



MONASH University

**The impacts of parent-mediated home-based DIR/Floortime[®] intervention
on children with Autism Spectrum Disorder and their parents in the
Malaysian context: A preliminary mixed methods investigation**

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Abstract

Background: Parent-mediated interventions (PMI) are an underutilised but effective approach in improving children with autism spectrum disorder's (ASD) communication, social, self-care, play, and behavioural issues as well as promoting parents' quality of life and psychological wellbeing. The Developmental, Individual-difference, and Relationship-based (DIR)/Floortime[®] intervention approach is one of the PMIs often utilised with children with ASD and has been recommended to be offered to families of children with ASD by the Malaysia Ministry of Health.

Aim: The aim of this study was to investigate the impact/s of a parent-mediated home-based intervention program based on the DIR/Floortime[®] model on children with ASD's pretend play, child-parent interactions, parents' quality of life, psychological wellbeing and parenting competence, as well as its applicability among families of children with ASD in the Malaysian cross-cultural context. The intervention program based on the DIR/Floortime[®] model was introduced to Malaysian parents of children with ASD and facilitated by an occupational therapist.

Method: The study involved ten parent/s-child with ASD dyads, aged between four to nine years old from Malaysia. A mixed methods approach involving a multiple single subject research design (SSRD) was used to investigate the study's aims. Child-parent interactions were evaluated through child-parent free play sessions and the child with ASD's pretend play was measured using the Test of Pretend Play (ToPP). Parents' quality of life, parenting competence and psychological wellbeing were assessed using the Malay translated versions of the Quality of Life in Autism Questionnaire (QoLA), Parenting Sense of Competence Scale (PSOC), and Bahasa Malaysia Depression Anxiety Stress 21-items (BM DASS-21), respectively. Key informant interview (KII) with parents were conducted to collect

qualitative data exploring the applicability and utility of implementing the parent-mediated home-based DIR/Floortime[®] intervention on children with ASD in a Malaysian cultural context. The visual and statistical analyses of the graphical data were used to determine the DIR/Floortime[®] intervention's impacts on child-parent interactions, while descriptive statistics were used to evaluate the changes in children with ASD's pretend play and parents' measures. Parents' interviews were analysed using the Qualitative Content Analysis (QCA) approach.

Results: Implementation of the intervention program based on the DIR/Floortime[®] model resulted in improved child-parent interactions in addition to increased parental levels of self-perceived quality of life, depression, anxiety and parenting competence. Parental level of stress increased slightly at the end of the intervention. Qualitative content analysis revealed five themes with several categories describing parental perceptions of (1) DIR/Floortime[®] intervention, (2) challenges in implementation and engagement in DIR/Floortime[®], (3) benefits and limitations of play for children with ASD, (4) improvements and changes in child and parents' abilities and skills, and (5) parents' views and suggestions about the DIR/Floortime[®] intervention program.

Discussion: Through the implementation of parent-mediated home-based program based on the DIR/Floortime[®] approach, children with ASD received a more intensive intervention which led to notable improvements in their social, communication, self-care, and play skills. These improvements had a positive impact on parents' self-reported quality of life, psychological wellbeing and parenting competency. The majority of the Malaysian families with a child with ASD enrolled in the study were able to implement the DIR/Floortime[®] intervention as required, however, they encountered some challenges. To achieve maximum success, the parent participants received continuous professional supports via coaching, feedback and discussion sessions during the biweekly follow-up visits with the occupational

therapist. Several improvements could be made to increase parents' efficiency in implementing the DIR/Floortime® program in a Malaysian context based on parents' suggestions, including providing parents with a semi-structured intervention manual or guidelines that explained the DIR/Floortime® program with clear examples, and increase the number of sample videos that demonstrated the implementation of DIR/Floortime® techniques that parents could view.

Conclusion: The study showed promising impacts of DIR/Floortime® intervention program on child-parent interactions, children's pretend play, parents' quality of life, parents' psychological wellbeing and parenting competence. The continued use of the DIR/Floortime® model in Malaysia is recommended along with further research that examines its effectiveness and feasibility in Malaysian contexts. Through this study, a parent-mediated home-based program based on the principles of the DIR/Floortime® model was shown to be applicable to practice among families of children with ASD in the Malaysian context.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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List of Acronyms

AAA	Assigning absent attribute
AJOT	American Journal of Occupational Therapy
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ASD	Autism Spectrum Disorder
AUD	Australian Dollars
APA	American Psychiatric Association
BM DASS-21	Bahasa Malaysia Depression Anxiety Stress Scale-21
BM-PSOC	Bahasa Malaysia translated version of Parental Sense of Competence
BM-QoLA	Bahasa Malaysia translated version of Quality of Life in Autism
CAOT	Canadian Association of Occupational Therapy
CarerQoL	Care-related quality of life instrument
CBR	Community-based rehabilitation
CEM	Caregiver Education Module
CES-D	Centre for Epidemiologic Studies Depression Scale
ChIPPA	Child-Initiated Pretend Play Assessment
CI-D	Child-initiated directive communication
CI-ND	Child-initiated non-directive communication
CMM	Caregiver-Mediated Module
CMOP-E	Canadian Model of Occupational Performance-Engagement
CoC	Circle of communication

CPG	Clinical Practice Guidelines
DASS-21	Depression Anxiety Stress Scale-21
DASS-42	Depression Anxiety Stress Scale-42
DC	Difficult Child
DIR	Developmental, Individual-differences and Relationship-based
DIR-FCD	Developmental, Individual differences and Relationship- Foundational Capacities for Development
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth edition
EPU	Economic Planning Unit
FDL	Functional developmental level
FEAS	Functional Emotional Assessment Scale
FEDQ	Functional Emotional Development Questionnaire
FTP	Floortime play
GDD	Global developmental delay
Hrs.	Hours
IAO	Imagining absent object
ICC	Intra-class correlation
ICDL	Interdisciplinary Council on Developmental and Learning Disorders
ICF	International Classification of Functioning, Disability and Health
ImPACT	Improving Parents As Communication Teachers
IQR	Inter-quartile range

IRR	Inter-rater reliability
IT	Information Technology
ITBM	<i>Institut Terjemahan & Buku Malaysia</i>
JASPER	Joint Attention, Symbolic Play, Engagement and Regulation
KII	Key informant interview
LAD	Language Acquisition Device
M	Mean
Max	Maximum
MCHAT	Modified Checklist for Autism in Toddlers
Mdn	Median
MEQ	Maternal Efficacy Questionnaire
Min	Minimum
Mins.	Minutes
MoH	Ministry of Health
MoHE	Ministry of Higher Education
MUHREC	Monash University Human Research Ethics Committee
MYR	Malaysian Ringgit
N	Numbers
N/A	Not applicable
OS	Object substitution
OT	Occupational Therapy

P1 PSOC-M	Pre-final Parental Sense of Competence-Malay translated version
P1 QoLA-M	Pre-final Quality of Life in Autism-Malay translated version
PACT	Preschool Autism Communication Therapy
PANAS	Positive and Negative Affect Schedule
PASS	Parent-mediated intervention for Autism Spectrum Disorders in South Asia
PCDI	Parent-Child Dysfunctional Interaction
PD	Parental Distress
PECS	Picture Exchange Communication System
P-ESDM	Parent delivered Early Start Denver Model
PICT	Parent-Child Interaction Therapy
PI-D	Parent-initiated directive communication
PI-ND	Parent-initiated non-directive communication
PLAY	Play and Language for Autistic Youngsters
PLS-3	Preschool Language Scale-3
PMI	Parent-mediated intervention
PND	Percentage of Nonoverlapping Data
PSI-SF	Parenting Stress Index-Short Form
PSOC	Parental Sense of Competence
PSOC-E1	Parental Sense of Competence-English back-translated version 1
PSOC-E2	Parental Sense of Competence-English back-translated version 2

PSOC-M1	Parental Sense of Competence – Malay forward-translated version 1
PSOC-M2	Parental Sense of Competence – Malay forward-translated version 2
Q	Questionable impact
QCA	Qualitative Content Analysis
QoL	Quality of life
QoLA	Quality of Life in Autism
QoLA-E1	Quality of Life in Autism-English back-translated version 1
QoLA-E2	Quality of Life in Autism-English back-translated version 2
QoLA-M1	Quality of Life in Autism-Malay forward-translated version 1
QoLA-M2	Quality of Life in Autism-Malay forward-translated version 2
RCT	Randomised Controlled Trial
RECUKM	Research Ethics Committee Universiti Kebangsaan Malaysia
RKPPS	Revised Knox Preschool Play Scale
SCDA	Single Case Data Analysis
SCQ	Social Communication Questionnaire
SD	Standard deviation
SSRD	Single-subject research design
Tb1	Time baseline 1
Tb2	Time baseline 2
ToM	Theory of Mind
ToP	Test of Playfulness

ToPP	Test of Pretend Play
TV	Television
UK	United Kingdom
UKM	Universiti Kebangsaan Malaysia
USA	United States of America
USD	US Dollars
VABS-2	Vineland Adaptive Behavior Scales-2
WHO	World Health Organisation
WHOQoL-BREF	World Health Organization Quality of Life Questionnaire -Brief

List of Symbols

%	Percentage
+	Increase
-	Decrease
>	Larger
<	Smaller
↑	Increasing direction
↓	Decreasing direction
\$	Dollar

List of Appendices

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- 15 Coding Frame
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- 17 Paper accepted for publication in Journal of Occupational Therapy, School and Early Intervention (Title: Translation, cross-cultural adaptation and validation of Quality of Life in Autism Questionnaire [QoLA] from English into Malay language)

Chapter 1

Introduction

In this chapter, an overview of the thesis structure is provided as well as an introduction to the thesis topic. Autism is a life-long condition impacting both children and their parents' functioning and wellbeing. Children with Autism Spectrum Disorder (ASD) experience a range of challenges, most significantly in their social communication and interaction abilities as well as restrictive play behaviours (Kuhlthau et al., 2014; Strock, 2007). Due to these limitations, children with ASD in many instances require a high level of care from their parents to manage everyday activities (Kuhlthau et al., 2014; Rapin, 2001). This takes substantial amounts of parental time, physical energy, mental resilience, and monetary resources (Eapen, Crncec, Walter, & Tay, 2014; Ilias, Liaw, Cornish, Park, & Golden, 2017; Kuhlthau et al., 2014; van Tangerloo et al., 2015). The prevalence of ASD is showing an increasing trend, with the latest prevalence in the United States of America (USA) reported that 13.4 per 1000 children aged 4 years old are diagnosed with ASD (Christensen et al., 2016) and a feasibility study in Malaysia reported that 1.6 per 100 children aged 18 to 36 months were being diagnosed with ASD (Ministry of Health Malaysia, MoH, 2014). With the increasing number of children presenting with ASD, a greater need for specialised health, social and education services exists.

Occupational therapy is one of the health services that children with ASD receive. In Malaysia, occupational therapists working with children with ASD mostly use sensory-based and play therapy intervention approaches (Kadar, McDonald, & Lentin, 2015). Both interventions are included in the MoH's Clinical Practice Guidelines (CPG; Ministry of Health Malaysia, 2014) for the management of ASD in children and adolescents. The

guidelines also suggested that Developmental, Individual-differences and Relationship-based (DIR)/Floortime[®] intervention and parental training opportunities should be offered to families of children with ASD (Greenspan & Wieder, 1997; Solomon, Van Egeren, Mahoney, Huber, & Zimmerman, 2014). However, there is limited evidence documenting the effectiveness of the DIR/Floortime[®] intervention approach and no studies have been conducted in Malaysia despite it being recommended in the CPG.

Meanwhile, similar recommendations were put forward in the American Journal of Occupational Therapy (AJOT) in a recently published article outlining potential research opportunities in the area of people with ASD (“Research Opportunities”, 2017). Future areas that require further investigation are developmental-based and parent-mediated interventions, parent training, education and coaching to improve people with ASD’s social communication and parents’ skills and knowledge, respectively.

The DIR/Floortime[®] intervention approach is based on a developmental model that focuses on improving children’s social interaction and communication skills with an emphasis on the parent-child relationship. Previous studies had utilised the intervention with families of children with ASD and provided some preliminary evidence of its effectiveness (Dionne & Martini, 2011; Greenspan & Wieder, 1997; Liao, Hwang, Chen, Lee, Chen, & Lin, 2014; Pajareya & Nopmaneejumrulers, 2011, 2012; Solomon, Necheles, Ferch, & Bruckman, 2007). In most of the studies, the intervention was implemented by the parents at home with support from health professionals in terms of training, coaching, feedback and assessing children’s changes and improvements.

Occupational therapy interventions are planned and delivered with the aim of addressing the functional difficulties that parents and their children with ASD present with. In accordance with the recommendations put forward by the MoH and in the AJOT (Ministry of Health Malaysia, 2014; “Research Opportunities”, 2017), studies exploring parent-mediated

home-based intervention based on the DIR/Floortime[®] intervention approach in the Malaysia context are needed, hence, this study was formulated.

This study explores the applicability of parent-mediated home-based intervention based on the DIR/Floortime[®] model (herein is called “intervention”) and its impacts on both children with ASD and their parents in the Malaysian context. To determine the impact of the DIR/Floortime[®] model, the following objectives and research questions were developed. This study’s objectives were:

- i. To investigate the impact of the parent-mediated home-based DIR/Floortime[®] intervention on child-parent interactions (using the rating of Circle of Communication [CoC])
- ii. To determine the impact of the parent-mediated home-based DIR/Floortime[®] intervention on parents of children with ASD’s quality of life (using the Bahasa Malaysia translated version of Quality of Life in Autism [BM-QoLA])
- iii. To determine the impact of the parent-mediated home-based DIR/Floortime[®] intervention on parents of children with ASD’s self-perceived depression, anxiety and stress (using the Bahasa Malaysia Depression Anxiety Stress Scale-21 [BM DASS-21])
- iv. To investigate the impact of the parent-mediated home-based DIR/Floortime[®] intervention on parents of children with ASD’s parental competence (using the Bahasa Malaysia translated version of Parental Sense of Competence [BM-PSOC])
- v. To explore the effect of the parent-mediated home-based DIR/Floortime[®] intervention has on the pretend play of children with ASD (using the Test of Pretend of Play [ToPP])

- vi. To investigate the applicability of the parent-mediated home-based DIR/Floortime[®] intervention among families of children with ASD in the Malaysian context (via key informant interviews with parents' participants)

The study was undertaken to answer these research questions:

- i. Does the implementation of the parent-mediated home-based DIR/Floortime[®] intervention effective in changing child-parents' interactions?
- ii. What is the impact of the implementation of the parent-mediated home-based DIR/Floortime[®] intervention on parents of children with ASD's quality of life?
- iii. What is the impact of the implementation of the parent-mediated home-based DIR/Floortime[®] intervention on parents of children with ASD's self-perceived depression, anxiety and stress?
- iv. What is the impact of the implementation of the parent-mediated home-based DIR/Floortime[®] intervention on parents of children with ASD's sense of competence?
- v. What is the effect of the implementation of the parent-mediated home-based DIR/Floortime[®] intervention on the pretend play of children with ASD in the Malaysian context?
- vi. Is the parent-mediated home-based DIR/Floortime[®] intervention applicable in the Malaysian context?

Guided by the research objectives and questions, scholarly literature related to the scope of this study are reviewed and presented in the next chapter. Following that, the methodologies adopted in this study are described in detail, followed by the presentation of the study results. The results of the study are then discussed and in the last chapter of this thesis, the conclusion derived from the results and discussions along with the recommendations for future research are provided.

Chapter 2

Literature review

2.1 Introduction

This chapter describes in detail the topics related to the study objectives including the participants (children with Autism Spectrum Disorder [ASD] and parents of children with ASD) and the components to be examined for both the children and parents (e.g., pretend play of children with ASD, parental quality of life, psychological wellbeing and parental sense of competence). The intervention program utilised in the study (Developmental, Individual-differences, Relationship-based [DIR]/Floortime[®] intervention), theoretical and practice models that underpin the study and the research design adopted in the study are also describe. Firstly, children's typical development, play development and its assessment tools are explained. Following that, this chapter describes the characteristics of children with ASD including their pretend play development as it is one of the component assessed in this study. Parents of children with ASD are the other major part of the study and their quality of life (QoL), psychological wellbeing involving depression, anxiety and stress, as well as sense of competence in parenting are described. The study utilised a home-based, parent-implemented intervention approach based on the DIR/Floortime[®] model that will be explained in this chapter. Theoretical foundations and practice models (Canadian Model of Occupational Performance- Engagement [CMOP-E], International Classification Functioning, Disability and Health [ICF], Bioecological Theory) and their applications in the study are also illustrated in this chapter. The research design adopted in this study, the multiple single study design is also described.

2.2 *Children development*

Children develop and change from conception through to adolescence in all domains, and these areas are inter-related with one another – physical, cognitive, emotional, social, and language. Human development is universal for the most part and occurs in a stage-like manner that sometimes changes quantitatively or qualitatively. This section discusses the typical cognitive, language and social-emotional development of children, and their link to play.

2.2.1 *Cognitive development*

Cognition refers to the inner process and products of the mind that leads to knowing and includes all mental activity such as attending, remembering, symbolising, categorising, planning, reasoning, problem-solving, creating and fantasising (Berk, 2013). Cognitive abilities are essential for an individual to adapt to changes in his/her environment to survive (Berk, 2013; Santrock, 1995). Two approaches used in discussing children's cognitive development are Piaget's cognitive developmental theory (Piaget, 1952), and Vygotsky's sociocultural theory (1966).

Children are viewed as individuals who discover, and construct knowledge about the world through their own activity as they are born with a psychological structure called schemas (Berk, 2013; Piaget, 1952; Santrock, 1995). Schemas are described as an organised way of making sense of daily experiences (Berk, 2013; Santrock, 1995). Piaget (1952) believed that children pass through four stages of cognitive development from infancy to adolescence – sensorimotor stage, preoperational stage, concrete operational stage, and formal operational stage. These stages are achieved as the result of biological pressures to adapt or accommodate to the environmental changes and to organise structures of thinking (Santrock, 1995).

Adaptation involves building schemas through direct interaction with the environment via assimilation, using the current schemas to interpret the external world (Berk, 2013; Santrock, 1995). Accommodation is a process where a new schema or an adjusted existing schema is developed from conflicting concepts of existing schemas and new information on the same schema (Berk, 2013; Santrock, 1995). In this section, only the first two of Piaget's cognitive developmental stages, the sensorimotor and pre-operational stages will be discussed since the current study aims to explore the pretend play of pre-school-age children diagnosed with ASD.

The sensorimotor stage of cognitive development lasts from birth to approximately two years of age. The mental development during this period is characterised by an infant's ability to organise and coordinate sensations with physical movements and actions (Piaget, 1952). This stage is divided into six sub-stages describing the qualitative changes in sensorimotor organisation: (1) simple reflexes, (2) primary circular reactions, (3) secondary circular reactions, (4) coordination of secondary circular reactions, (5) tertiary circular reactions, and (6) mental representation (Piaget, 1952). During an infant's first months of life, the coordination of sensation and action is done through reflexive behaviours such as rooting and sucking (Santrock, 1995). Infants then learn to coordinate sensation and types of schemas or structures which are indicative of primary circular reactions. They are now able to produce behaviours that resemble reflexes in absence of the stimuli (e.g., when infants organise the action of sucking a nipple when bottle feeding).

In the next sub-stage, the primary circular reactions, the infant progresses by attempting to reproduce interesting or pleasurable events that initially occur by accident. Habits and circular reactions are stereotypical in the sense that the same action is repeated in the same way each time (Santrock, 1995). For example, while the motor skills are still developing, a child may accidentally suck his/her fingers and will repeat the same action automatically

without being aware of its purpose. Between four and eight months of age, infants develop secondary circular reactions where they become more object-oriented or focused when they do something (Berk, 2013), as illustrated by infants who are often fascinated by the act of shaking a rattle and will repeat the same action just to experience the fascination or imitate simple actions of others.

The next stage that emerges is the coordination of secondary circular reaction in infants aged eight to 12 months, this is when infants intentionally coordinate the schemas to solve simple problem. Actions are directed to achieve secondary goals, where the means and goals of action are separated (Santrock, 1995). For example, the act of knocking over a small tower made out of blocks (means) is performed with the intention of getting another toy (goal) to play with. At this stage, the child's object permanence is beginning to develop where he/she understands that an object continues to exist even when it is out of sight.

The fifth sub-stage, tertiary circular reactions, develops between 12 and 18 months of age and is characterised by the child's interests in a variety of properties of the object and various ways to operate it (Berk, 2013; Santrock, 1995). For example, an infant turning and twisting a geometrically-shaped block so that it fits into the correctly matched shaped-hole. Finally, the last sub-stage is mental representation that develops around 18 to 24 months of age in infants (Berk, 2013). Children at this stage solve problems by thinking instead of trial-and-error behaviour as well as beginning to have the capability of invisible displacement (e.g., finding objects that had been moved while out of sight), deferred imitation (e.g., imitation behaviour in absence of models), and make-believe play (e.g., act out of every day and imaginary activities).

Progressing from the sensorimotor stage, children aged two to seven years old move to the preoperational stage (Piaget, 1952). Operations in the context of cognitive developmental theory are described as mental representations of actions that obey logical rules (Berk, 2013:

Santrock, 1995). Children reaching this stage can represent objects and events mentally, hence permitting more complex symbolism thought processes, but still understand concepts through their perception (Frost, Wortham & Reifel, 2012). This stage develops through two sub-stages – the symbolic function sub-stage and the intuitive thought sub-stage (Santrock, 1995). The symbolic function sub-stage occurs between the ages of two and four years and is characterised by the ability of picturing things mentally. There are two types of thinking processes they exhibit: egocentrism, described as concern with one's own thoughts and ideas, an inability to consider other people's points of view; and animistic thinking where children believe that inanimate objects are alive and can act on their own (Berk, 2013).

During the second sub-stage, intuitive thoughts, start occurring between the ages of four and seven years, and primitive reasoning begins where the thought process is changing from symbolic thinking to intuitive, inner thinking (Santrock, 1995; Piaget, 1952). However, the child is still using the primitive system of organisation caused by centration that results in focusing on only one characteristic or attribute of an object at a time. Children are not yet capable of understanding that the physical attributes of materials remain consistent even when the materials may be altered or rearranged, and this is referred to as conservation. Children also do not master the concept of reversibility which is the ability to go through a series of steps in a problem and then mentally reverse direction, returning to the starting point (Berk, 2013). Children entering school will continue to develop their thinking processes into more mature and logical ways until their teenage years.

2.2.2 Language development

Language development begins as early as in the womb when the foetus hears his/her mother's voice and language in the environment (Frost et al., 2012). The first two years of life is a critical period for language acquisition. Three major theories explaining language development are behaviourism, nativism, and interactionism (Berk, 2013). The behaviourist

theory of language development proposes that language is acquired through operant conditioning (Skinner, 1957), which occurs when children's efforts to say or imitate words are reinforced using rewards.

Through conditioning, children learn these words and build up their vocabularies. In contrast to the behaviourist theory, nativist theorist, Noam Chomsky (1957) believed that children have an innate ability to acquire language using their biologically based innate system called the Language Acquisition Device (LAD). Meanwhile, the interactionist theory (Vygotsky, 1962) proposed that language is only acquired through socialisation (Berk, 2013). Infants and toddlers have an innate ability to learn language facilitated by adult caregivers (Berger, 2009; Berk, 2007).

During the critical period of the first two years of life, infants and toddlers learn enough about the language to speak and develop a vocabulary ranging from 50 to 200 words regardless of the culture and country they are exposed to or live in (Berk, 2007). Children learn the language of their community as reported by Trawick-Smith (2009) who found that Italian babies understand names of different kinds of pasta early in life. The sequence of language development from birth to two years is shown in Table 2.1 below.

2.2.3 Social emotional development

Emotion is defined as “a rapid appraisal of the personal significance of the situation, which prepares you for action” (Berk, 2013, p. 401) and expresses the readiness to establish, maintain, or change the individual's relation to the environment on a matter of importance to the individual (Campos, Frankel, & Camras, 2004; Saarni et al., 2006). According to functionalist theorists, emotions are thought to energise behaviour to accomplished goals (Campos et al., 2004; Frijda, 2000; Saarni et al., 2006). Emotional development and social development are intercorrelated. Psychosocial theory proposed by Erikson (1963) suggested

that emotional development occurs as the individual resolves life stages positively or negatively.

Table 2.1
The sequence of language development

Age	Language development
2 months	Develops a range of meaningful noises that can be discriminated by the mother – cooing, fussing, crying and laughing.
3-6 months	Squeals, croons, vowel sounds are added. Parents direct attention to what their baby is looking at and verbally label what is seen.
6-10 months	Utterances begin to include repetition of syllables – babbling.
10-12 months	Comprehends simple words, utterances sound more like adult words in intonation.
13 months	First word spoken, vocabulary increases steadily. Infant uses a single word to express complete thoughts, has larger receptive vocabulary than expressive.
13 months-18 months	Continued growth of vocabulary using one-word utterances.
18 months	Spurt in vocabulary development.
21 months	Begins to combine two words in an utterance, vocabulary expands rapidly and begin to understand rules of grammar.
24 months	Has a vocabulary of up to 200 words.
2 – 3 years	Combines two words, by the end of 2 years. Three-word sentences begin to appear, engages in conversational turn taking and topic maintenance.
3 – 5 years	Improves in phonological awareness, word pronunciation, understands metaphors, adjusts speech to listener’s perspectives and social expectation and produces chronological narratives.

Note. Adapted from Berk (2013).

In the first year of life, infants go through the first stage of social development that is referred as ‘trust versus mistrust’, where infants learn whether the world is a secure place. A sense of trust is developed if the infants’ needs are met with consistency and continuity, this

capability helps overcome and reduce infants' fear to their surrounding world that often manifests through crying. On the other hand, if the needs are not met then the infant will develop a sense of mistrust. By two years of age, toddlers encounter the conflict of 'autonomy versus shame and doubt' (Erikson, 1963; Frost et al., 2012). Toddlers will try to control their actions and body, and thus attempt to become more autonomous and independent with the support from their parents. However, children will develop the sense of shame, and doubt their ability to act competently if they have over controlling and restrictive parents (Erikson, 1963; Frost et al., 2012).

An infant's earliest emotional life consists of two global arousal states: attraction to pleasant stimulation, and withdrawal from unpleasant stimulation (Camras et al., 2003; Fox, 1991). A sensitive caregiver/parent who selectively mirrors aspects an infant's emotional behaviour will assist the infant to develop those emotional expressions that resemble those of adults (Gergely & Watson, 1999). When these sensitive parents express, label and explain the emotions using emotion-associated words with warmth and enthusiasm, children who typically use more of these words further develop a better understanding of these skills (Fivush & Haden, 2005; Laible & Song, 2006). The emotional development between infancy and six years of age are shown in the following Table 2.2.

Social development in children begins with the ability to discriminate oneself from the environment as the capacity for intermodal perception supports the beginning of self-awareness (Rochat, 2003). During the first few months of life, infants are able to distinguish their own visual image from other stimuli, but their self-awareness is limited which is only expressed in perception and action. By four months, infants begin to view other persons as opposed to themselves as a potential social partner (Rochat & Striano, 2002) thus begins the social development of children.

Table 2.2
The development of emotional expressiveness and understanding

Age	Emotional expressiveness	Emotional understanding
Birth-6 months	<ul style="list-style-type: none"> ▪ Smiles in response to gentle touches and sounds ▪ Social smile emerges, laughter appears ▪ Expression of happiness increase when interacting with familiar people ▪ Emotional expression gradually become organised signal, meaningfully related to environmental events 	<ul style="list-style-type: none"> ▪ Detects emotions by matching caregiver's feelings and tone in face-to-face communication
7-12 months	<ul style="list-style-type: none"> ▪ Anger and fear increases in frequency and intensity ▪ Uses caregiver as a secure base ▪ Regulates emotions by approaching and retreating from situations 	<ul style="list-style-type: none"> ▪ Detects the meaning of others' emotional signals ▪ Engages in social referencing (relying on another person's emotional reactions to appraise uncertain situations)
1-2 years	<ul style="list-style-type: none"> ▪ Self-conscious emotions (higher order set of feelings that involve injury or enhancement of an individual's sense of self – guilt, shame, embarrassment, envy and pride emerge but depend on monitoring and encouragement of adults ▪ Begins to use language to assist with emotional self-regulation (to adjust emotional state to a comfortable level of intensity for goal accomplishment) 	<ul style="list-style-type: none"> ▪ Begins to appreciate that others' emotional reactions may differ from one's own ▪ Acquires vocabulary of emotional terms ▪ Displays empathy

3-6 years	<ul style="list-style-type: none"> ▪ Self-conscious emotions clearly linked to self-evaluation ▪ Uses active strategies to regulate emotions with representation and language improving ▪ Begins to conform to emotional display rules (where and how it is appropriate to express emotion), can pose a positive emotion that he /she does not feel 	<ul style="list-style-type: none"> ▪ Understanding of causes, consequences of emotion, behavioural signs of emotion improves in accuracy and complexity ▪ Empathy becomes more reflective with the development of language
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Note. Adapted from Berk (2013) and Mumme et al. (2007).

At around two years old, toddlers become consciously aware of the self as a unique object in a world of objects, and this is when an explicit self-awareness is developed (Berk, 2013). Self-awareness becomes a central part of children’s emotional and social lives. By the end of the first year of life, infants start to behave intentionally and learn that their own goals often conflict with the goals of others. Then, they develop social referencing which they use to choreograph their behaviour to be socially accepted.

2.2.4 Children development and play

Children’s development and play are intercorrelated, as the development of one optimises the other. Play has an important role in optimising children’s development of physical, cognitive, social and emotional wellbeing (Ginsburg, 2007). Play allows children to use their creativity and develop their imagination, cognitive skills, physical and emotional abilities (Shonkoff & Phillips, 2000; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). Play is considered the most cherished part of childhood and a meaningful occupation that children engages in (Ginsburg, 2007).

Play and children’s development are closely linked and promoting one another’s progression. Children having appropriate and affective relationships with loving and consistent caregivers encourages their healthy development, therefore, parents can relate with

children by playing together. Similar to children's development, play also develops with respect of the child's developing skills. The development of play will be discussed further in the following section.

2.3 *Play*

Play involves various parts of a child's life. It is the most essential and meaningful occupation that children can engage in since play helps them learn new things and experiment with aspects of their world (Algado & Burgman, 2005). Children's play in everyday life is an activity that is easy to understand, but difficult to define since a number of different definitions have been proposed in the literature. The definition and characteristics of play is provided in the following subsection.

2.3.1 *Definition and characteristics of play*

Generally, play can be described as voluntary, internally motivated, process-oriented, fun, enjoyable and a creative activity performed for a non-serious purpose, as described by various authors (Apter & Kerr, 1991; Burghardt, 2005; Sutton-Smith, 1997). The key features of play include intrinsic motivation, enjoyment or pleasure, spontaneity, active engagement, non-instrumental, not serious, and non-literality of the objects used to engage in it (Clark & Miller, 1998; Stagnitti, 2010).

Intrinsic motivation is defined as engaging in play that is motivated by the experience of play itself, not by the promised external rewards (Rubin, Fein, & Vandenberg, 1983). The goal of playing is the play itself, done only for the satisfaction of doing it (Hughes, 2010). Children are free to choose when, how and where to play. Enjoyment and pleasure are two of the defining features of play (Clark & Miller, 1998) which are associated with positive affect. However, it is not always apparent particularly if the activity requires the player to concentrate on it. Meanwhile, spontaneity in play is characterised by self-imposed goals that

can change suddenly as the player wishes them to and this focuses on the means of behaviour rather than its ends (Parham, 2008).

Play also involves active engagement of the player. Whenever individuals actively engage themselves in an activity, which possess other criterion of play, then it is considered to be play (Parham, 2008). This includes daydreaming since an individual is actively engaged in the activity of playing with ideas (Sutton-Smith, 1997). Play does not require actual objects to happen, it can occur without the presence of them. Play can be instrumental when it involves objects, or non-instrumental with no physical objects included (Parham, 2008). The player and the play itself are important parts of the activity of play. Children's play is also non-literal, where objects are treated as if they were something else, whether in its functional or made up properties of real or non-real-life situations. It is the pretending quality that differentiates play from serious behaviours. There is no single approach that adequately encompasses the range of perspectives that are germane to the intuitive meaning of play (Rubin et al., 1983). Hence, the characteristics of play suggested by Stagnitti (2010) are listed below and will be referred in this study:

- i. More internally than externally motivated
- ii. Able to transcend reality as well as reflect reality
- iii. Controlled by the player
- iv. More focused on the process than product
- v. Usually safe, fun, unpredictable and pleasurable
- vi. Spontaneous and involves non-obligatory active engagement
- vii. Non-literal
- viii. Opportunistic and episodic
- ix. Imaginative
- x. Creative

In order to have a better understanding about play, Wilcock (1999, 2006) provided an explanation in terms of 'doing', 'being', 'becoming' and 'belonging'. The 'doing' is what

children do in terms of play skills, abilities and their developmental level of play thus interconnected with the 'being' of play. The 'being' of play as described by Wilcock (1999) is about being true to ourselves, our nature, our essence and to what is distinctive about what the individual brings to other parts of relationships and to what individuals do. 'Being' is to be the player that spends their time to play, explore, engaging in and enjoying the activity. Both 'doing' and 'being' complement each other; when a child fails to do so, it is difficult for the child to be a player who engages and enjoys his/her play.

The 'becoming' component of play is the potential for an individual's growth of emotion, physical, social, and cognitive. This helps the individual transform into a participating member of society and self-actualised person who initiates and contributes ideas when playing with peers, friends, family and the society at large. By 'becoming', children are able to 'belong' and participate in a broader social life, with schoolmates, neighbours and society; thus, grow to their full potential and contribute to society as productive citizens. All four aspects - 'doing, being, becoming and belonging' - provide a sense of meaning to play as a purposeful occupation. Including a review of play from various theoretical perspectives will provide an overview of the concept of play. Therefore, a brief discussion of the play theories is provided in the following subsection.

2.3.2 *Play theories*

Theories of play are discussed in two categories - classical theories, and contemporary theories. The classical theories of play originated in the late 19th and early 20th century, while contemporary theories emerged in the mid-20th century and continue to develop.

a. Classical theories of play

Four well-known classical theories of play are discussed in this section: the surplus energy theory, recreation or relaxation theory, pre-exercise theory, and recapitulation theory. The surplus energy theory explains play as resulting from children having excessive energy

(Spencer, 1873). Children tend to preserve a lot of energy because they are looked after by their caregivers. To expel their excess energy, children have to play. In direct contrast to the surplus energy, recreation or relaxation theory approach believed that children engage in play due to a deficit of energy. Gilmore (1971) suggested that play occurs because fatigue builds up as a result of energy expended completing unfamiliar and relatively new tasks, and the purpose of play is to replenish spent energy.

Meanwhile, Groos (1978) believed play is an intrinsic behaviour that emerges from instincts in the context of pre-exercise theory. Children exercise and refine their instincts into mature behaviours in preparation for use in the future so they are equipped with the necessary adaptive skills required throughout life (Vanderberg, 1978). The recapitulation theory of play views play as a product of evolutionary biological processes (Hall, 1978). In this theory, play is a carryover of behaviours that were critical for survival in evolution in the past but are no longer important where no new skill or ability can emerge.

b. Contemporary theories of play

The contemporary approaches to play are grouped according to their theoretical basis - biological, psychodynamic, cognitive developmental and sociocultural. According to Burghardt (2005), in the evolutionary biology of play theory, play is both a product and cause of evolutionary change. A prior evolutionary event can also lead to enhanced existing functions and even be the impetus for creating new functions. Arousal modulation theory originated in the discipline of psychology and proposed that play and exploration were secondary to behaviours that serve to reduce basic drives, such as reducing hunger, cold or thirst (Rubin et al., 1983). Play, an intrinsically motivated behaviour is performed due to the arousal of the central nervous system.

The psychodynamic theories proposed that play serves the roles of wish fulfilment and mastery of traumatic events for children (Freud, 1961). The theory views play to have an

important role in children's emotional development and also have a cathartic effect where it allows children to channel out their negative feelings associated with traumatic events faced in everyday life in their play situation (Mellou, 1994). In this theory, play is also discussed in connection with wish fulfilment, anxiety and the ego process in children.

In the context of this study, cognitive developmental theories of play are used to describe play. Generally, it considers play as a voluntary activity where children are in control when interacting with objects and toys. It is also considered a cognitive process and is believed to contribute to cognitive development, including problem solving and creativity with the focus being on children's formation and manipulation of concepts and symbols (Mellou, 1994; Sutton-Smith, 1980). Children combine ideas and form new behaviours when playing, which can be used outside of play contexts to promote human adaptation later in life. Play as suggested by Piaget (1952), in its purest form, is considered to include children's expression of experience with their existing mental structures and as a joyful exercising of a child's existing cognitive abilities through action.

Sociocultural theories of play focus on the relationship of play with culture, with both influencing each other (Vygotsky, 1962). Play influences culture where it contributes to children's socialisation and enculturation; it mirrors and parodies the socialisation process of society (Schwartzman, 1978). Meanwhile, Mead (1934) indicated that play is a socialising factor where children learn the concepts of particular roles through their play. Children reflect and interpret their culture, and then communicate it through their expression and range of play activities.

2.3.3 The types of play and development of play

The four types of play are sensorimotor play, object play, symbolic and pretend play, and social play. Characteristics and the course of development for each play type from infancy to five years of age are discussed below.

a. *Sensorimotor / practice play*

Sensorimotor or practice play is the repetition of already assimilated sensory or motor activities for the utter pleasure of repeating them (Piaget, 1952). Infants spend much of their first year of life engaging in sensorimotor and practice play. The course of sensorimotor play development reflects a child's gradual intellectual growth and progress as shown in Table 2.3 below.

Table 2.3
Development of sensorimotor play and types of play associated in each sub-stage

Age (in months)	Type of play	Intellectual / cognitive development characteristics
1-4 months	Play with one's own body, repeated for enjoyment of doing so (e.g., grasping, sucking thumb)	Primary circular reactions appear. Discovery of interesting sensory or motor experience relating to one's own body. Baby enjoys it and repeats it.
4-8 months	Play is not specifically oriented to the body; definite interest towards environmental consequences (e.g., tearing paper, banging spoon)	Secondary circular reactions appear. Repetition of activities not specifically oriented towards one's own body, but the effects on the external world.
8-12 months	Intentional, goal directed activity, prolong interesting environment, (e.g., knock over block tower to get to toys, repeatedly knocking over block towers to observe the action of blocks falling and making loud noise)	Appearance of intentional, goal-directed activities, often abandon the object of intention (toy that children originally going after) to simply play with means (action involved in getting the toy such as knocking over block towers located in front of the toy) itself.
12-18 months	Variation in action sequences, intentionally complicates play experiences to make them more interesting (e.g., drop	Tertiary circular reaction appears. Attempts to vary the activity's new behaviour instead of repeating precisely the same action. Enjoying the novelty

	toys from a height, squeeze, put into water)	and actively looking for new ways of producing interesting experiences.
>18 months	Takes part in symbolic or make-believe play activities	Symbolisation (referred to as the ability to represent something else for something) appears.

Note. Adapted from Piaget (1952) and Hughes (2010).

b. Object play

Play with objects involves the intentional manipulation of objects, with a definite interest of the player in the results of the manipulation (Hughes, 2010). The course of object play development is shown in Table 2.4 below.

Table 2.4
The development of object play and types of play in each stage

Age	Type of play	Characteristics
0-3 months	Play with little intention and physically manipulating objects during play; child looks, hears, and feels toys	Infants cannot sit erect, does not yet have primitive grasp; toys stimulate infant's senses.
3-6 months	Manipulates objects with hand, can reach out and pick up a block, pass one object from hand to hand, bang spoon on table	Begins to grasp, manipulate objects actively with hand, shows emerging eye-hand coordination skills.
6-12 months	Pick up an object using thumb and forefinger; bringing objects together in play; mouthing toys; plays with objects differently depends on their texture; exploratory play; banging, manipulating objects, stacking and nesting toys	Grasping skills continue to improve, examining things around them by mouthing them, exploring objects, improved ability to differentiate objects
12-18 months	Play with toys that reacts to player's actions (e.g. turning a dial on telephone toy that has sound), builds 2-3 block tower, push, pull, throw toys	Enjoying and interested in the reactions from toys resulting from action upon them.

18-24 months	Multiple play objects, appropriate use of objects and increase representational use of objects	Begins to realise the functions of objects, combining objects in play, begins to be able to have mental substitution of objects.
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Note. Adapted from Hughes (2010).

c. Symbolic or make-believe play

Symbolic or make-believe play is characterised by the use of mental representations where one object is allowed to represent another object. Three underlying elements of symbolic play include ‘*decentration*’ which is the ability to direct play actions onto something else, outside of themselves (Casby, 1992; Hughes, 2010), ‘*decontextualisation*’ that refers to the substitution of one object for another (Casby, 1992; Fenson, 1986), and ‘*integration*’ showed by the organisation of play into patterns. The development of symbolic play is shown in the following Table 2.5.

Table 2.5
The development of symbolic play

Age	Characteristics of play
12 months	Make-believe acts directed towards self. Involves familiar everyday life experiences (such as eating, drinking, and sleeping), realistic substitution of objects used in realistic ways with little connection between symbolic play activities.
18 months	Pretence involves objects as recipients of the action. Child will initiate the make-believed action and directed it to the object. Substitution of objects is less realistic of appearance and function and pairs up related activities in single-scheme combinations (e.g., teddy bear “riding” bicycle made of block and jump off, followed by other toys doing the same action).
24 months	Objects in make-believe play routines act as an initiator and recipient of the make-believe actions, substitution of objects with no physical resemblance to original function, integrates multiple scheme combinations

of play and coordinates collections of activities (e.g., put teddy bear at a table set up for tea party and allow it to enjoy the meal).

3-6 years Able to distinguish between reality and make-believe, progressing in the understanding that pretence involves mental representation of reality including planning and intention (e.g., pretence during play, stepping out of pretence mode when disrupted and continue to pretend again).

5-6 years Group pretend play/sociodramatic play that involves two or more children, pretend playing together, with each member taking on different roles that complement roles played by others in the group.

Note. Adapted from Fenson (1986), Hughes (2010), Piaget (1952), and Rubin (1986).

d. Social play

Social play involves the transition of children’s play from being non-social or uninvolved to socially involving others (Frost et al., 2012; Parten, 1932). Social play emerges at around two years of age with the lowest level of social play referred to as solitary play. The progressions of the different types of social play that emerge in children from two years old to four years old are included in Table 2.6.

Table 2.6
The development and categories of social play

Age	Social games / Categories of social play	Characteristics
9 months	Simple cooperative game	Plays cooperative games with parents with active role in games initiated by adults.
18 months	Imitative peer play	Imitating play of other children around and plays by themselves.
2 years	Solitary play	Plays alone in own world even surrounded by other children.
2 years	Onlooker play	Watches other children play, acts as a spectator by asking questions and even offering suggestions but not as active participant.
2 years	Parallel play	Plays the same activity, at the same time, in the same place separately but aware of presence of others.

3-4 years	Associative play	Focused on separate activity, but with considerable amount of sharing, lending, taking turn, attending to other peer's activities and communicates with each other.
4 years	Cooperative play	Two or more children engaged in a play activity that has a common goal with individual assigned roles being carried out.

Note. Adapted from Hughes (2010) and Parten (1932).

2.3.4 *The importance of play*

Most scholars agree that play is an essential component in a child's development (Berk, 2013; Santrock, 1995; Wilcock, 2006). In occupational therapy, play in childhood is deemed important because it is an effective way to develop functional skills, such as sensory, motor, social, cognitive, self-care and work skills (Cooper, 2001, 2009; Parham, 1996). Evidence has shown that play promotes long-term health and wellbeing of a child. Walker et al. (2005) conducted a longitudinal study in Jamaica for 19 years involving 129 children who presented with stunted growth and were systematically grouped into four groups (supplementation, stimulation, stimulation and supplementation, and a control group consisting of non-stunted children). The supplementation group was given one kilogram of milk-based formula per week and the stimulation comprised of a weekly visit to the home by a community health worker who encouraged mother-child interactions through play. Follow-up measurements of the participants when they were 17 to 18 years of age found that the stunted children who received home-based stimulation sustained long-term cognitive and educational benefits compared to those who did not receive services.

Language development in children was found to be linked with play. For example, Lyytinen et al. (1999) found that pretend play and vocabulary production of 14-month-old toddlers contributed to their language skills at two years of age. A qualitative study conducted in Korea by Wee, Shin and Kim (2013) involving nine children aged three to five

demonstrated that role playing enhanced the understanding of self and awareness of one's own feeling and others'. The children also developed positive self-concept and attitude toward others, understanding other's perspectives and feelings, and self-discipline.

Pretend play appears to be a key skill underpinning children's cognitive and social development, because it provides insight into children's use of knowledge when facing the real world, thus contributing to self-regulation and problem solving (Cohen, 2006; Russ, 2005; Westby, 1991). Meanwhile, play was found to enhance physical health by building active and healthy bodies, contributing to children's brain development, helping children adjust to the school setting, school engagement, and enhancing children's learning readiness and problem-solving skills (Milteer & Ginsburg, 2012).

Play can be assessed through standardised and non-standardised assessments. Some assessments measure the development of general play and some assess the specific type of play. Four play assessments that are related to the study's aims are explained and compared to find the most suitable assessment to be used in this study.

2.3.5 Play Assessments

There are several play assessments frequently used in play studies among children with disability and typically developing children. Children's play is assessed in several aspects including the skills, the engagement or participation in the play itself, the playfulness of the player, the play development of an individual and the play abilities. This study aims to examine and improve pretend play of pre-schoolers with ASD by incorporating a parent-mediated home-based intervention that encourages both play and pretend play. Hence, in this section, four play assessments, (i) Revised Knox Preschool Play Scale (RKPPS) (Knox, 1997), (ii) Test of Playfulness (ToP) (Bundy, 2003; Skard & Bundy, 2008), (iii) Child-Initiated Pretend Play Assessment (ChIPPA) (Stagnitti, 2007), and (iv) Test of Pretend Play (ToPP) (Lewis & Boucher, 1997) are described and compared.

a. *Revised Knox Preschool Play Scale (RKPPS) (Knox, 1997)*

The Revised Knox Preschool Play Scale (RKPPS) (Knox, 1997) as the name implies, can be used for assessing play of pre-schoolers which is suitable for the intended participant group of this study. One of the advantages is, it can be administered in a natural setting without any specific toys or materials. However, the tester should observe a minimum of two sessions of play in both indoor and outdoor settings for 30 minutes for each play session. Regrettably, this was not feasible in this study considering the time limitations for data collection period and structure. Furthermore, the scoring instructions have been identified as being unclear (Jankovich et al., 2008) and might cause inconsistency in rating the play of children thus affecting the reliability of the scores.

This assessment of play measures the developmental play age of children including the pretence-symbolic play, which is the aim of the study. However, the items of the RKPS do not fully captured the aim of this present study, the time limitation in administering the assessment and the risk of inconsistency in ratings are reasons this assessment was not used in this present study.

b. *Test of Playfulness (ToP) (Bundy, 2003; Skard & Bundy, 2008)*

The second assessment is the Test of Playfulness (ToP) (Bundy, 2003; Skard & Bundy, 2008), which measures the playfulness of children from six months to 18 years of age which is suitable for this study's participants. Similar to the previous described assessment, this tool also does not require specialised toys and equipment to administer. The tester is required to observe the child's free play, preferably in both indoor and outdoor environments. Compared to the RKPPS, there is no minimum time requirement as long as the child continue to play and playfulness of child's play could be assessed. These three factors make the ToP useful in this study as it is easy to administer. However, the ToP assesses the strengths of a child in

his/her role as a player and the playfulness of the child's play instead of pretend play. Due to this reason, the ToP was not used in this study.

c. Child-Initiated Pretend Play Assessment (ChIPPA) (Stagnitti, 2007)

The ChIPPA (Stagnitti, 2007) measures pretend play, which is exactly the aim of this study. The ChIPPA was developed to measure the spontaneous pretend play ability of children aged three to seven years old. Unlike the other two previously described assessments, administering this assessment requires a set of conventional toys and unstructured play materials. The assessment is administered in two 15-minute structured play sessions – the conventional imaginative play and the symbolic play. Scores of the testing and observation of play indicate the percentage of pretend play action, number of substitutions and imitated actions demonstrated by the child. Although the assessment measures pretend play of pre-schoolers, some of the play components (i.e., white cloth dolls to represent “ghost” and the farm animals) are not culturally appropriate in the Malaysian context. For this reason, the assessment was not used to assess children with ASD's pretend play in this study.

d. Test of Pretend Play (ToPP) (Lewis & Boucher, 1997)

The last assessment is the ToPP (Lewis & Boucher, 1997) which measures the child's ability to play symbolically (one type of pretend play) in either structured or unstructured play conditions. It can be administered to children of one year to six years old. Similar with the ChIPPA, it is administered with specific sets of representational toys and non-representational materials. One of the advantages of using this assessment is it can be conducted in structured or unstructured play conditions, which is more convenient since the child with ASD can sometimes show more play in a structured situation (Lewis & Boucher, 1997). However, it is not compulsory but is preferable for the testing to be completed in a single session as long as the child is enjoying the play, which might not be easy when administering the test with

children with ASD. Since the ToPP's results reflect the pretend play ability and maturity of children and the test items are appropriate to the intended participants, hence, it is used in this study. A description of each assessment and their differences are presented in Table 2.7.

Following this section, the characteristics of ASD will be described so the differences of an individual with ASD's development and play can be demonstrated.

2.4 Autism Spectrum Disorder (ASD)

In this section, Autism Spectrum Disorder (ASD) will be discussed in terms of its general characteristics and deficits, current prevalence of the disorder, and the severity levels for ASD based on the criteria provided in the Diagnostic and Statistical Manual of Mental Disorders, Fifth edition (DSM-5; American Psychiatric Association [APA] 2013).

Characteristics of the typical play of children with ASD will also be described, and in particular, pretend play will be discussed in more detail. This will be followed by a discussion of the general deficits related to ASD in the context of the theory of mind.

2.4.1 Characteristics, severity level and prevalence of ASD

Autism Spectrum Disorder (ASD) is a set of heterogeneous neurodevelopmental conditions characterised by two broad groups of criteria: (1) persistent deficits in social communication and social interaction; and (2) restricted, repetitive patterns of behaviour, interests, or activities (APA, 2013; Lai, Lombardo & Baron-Cohen, 2014). According to the DSM-5 (APA, 2013), children with ASD exhibit three persistent deficits in social communication and social interaction: (1) deficits in social emotional reciprocity, (2) deficits in non-verbal communicative behaviours used for social interaction and (3) deficits in developing and maintaining relationships that are appropriate to the child's developmental level.

Table 2.7

Play assessment tools

	Play assessments			
Characteristics	Revised Knox Preschool Play Scale (RKPPS) (Knox, 1997)	Test of Playfulness (ToP) (Bundy, 2003; Skard & Bundy, 2008)	Child-Initiated Pretend Play Assessment (ChIPPA) (Stagnitti, 2007)	Test of Pretend Play (ToPP) (Lewis & Boucher, 1997)
Measures	Developmental description of typical play	Playfulness of children and adolescents	Spontaneous pretend play ability (self-initiate and organised pretend play)	Child's ability to play symbolically (one type of pretend play) in structured and unstructured play conditions
Population	0-6 years	6 months – 18 years	3-7 years	1 – 6 years (up to approximately the age 8 years for children with developmental difficulties)
Items	Group into four dimensions: (a) space management (b) material management (c) pretence-symbolic (d) participation	21 items reflecting four elements of play: (a) intrinsic motivation (b) internal control (c) freedom from constraints of reality	Play items measured: (a) percentage of elaborate pretend play actions (PEPA) (b) number of object substitutions (NOS)	Four sections: (a) self with everyday objects - 1 item (b) toy and non-representational materials – 4 items

		(d) framing	(c) number of imitated actions (NIA)	(c) representational toy alone – 4 items (d) self-alone – 4 items
Materials	No specialised toys and equipment required	No specialised toys and equipment required	Conventional toys – truck, trailer, small boy doll, small girl doll, animals, fences, wrench Unstructured play materials – shoe box, large box, tin, dowel stick, flat stick, 3 pebbles, plastic cone, tea towel, face washer and 2 cloths “dolls”	Representational toys – a doll, a bath, a cup and saucer, a teddy Non-representational materials – yellow top, red cloth, white counter, black box, brown stick, round white tub, blue cloth, white Perspex reel, white board, wooden box and cotton wool
Administration	Observed child play indoors and outdoors in naturalistic or familiar environment with peers’ present. Clinic setting with adequate opportunities, equipment and toys for	Observed child’s free play preferable in both indoor and outdoor play situations.	Observed child play in a “cubby” house with examiner sitting on the floor in front of cubby house for two play sessions – conventional imaginative play and symbolic play	Test can be conducted in the nonverbal version or the verbal version (younger population) Tester should conduct the testing, starting with warm up session to familiarise the child with test situation

gross and fine motor skills assessment.

Each play session conducted in a form of three 5 minutes sections (first 5, second 5, third 5) with examiner presenting certain toys for each section and/or modelling play actions.
ChIPPA for 3-year-old: 9 minutes of each play session with three 3-minute sections

Tester encourages child to produce some play by placing materials in front of child, and gesturing or/and use short phrases of encouragement. If no play is produced, tester modelled a play with materials presented and encourages the child to produce some play or imitate the action and encourage the child to produce some other play action.

Time

Minimum of two observations for each setting.
Each observation – 30 minute of play session/activity

No specified or minimum time

30 minutes (15-minutes session of playing with conventional toys and 15-minutes session of playing with unstructured play material)
3-years old: 18 minutes (9 minute + 9 minute)

Should be completed in a single session as long as the child is enjoying and cooperating with tasks given
If more than one session is required, resume testing two or three items prior to the

			4-7 years old: 30 minutes	point previous session was dismissed.
Scoring	Mark each factor: (+) if behaviour was present (-) if behaviour was absent (NA) if no opportunity to observe Underline items of special interest Dimension score determined by age level containing majority of (+) factors Overall play age determined by the overall mean of all dimensions mean scores	Each item is scored on a 5- point Likert scale according to the following three scales: (i) extent 3 = almost always 2 = much of the time 1 = some of the time 0 = rarely or never N/A = not applicable (ii) intensity 3 = highly 2 = moderately 1 = mildly 0 = not N/A = not applicable (iii) skilfulness 3 = highly skilled 2 = moderately skilled	PEPA – percentage of play action to the total number of actions (play + nonplay action) NIA – number of times child copies the examiner’s modelled actions NOS – number of times child uses an object as something else	Item scoring: Section I – spontaneous pretend play scored 2, modelled or followed instruction scored 1. Section II – scored 2 for each piece of material used in substitution in spontaneous pretend play and 1 for each piece of material used in substitution in modelled/instructed play Section III & IV (for first three items) – spontaneous pretend play scored 2, modelled or followed instructions scored 1. Section III & IV (for the item 4) – spontaneous pretend play

1 = slightly skilled
 0 = unskilled
 N/A = not applicable

scored 6, modelled or followed instruction scored 3
 Total score for sections:
 Section I – the best score
 Section II – highest score on any one item
 Section III & IV– sum of best scores for all four items

Interpretation

Mean scores of four dimensions provide play age indicating the play maturity

Scores illustrate the child's strengths in his/her role as player and playfulness of the child's play

Score reflects complexity and level of self-organisation of child's play ability

Scores reflects child's pretend play ability and maturity

Note. ChIPPA = Child-Initiated Pretend Play Assessment. RKPPS = Revised Knox Preschool Play Scale. ToP = Test of Playfulness. ToPP = Test of Pretend Play. Adapted from Bundy, 2003; Knox, 1997; Lewis and Boucher, 1997; Skard and Bundy, 2008; and Stagnitti, 2007.

Meanwhile in the area of restricted, repetitive patterns of behaviour, interest or activities are manifested by at least two of the following four symptoms: (1) stereotyped or repetitive speech, motor movements, or use of objects; (2) excessive adherence to routines, ritualised patterns of verbal or nonverbal behaviour, or excessive resistance to change; (3) highly restricted, fixated interests that are abnormal in intensity or focus, and (4) hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environments. According to the DSM-5, there are three levels of severity for ASD depending on the level of support needed, as reported in Table 2.8

Table 2.8
Severity levels for ASD

Severity level	Social communication	Restricted, repetitive behaviours
Level 3 'Requiring very substantial support'	Severe deficits in verbal and non-verbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions and minimal response to social overtures from others. For example, a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches to meet needs only and responds to only very direct social approaches.	Inflexibility of behaviour, extreme difficulty coping with change, or other restricted/repetitive behaviours markedly interfere with functioning in all spheres. Great distress/difficulty changing focus or action.
Level 2 'Requiring substantial support'	Marked deficits in verbal and non-verbal social communication skills; social impairments apparent even with supports in place, limited initiation of social interactions; and reduced or	Inflexibility of behaviour, difficulty coping with change, or other restricted/repetitive behaviours appear frequently enough to be obvious to the casual observer and interfere

	abnormal responses to social overtures from others. For example, a person who speaks simple sentences, whose interaction is limited to narrow special interests, and who has markedly odd nonverbal communication.	with functioning in a variety of contexts. Distress and/or difficulty changing focus or action.
Level 1 'Requiring support'	Without supports in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful responses to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication but whose to-and-fro conversation with others fails, and whose attempts to make friends are odd and typical unsuccessful.	Inflexibility of behaviour causes significant interference with functioning in one or more contexts. Difficulty switching between activities. Problems of organisation and planning hamper independence.

Note. ASD = Autism Spectrum Disorder. Reprinted with permissions from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (Copyright 2013). American Psychiatric Association.

Autism Spectrum Disorder can be attributed to distinct aetiological factors and results from complex interactions between genetic and non-genetic factors (Lai et al., 2014) and it affects males to females, with a ratio of 4:1 (Matilla et al., 2011). The prevalence of autism has been increasing with a median worldwide prevalence 0.62 – 0.70% (Elsabagh, et al., 2012). A feasibility study that used Modified Checklist for Autism in Toddlers (MCHAT)

(Robins et al., 2001) amongst children of 18 to 36 months conducted by Ministry of Health Malaysia (MoH) reported that approximately 1.6 in 1000 children have ASD (Family Health Division, 2006; MoH, 2014).

There is only one estimate of ASD from a country in the same region as Malaysia; a prevalence study conducted in Yogyakarta, Indonesia (Wignyo Sumarto et al., 1992) reported that 11.7 of 10,000 children aged between four to seven years old have ASD. Meanwhile, in the most recent study conducted in South Korea showed even higher prevalence with 94 of 10,000 children aged seven to 12 years old having ASD (Kim et al., 2011).

The prevalence of children with ASD aged five to 17 years old in Montreal, Canada is quite high in the study region (America region) with 25.4 of 10,000 children diagnosed with the disorder (Lazoff et al., 2010) compared to a study in Canada, USA where that estimated 11.0 of 10,000 children aged five to 12 years old are on the spectrum (Croen, Grether, Hoogstrate, & Selvin, 2002). This prevalence raises a great concern considering the estimation in Malaysian children with ASD is in the same range of estimation as other countries with larger populations than Malaysia.

2.4.2 Play of children with ASD

Abnormalities in play behaviour are one of the features of children with ASD and can be detected during their first year of life (Naber et al., 2008; Van Berckelaer-Onnes, 2003). The play of children with autism is not only delayed, but is qualitatively different from that of typically developing children. Van Berckelaer-Onnes (2003) described the play of children with ASD starting with the exploratory or manipulative play, where the children often play with a limited selection of objects, play with parts of objects and spend a large amount of time in exploratory play activities compared to their typically developing peers. Children with ASD also show more repetitive patterns in play (Honey, Leekam, Turner, & McConachie, 2007; Williams et al., 2001), and experience difficulties in symbolic play where

they lack spontaneous pretend play skills (Hughes, 2010; Thomas & Smith, 2004; Vig, 2007; Williams, Reddy, & Costall, 2001).

Furthermore, children with ASD often prefer toys that only require simple play behaviours compared to objects that require complex play behaviours are needed to engage with them (Naber et al., 2008; Williams et al., 2001). Children with ASD are less likely to use toys appropriately (e.g., lining up toys instead of playing with them) and becoming upset when someone changes the arrangement (Bishop & Lord, 2006; Hughes, 2010; Nebel-Schwalm & Mattson, 2008). Williams et al. (2001) found that the functional play of young children with ASD was less elaborated, less varied and less integrated than that of developmentally matched children with Down syndrome and typically developing children. They found that the functional play of children with ASD consisted of a simple one-step act involving a single object.

This is because the functional use of objects is learned through social context (i.e. from other people) which is unfortunately lacking in children with ASD. Children with ASD exhibited decreased frequency, complexity and novelty of spontaneous pretend play behaviour (Bernabei, Camaioni, & Levi, 1999; Rutherford, Young, Hepburn, & Rogers, 2007; Wing et al., 1977). As well, Jarrold, Boucher, and Smith (1996) found that pretend play among children with autism were usually very structured or needed external prompts to stimulate pretence.

2.4.3 ASD and pretend play

One of the most noticeable characteristics of ASD is the lack of imaginative and/or pretend play (Malhi & Singhi, 2014) which can be explained by several factors. Studies have shown that children with ASD experience particular difficulties in pretend play (Charman & Baron-Cohen, 1997; Jarrold, Boucher, & Smith, 1993, 1996; Sherratt, 2002). However, Naber et al. (2008) found that children with ASD who were securely attached to parents or

caregivers spent more time engaged in symbolic play compared to those who exhibited a lack of secure attachment. Nevertheless, children with ASD still have notably lower levels of symbolic play than children without ASD.

Children with ASD often demonstrate a delay in symbolic play where it usually consists almost entirely of object substitutions, the earliest form of symbolic play (Sherratt, 2002). Although children with ASD lack pretend play skills, when certain conditions and prompting is provided, combined with an affective component, they can display play skills (Charman & Baron-Cohen, 1997; Jarrold et al., 1993, 1996; Sherratt, 2002). However, the onset of representational play is often delayed amongst children with ASD (Charman et al., 1997; Hobson, Hobson, Malik, Bargiota, & Calo, 2013; Jarrold et al., 1996). Furthermore, children with ASD spontaneously initiate symbolic play activities and engage other people in their play on a much less frequent basis when compared to their typically developing peers (Jarrold et al., 1993; Libby, Powell, Messer, & Jordan, 1998). Wong and Kasari (2012) compared the play of children with ASD aged between three to five years old and their typically developing peers. No significant differences between children with ASD and children with other disabilities in symbolic play were found, but the symbolic acts were observed more frequently in unstructured settings in their study (Wong & Kasari, 2012).

As children with ASD grow older, they are able to show pretend actions although the playful qualities of pretend play are significantly lower than children without ASD (Hobson et al., 2013). Children with autism could even bring pretend schemata into use in new situations and use symbolic play spontaneously in unstructured settings (Sherratt, 2002). To produce symbolic play, an individual has to be able to simultaneously hold two competing representations in one's mind (Leslie, 1987). Symbolic play deficits in children with ASD have been linked to the difficulties in understanding other people's mind and perspectives (as described in the theory of mind) (Lam & Yeung, 2012). Other than deficits in theory of mind,

lack of pretend play capacities in children with ASD can be due to problems of processing incoming information. Even when the child with ASD is placed in a play context that is conducive to pretend play, they may still have problem engaging in pretend play due to the difficulties in processing surrounding stimuli thus influencing a child's ability to engage in meaningful play acts (Lam & Yeung, 2012).

2.4.4 ASD and theory of mind

One of the most well-known possible explanations accounting for the deficits in children with ASD is lack of theory of mind (ToM), which has been associated as one of the major characteristics of ASD (Matthews et al., 2012). Theory of mind is described as the ability to attribute subjective mental states to oneself and to others (Baron-Cohen, Tager-Flusberg, & Cohen, 2000), which is important in understanding the behaviour of oneself and another people's behaviour (Begeer et al., 2011). It includes the awareness of how mental states such as memories, beliefs, desires, and intentions govern the behaviours of self and others, one of the quintessential ability that makes individuals human (Baron-Cohen, 2000). Studies have found that children with ASD show specific deficits in ToM where they perform significantly less well on ToM tasks compared to their matched comparison children (Baron-Cohen, 2000; Baron-Cohen, Leslie, & Frith, 1985). An impairment in ToM is consequence of a disturbance in the ability to represent mental states to self and/or others (impairment of competence), and also in the ability to apply mental states to self and/or others (impairment of performance) (Abu-Akel, 2008).

Despite the view that children with ASD show no significant improvements in ToM, a study by Steele, Joseph and Tager-Flusberg (2003) reported the contrary. The one-year longitudinal study involving 57 children aged four to 14 years old showed an increased score of ToM measures for 79% of the participants, indicating that children with ASD acquired some mental state concepts across the course of a year. The study also explored factors that

predicted the incremental increase in ToM scores and found that the children's vocabulary level predicted the gains (Steele et al., 2003). It has been suggested that language is an important factor in the development and mastery of ToM abilities in typically developing children and children with ASD (Astington & Jenkins, 1999; de Villiers, 2000; Steele et al., 2003). The deficits in ToM abilities are also different between early onset autism and regressive autism (condition where the abilities and skills of the child with ASD is deteriorating with time) in comparison to typically developing children (Matthews et al., 2012). In Matthews et al.'s (2012) study, the early onset autism group of children also consistently had lower percentage of full pass scores in the change of location and appearance-reality of both verbal and non-verbal tasks compared to the regressive autism group (language loss).

The most notable implication for development of children with ASD in the ToM approach relates to social and communicative skills which have consequences for their ability to effectively complete their daily activities and engage with their environments. Individuals with Asperger's syndrome usually have an understanding of mental states but have problems when they manifest in real life situations (Bowler, 1992). Children with access to language early in life are able to learn about certain aspects of the social world (Matthews et al., 2012), and these aspects will then facilitate the development of an understanding of the appearance-reality distinction that are thought to assess children's understanding of their own mental states (Flavell, Flavell, & Green, 1983; Sapp, Lee, & Muir, 2000).

Due to the discrepancy of the findings relating to ToM in children with ASD, it is best to characterise ToM in ASD in terms of a range of abilities rather than deficits since there is a range of patterns of performance amongst groups of children with ASD (Matthews et al., 2012). Furthermore, the lack of universality in the ToM abilities among children with ASD has to be taken into consideration as not to describe it as a characteristic of ASD since other

cognitive and behavioural deficits might be associated with the disorder. It is worth considering that ToM is more of a multi-faceted ability such that individuals with ASD may exhibit their abilities in some areas and difficulties in others (Matthews et al., 2012).

Peterson, Wellman, and Liu (2005) proposed that ToM's development can be viewed through five tasks. The study involved 145 children aged from three to 13 years with deafness, autism and typically developing children where they performed a range of theory of mind tasks including (a) diverse desires, (b) diverse beliefs, (c) perceptual access to knowledge, (d) false belief and (e) hidden emotions. These tasks are in order of difficulty corresponded to the developmental progression of ToM. The findings of the study revealed that children with ASD are able to pass the first three sequence tasks the same as the other two groups of children. However, the last two tasks were reversed for the ASD group compared to the other groups where children with ASD had difficulties passing the false belief tasks but passed the hidden emotion tasks more easily.

Although the findings showed that children with ASD passed the ToM tasks in a reversed sequence, they were still delayed in their acquisition of these skills compared to typically developing children by several years (Peterson et al., 2005). Children with ASD are able to develop and master ToM tasks although in a reversed manner, but they are usually several years behind their typically developing peers. However, with training and maturation linked with increasing age, the ToM abilities can improve thus aiding children's social and communication skills.

Children with ASD have difficulties and will need their parents' help most of the time to perform their daily routines. Due to this reason, parents of children with ASD will also be examined in the current study relating to their quality of life, psychological wellbeing and sense of competence. It is deemed important to examine the parents also since they are the

ones conducting the home-based intervention program and the implementation of the intervention will be indirectly affected.

2.5 *Parents of children with Autism Spectrum Disorder (ASD)*

Parents of children with ASD are the main agent in enabling their child's/children's occupation since children with ASD have some difficulties (as previously described) in independently performing tasks. Parents' QoL, psychological wellbeing and parenting competence usually affected by the high dependence level of children with ASD on them. These impacts could be due to several factors which are discussed in the following subsections.

2.5.1 *Impacts of Autism Spectrum Disorder (ASD) on parents of children with ASD*

Autism spectrum disorder is a complex disorder that impacts children's social interaction, communication, and behavioural functioning and these difficulties' impacts extend to their parents and families as well (Kuhlthau et al., 2014; Rapin, 2001; Strock, 2007). Due to these difficulties, children with ASD usually require intensive multifaceted services, more parental time and resources compared to their peers without ASD (Kuhlthau et al., 2014; Rapin, 2001). Parents of children with ASD tend to experience greater psychological distress (Eapen, Crncec, Walter, & Kwok, 2014; Kuhlthau et al., 2014), more financial stress (Kuhlthau et al., 2014; Strickland et al., 2004), a higher risk of being unemployed (Kuhlthau et al., 2010; Leiter, Krauss, Anderson, & Wells, 2004), and have lower levels of reported QoL (Eapen et al., 2014; Kuhlthau, Orlich, et al., 2010; Kuhlthau, Payakachat, et al., 2014).

Parenting child/children with ASD can be physically and emotionally tiring; as well as socially and financially challenging for parents (Bekenkamp et al., 2014; Eapen et al., 2014). Having a child with ASD can sometimes lead to marital dissatisfaction (Allik, Larsson, & Smedje, 2006) and negatively impact the psychological wellbeing of siblings of children with

ASD (Shivers, Taylor, & Deisenroth, 2013). Hence, many of the factors related to having a child with ASD can have a negative impact on parents' and families' overall QoL, health, and wellbeing.

2.5.2 *Support systems*

The World Health Organization (WHO) defines QoL as “individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns...” (WHO, 1997, p. 1). The QoL of parents of a child with ASD is influenced by the presence and the effectiveness of the support systems in place for the child. Some parents have expressed feelings of not being adequately supported by medical professionals and members of the community post-diagnosis (Lamminen, 2008; Wright & Williams, 2007). The absence, unstable or inefficient support systems, especially in health and education services, will affect parents’ lives in a negative manner (Kuhlthau et al., 2014).

Most parents also felt stigmatised especially when in public places as people generally do not understand the behavioural issues of children with ASD when they are in unfamiliar surroundings and people. This is mostly due to the appearance of children with ASD are just like typically developing children, thus were expected to act like one (Allik et al., 2006; Kuhlthau et al., 2014). The lack of social and organisational support that is accessible to parents and families with children with ASD influences their stress level and wellbeing (Davis & Carter, 2008; Kuusikko-Gauffin et al., 2013). Parents are often tired, stressed and need supportive social environments that understand the needs of their special needs children as well as their own needs.

Due to the special care and needs of children with ASD, parents will need to deal with various governmental and non-governmental organisations (including health service agencies, welfare agencies, and education agencies). It would also be helpful to receive full

support from the organisations as well as their social environments (including extended family, neighbours, childcare personnel and school personnel). This includes employers of parents supporting their parenting needs (such as breaks or leave to meet scheduled appointments). With limited social and organisational support, this can elevate parents' stress levels which can affect their QoL and ability to care for their child with ASD.

2.5.3 *Family and siblings*

The relationships within families and between spouses are strongly influenced by having child/children with ASD and the influence can be both positive and negative (Kamninsky & Dewey, 2002). Family and social support can positively underpin a better QoL for parents of a child/children with ASD, especially if there is ongoing or long-term child care support from other family members. However, having supportive members of extended families can sometimes also lead to negative feeling in parents such as feeling guilty. Parents in the Kuhlthau et al.'s (2014) study reported feeling guilty about their other typically developing children as they felt that they had been neglecting the typically developing siblings or placed an extra burden or responsibility on them in the form of taking care of their special needs sibling. At the same time, parents also felt that they were not doing enough for their child/children with ASD. Similarly, parents reported that it was difficult to have family situations that were different from other families which often contributed to feelings of isolation and frustration (Kuhlthau et al., 2014).

Having a child with ASD may add some degree of stress to the family (including parents and siblings) (Fisman, Wolf, Ellison, & Freman, 2000; Kamninsky & Dewey, 2002) and could have an overwhelming negative impact on the marital relationship of parents, which could potentially lead to separation or divorce (Freedman, Kalb, Zablotsky, & Stuart, 2012; Hartley et al., 2010). As mothers were often the primary carers for their child with ASD, they reported experiencing greater levels of emotional and psychological distress

(Hastings et al., 2005; Sharpley, Bitsika, & Efremidis, 1997), whereas fathers often reported coping with this increased stress by becoming less involved and distancing themselves from their families (Rodrigue, Morgan, & Geffken, 1992). The compounded stress levels placed on the marital relationships contributes to decreased marital satisfaction (Rogers, 2008).

Higher rates of behavioural and emotional issues among the typically developing siblings of a child/children with ASD have been noted in recent studies (Constantino et al., 2006; Fisman et al., 2000; Giallo & Gavidia-Payne, 2006; Ross & Cuskelly, 2006). Although a number of negative impacts have been documented on the siblings of children with ASD, it is still inconclusive since other studies have found that some siblings of children with ASD are well adjusted (Dempsey, Llorens, Brewton, Mulchandani, & Goin-Kochel, 2012; Hastings, 2007; Verte, Roeyers, & Buysse, 2003). The multifaceted deficits of children with ASD can cause additional stress to the families and impose various challenges on family functionality (Fisman et al., 2000). This is most significant when the siblings of children with ASD are young and vulnerable. For example, they have an increased tendency to develop psychological difficulties including internalising (e.g., anxiety, depression, withdrawal, somatic symptoms) and externalising (e.g., inattention, hyperactivity, aggression) disorders (Orsmond & Seltzer, 2009) caused by imitating behaviours of their older siblings with ASD.

Typically developing siblings of children with developmental disabilities are also reported to have elevated levels of emotional and adjustments difficulties (Giallo & Gavidia-Payne, 2006), whilst Quintero and McIntyre (2010) have found that male siblings of preschool aged children with ASD were more likely to have adjustment issues within their social skills. However, the findings of studies that report the negative effects of having siblings with ASD amongst typically developing siblings are not consistent. In contrast to the results that report negative impacts on children who have siblings with ASD, some researchers have also reported that having a sibling with ASD does not place typically

developing sibling at a greater risk of developing behavioural problems (Dempsey et al., 2012; Hastings, 2007; Verte et al., 2003). In fact, some researchers have reported that siblings of children with ASD may have improved development in certain psychosocial and emotional constructs (Macks & Reeve, 2007; Mates 1990).

Albeit the vast amount of evidence of both the negative and positive impacts on children of having a sibling with ASD, a cautionary interpretation of the findings has to be made as the sampling method approach adopted in some of the studies may have influenced participants' behaviour and responses. The effects on the family and siblings of children with ASD can be positively influenced by the openness of parents in communicating and discussing issues related to their daily lived experience. This shows that family members and service providers are best placed to provide the support and services that family member's need (Dempsey et al., 2012).

2.5.4 Financial burden

Financial burden is one of the most frequently discussed issues by parents in relation to having a child with ASD and the potential impact on their QoL (Kuhlthau et al., 2014). This includes the financial stress due to the health, care, and service costs that can take up to 65.5% of the total costs of taking care of a child with ASD (van Steensel, Dirksen, & Bogels, 2013). The health care costs involve the high frequency of children's health visits given that children with ASD may have other comorbidities (e.g., anxiety disorders), that places additional costs on parents for accessing mental health care services for their children (van Steensel et al., 2013). Examples of other stress related to health care costs that families of a child with ASD may encounter include the chance that health insurance companies may refuse to reimburse for the costs of various therapy needs of their child (Kuhlthau et al., 2014).

Expenses for taking care of children with ASD were reported to be significantly higher than of typically developing children (Croen, Najjar, Ray, Lotspeich, & Bernal, 2006; Mandell, Cao, Ittenbach, & Pinto-Martin, 2006; van Steensel et al., 2013). van Steensel et al. (2013) reported that the overall care cost of a child with ASD can be at approximately 72 times higher than the costs of a typically developing child. The health care costs alone are higher without adding other non-health-related care costs as reported by van Steensel et al. (2013). For example, the costs of health care per child with ASD with a concurrent anxiety disorder per year is equates to approximately \$16,023 AUD with 80.4% of it is spent on ASD-related reasons.

Considering the care of a child involves not only health concerns, the other related costs also contribute to the financial distress that parents experience. Due to the complexity of ASD and the demanding nature of the care required, parents are likely to lose paid work time (van Steensel et al., 2013) as it is difficult to maintain existing employment and manage appointment schedules (Kuhlthau et al., 2014). van Steensel et al. (2013) reported that parents with child/children with ASD spend additional costs mostly on accessing informal care (which equates to approximately \$184 AUD per child per year) and extra/special support for school (which equates to approximately \$2551 AUD per child per year). This includes indirect costs resulting from school absence because of the child needing to attend appointments due to their health or behavioural problems (which equates to approximately \$95 AUD per child per year). While the non-health care costs are lower than the health care costs, it is still relatively higher in comparison to typically developing children, in fact it is estimated to be 12 times higher (van Steensel et al., 2013).

A direct cross-culture comparison of the costs involved in taking care a child with ASD is not feasible due to differences in the education system, social safety net, health care system, cost of living across countries and specific cultural issues related to the care of a

special need child. Nevertheless, the total costs for children with ASD compared to typically developing children is one factor impacting parents' overall QoL.

2.5.5 Health

The physical health of parents who care for children with ASD can affect the quality of care provided because the task is both emotionally and physically demanding. Kuhlthau et al. (2014) conducted a study with 224 parents of children with ASD using mixed method approach and examined parents' health-related QoL. The findings indicated that parents with children with ASD reported significantly lower health-related QoL. Parents in the study reported that they neglected their own physical health and had problems eating well as well as maintaining healthy life habits in order to take care of their child. They reported an increased frequency of headaches, back problems, joint trouble, exhaustion, sleep problems, hypertension, eczema, arthritis, limited energy and other issues (Bekenkamp et al., 2014; Kuhlthau et al., 2014). The less than optimal health reported by parents of children with ASD adversely affected their daily functioning at home and at work (Arafa et al., 2008) as well as their ability to effectively care for their children (Barlow & Ellard, 2006). The physical health of parents with children who have special needs was found to be markedly lower than that of the health of the general population (Bekenkamp et al., 2014).

Parents' psychological health is also affected. Parents of special needs children reported of experiencing elevated level of anxiety and depression (Olsson & Hwang, 2001), post-traumatic disorder (Guomundsdottir, Guomundsdottir, & Elklit, 2006), higher caregiver burden, and reduced levels of overall happiness (Kuhlthau et al., 2014). Having good psychological health was vital since Barlow and Ellard (2006) reported that mental health problems in mothers were one of the predictors of behavioural problems in children. Related to this is that psychological health problems in parents may reduce their ability to manage the daily challenges in rearing their children with ASD, thus jeopardising their ability to care for

their children (Keen, Couzens, Muspratt, & Rodger, 2010) and implement programs that might benefit them (Falk, Norris, & Quinn, 2014).

Parents have reported feelings of loss regarding their future life opportunities upon hearing their children's diagnosis of ASD (Myers, Mackintosh, & Kochel, 2009) and a sense of uncertainty of the impact their child's diagnosis will influence their functioning as parents and the family unit (Woodgate, Ateah, & Secco, 2008). Parents of children with ASD reported more mental health problems compared to the parents of children in other clinical or non-clinical groups (Benjak, 2009; Bitsika & Sharpley, 2004; Kuusikko-Gauffin et al., 2013; Singer, 2006). Stress, anxiety and depression are three primary mental health issues identified amongst parents of children with ASD (Falk et al., 2014).

A number of factors have been identified as predictors of mental health problems in parents including parental physical wellbeing (Bitsika & Sharpley, 2004), autism symptom severity (Duarte, Bordin, Yazigi, & Mooney, 2005; Falk et al., 2014; Hastings & Johnson, 2001), behavioural problems of children with ASD (Falk et al., 2014; Lecavalier, Leone, & Wiltz, 2005), and the level of social and economic support available (Falk et al., 2014). Even though parents of children with ASD are more likely to report experiencing depression, anxiety and stress, a study conducted by Falk et al. (2014) found that fathers of children with ASD reported lower mean scores of depression, anxiety and stress compared to mothers in the study.

The predictors of maternal depression were social support, parental locus of control, and aggressive behaviour; whilst the predictors of both paternal depression and anxiety were the level of social support received, perceived limit setting ability (perceived ability to set limits on maladaptive behaviour patterns of their children), and satisfaction with parenting (Falk et al., 2014). On the other hand, maternal anxiety was predicted by the autism symptom severity, perceived limit setting ability and mother's age (with younger mothers were more

likely to report high levels of anxiety). In comparison to predictors of paternal stress in fathers, the predictors of maternal stress were comparatively many in numbers including perceived limit setting ability, mother's age, autism symptom severity, social support, parental locus of control, and economic support.

Often, when considering the case of children with ASD, the focus is the child while the impacts on parents and families (who are usually as vulnerable as the child with ASD) are forgotten. Parents' wellbeing is one of the primary anchors for family functionality and their children's wellbeing (including their typically developing children and children with ASD). A functional, healthy and happy family are much better equipped to facilitate the health, development, and functional behaviour of children with ASD.

2.5.6 *Assessment tools*

There are several standardised assessment tools that can be used to examine the QoL and psychological wellbeing of parents who have children with ASD. In considering the specific nature of the diagnosis, an autism-specific measure of QoL, the Quality of Life in Autism Questionnaire (QoLA) was developed by Eapen et al. (2014). It is designed to be completed by parents and caregivers of children with ASD and is composed of 48 items in two subscales: Part A- Quality of Life subscale comprising of 28 QoL items and Part B - Impact of ASD Symptoms made up of 20 items where parents are asked to report how their children's ASD symptoms are affecting them.

This scale was developed for parents of children aged two to 18 years with ASD and has excellent internal consistency (Part A $\alpha = 0.94$, Part B $\alpha = 0.92$), good known-group difference validity between parents of children with ASD and parents of typically developing children (Part A, $t(31) = -3.54, p < 0.01$; Part B, $t(29.09) = -6.50, p < 0.001$; QoLA total score, $t(36.87) = -6.59, p < 0.001$) and good convergent validity with other measures of QoL and ASD symptom severity (Eapen et al., 2014).

Part A (QoL subscale) of the QoLA measures parents' overall perception of their QoL that includes their perception of their own life and feelings, social life, relationships, family, and financial aspects. Items are measured on a five-point Likert scale ranging from one (not very much) to five (very much), thus the total subscale score can range from 28 to 140, with higher scores indicating greater perceived QoL. Part B (Impact of ASD Symptoms subscale) of the QoLA assesses parents' perceptions of how problematic their child's autism-specific difficulties are for them. It is comprised of 20 difficulties that children with ASD may present with including difficulties in social life, activities of daily living, sensory issues and behavioural issues.

Parents rate the Impact of ASD Symptoms subscale on a five-point Likert scale ranging from five (not much of a problem for me) to one (very much of a problem for me), thus the total subscale score can range from 20 to 100, with higher scores signifying fewer problems for parents relating to ASD-related behaviour. The scale is more suitable when assessing parents of children with ASD as a part of the scales measures autism-specific difficulties which will show a more accurate picture regarding the QoL of this specific group of parents.

Examining the impact of caregiving on parents of children with ASD's QoL can also be done using the Care-Related Quality of Life Instrument (CarerQoL) (Brouwer, van Exel, van Gorp, & Redekop, 2006). This instrument was developed specifically to measure caregiver outcomes (the perceived burden of caring for child in two positive and five negative dimensions) and the caregiver's general QoL (using a visual analogue scale) (Brouwer et al., 2006; Hoefman et al., 2014). CarerQoL is a self-report assessment consists of two parts, the CarerQoL-7D and CarerQoL-VAS.

In the first part, caregivers have to report their level of agreement ('no', 'some', 'a lot of') to the statements describing their current care giving situation. The second part of the assessment requires the caregivers to report their level of happiness in the 10-point visual

analogue scale which is interpreted as their overall QoL (Brouwer et al., 2006). Due to its generic characteristic, the instrument can be administered in any caregiver population and thus includes parents of children with ASD (Hoefman et al., 2014). However, still it can provide insight into the impact of caregiving of children with ASD and has shown convergent and discriminative validity with subjective burden of caregiving (SRB) and family QoL assessment tools (Hoefman et al., 2014). Unfortunately, compared to QoLA, CarerQoL is less sensitive in interpreting the QoL of parents of children with ASD who have specific care situations that can be captured more on the QoLA.

The quality of life of parents are interrelated with their sense of competence. Therefore, it is important to also obtain information about parents' perceptions of their competence, and one tool that is useful for this purpose is the Parenting Sense of Competence Scale (PSOC; Johnston & Mash, 1989). The PSOC was originally developed to measure parents' perceived competence with their infants (Gibaud-Wallston & Wandersman, 1978), but was revised from "infant" to "child" by Johnston and Mash in 1989 so it can now be used with children. The scale measures parents' satisfaction (liking the parenting role) and efficacy (perceived competence in the parenting role) (Johnston & Mash, 1989; Ohan, Leung, & Johnston, 2000). Originally, the PSOC was made up of 17 items but Johnston and Mash (1989) found that item 17 did not load on any viable factors, thus they recommended that item 17 to be omitted from the analysis (Gilmore & Cuskelly, 2008; Rogers & Matthews, 2004).

The items are statements comprising of the perceived feelings and skills related to parenting and parenthood. Parents will indicate their level of agreement with each item or statement, on a six-point scale ranging from one (*strongly agree*) to six (*strongly disagree*). Higher scores indicate greater parenting self-esteem (Ohan et al., 2000). Although the factor loading for the items in this scale varies, the scale has good internal consistency, good

convergent and divergent validity with other family life relationships measures (Gilmore & Cuskelly, 2008; Ohan et al., 2000).

Another measurement tool measuring self-efficacy in parents is the Maternal Efficacy Questionnaire (MEQ; Teti & Gelfand, 1991) which measures mothers' feelings of efficacy in specific infant care tasks. The tool consists of ten four-point maternal self-efficacy items. Nine of the items addressing mothers' feelings of efficacy in soothing the baby, understanding what the baby wants, getting the baby to understand the mother's wishes, maintaining joint attention and interaction with the baby, amusing the baby, knowing what the baby enjoys, disengaging from the baby, performing daily routine tasks and getting the baby to show their ability for visitors and the last item asks the mother's general feelings of efficacy in mothering (Teti & Gelfand, 1991). The sum scores indicate the maternal self-efficacy. This tool's internal consistency was at a satisfactory level ($\alpha = 0.86$) while strongly related to the Parenting Stress Index (PSI) ($r = -0.75, p < 0.01$; Teti & Gelfand, 1991).

Although both assessments are frequently used measurement tools for parental self-efficacy (Jones & Prinz, 2005), the MEQ can only be used among mothers while the PSOC can be used with both mothers and fathers. The PSOC measures parental self-efficacy and their satisfaction in parenting thus making it more comprehensive than the MEQ.

Psychological health is one of the important aspects of QoL and wellbeing. The most commonly used tool to measure negative affect in individuals is the Depression Anxiety Stress Scales (DASS-21), which is the modified, shorter version of DASS-42 item (Lovibond & Lovibond, 1995). The DASS-21 consists of 21 items that assesses the severity level of depression, anxiety and stress using a four-point scale that asks respondents to report the frequency of occurrences of each statement during the past week: never (0), sometimes (1), often (2) and almost always (3).

Scores of items designated to measure depression, anxiety and stress are totalled and can be categorised into five levels of severity: normal, mild, moderate, severe and extremely severe. Each subscale has a different total score indicating the levels of severity. The DASS-21 has been translated into various languages and validated for use with different populations and one of them is the Bahasa Malaysia version of DASS-21 (BM DASS-21; Musa, Fadzil, & Zain, 2007). The BM DASS-21 has good internal consistencies for all three subscales (overall items $\alpha = 0.904$; depression = 0.84; anxiety = 0.74; stress = 0.79) (Musa et al., 2007). The usage of the BM DASS-21 is suitable as it has been translated into the first language of participants and validated for use with speakers of Bahasa Malaysia.

Another assessment quite similar to DASS-21 is the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). It is a self-report assessment consisting of two 10-item scales for positive affect (PA) and negative affect (NA) which individuals have to indicate the extent to which they experienced each affect (Tuccitto, Giacobbi Jr., & Leite, 2010; Watson et al., 1988). Individuals indicate their feelings relating to randomly arranged words describing feelings and emotions according to the five-point scale (very slightly or not at all, a little, moderately, quite a bit and extremely). The positive affect reflects the pleasurable engagement with one's environment while the negative affect reflects the contrary. The positive affect includes interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and afraid. Whilst the negative affects are distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery and afraid. The sum scores for PA and NA reflect the levels of affect individuals experienced in the respective time frame (past one week or present moment) (Watson et al., 1988).

Parenting Stress Index-Short Form (PSI-SF; Abidin, 1995) is one of the most commonly used measures in determining parental stress (Dardas & Ahmad, 2014; Nazurah, Dzalani, Baharudin, Mahadir, & Leonard, 2016). It is comprised of three subscales each

consisting of 12 items which are Parental Distress (PD), Parent-Child Dysfunctional Interaction (PCDI) and Difficult Child (DC) (Abidin, 1995). The PD subscale measures parents' perceptions of their own behaviour (perceived competence, marital conflict, social support, life restrictions due to parenting demands). Meanwhile, the PCDI measures parents' view of expectations and interactions with their child and the last subscale measures the parents' perception of their child's temperament, demandingness and compliance.

Parents indicate to what extent do they agree to the items in all the subscales ranging from strongly disagree (1) to strongly agree (5). The sum scores of greater than 33 for PD and DC sub-scales and greater than 27 for PCDI are considered clinically elevated stress (Abidin, 1995). The Parenting Stress Index is a measurement tool that has been used extensively in studies of parents of children with ASD (Dardas & Ahmad, 2014; Nazurah et al., 2016).

However, of the three assessments described (DASS-21, PANAS, PSI) the DASS-21 and PSI are presented in the form of statements which is easier for individuals to reflect on their life to indicate their agreement to each statement. The PANAS assessment can be a little difficult to provide a response as it is too general (words describing feeling, e.g., distressed) and only depicts the level of positive or negative affect the individual perceived to experience in the time frame applied. Both the PSI and DASS-21 assessments comprise of a section that the score indicates the individual's level of stress; however, the PSI focuses on the stress due to parenting compared to the general stress yielded from the DASS-21. Although the DASS-21 is more general in its stress sub-scale's measures, the comprehensive score yielded within depression, anxiety and stress makes it more suitable to use in the context of the present study. In addition, there is a translated version of the DASS-21 in Bahasa Malaysia, the first language of participants (BM DASS-21) which can help participants to better understand and provide their responses. Hence, the BM DASS-21 was chosen to assess parents' psychological wellbeing.

For the purpose of this study, three self-report measurement scales were used with parents of children with ASD – the QoLA, PSOC and BM DASS-21. Combination of these three assessments provides a clearer picture on parents of children with ASD’s QoL and wellbeing as well as psychological health prior to and after the implementation of a parent-implemented home-based program based on the DIR/Floortime[®] approach. The DIR/Floortime[®] intervention approach is described in the next subsection.

2.6 Developmental, Individual-difference, Relationship-based (DIR) Model

The Developmental, Individual-difference, Relationship-based (DIR) model proposed by Greenspan and Wieder (1997) is a theoretical and applied framework for comprehensive intervention with children, that examines the functional emotional developmental capacities of children in the context of children’s unique biologically-based processing profile, their family relationships, and their interaction patterns (Dionne & Martini, 2011; Greenspan, DeGangi, & Wieder, 2001; Greenspan & Wieder, 2006; Wieder & Greenspan, 2003). This model focuses on the relationships with others, social skills, meaningful and spontaneous use of language and communication, and an integrated understanding of human development (Pajareya & Nopmaneejumrulers, 2011). The DIR model provides a framework for the comprehensive assessment of an infant or child and his/her family that enables caregivers and clinicians to plan assessment and intervention programs that address the specific needs of each child and family (Greenspan & Wieder, 2006).

2.6.1 Foundations of Developmental, Individual-difference, Relationship-based (DIR) Model

The DIR model consists of three inter-correlated core components – developmental (the “D” component), individual-difference (the “I” component) and the relationship (the “R” component). Each of following subsections will describe these components.

a. *Developmental capacities (The “D” component)*

The model focuses on the core developmental capacities that emerge during a child’s early years that a child needs to master (Greenspan & Wieder, 1997, 2006, 2009). There are six functional-emotional developmental capacities (social, motor, cognitive, language, spatial and sensory) that a child must integrate to carry out emotionally meaningful and functional goals (Greenspan & Wieder, 2006). In the DIR model, these six core capacities are termed ‘*functional*’ because they enable a child to interact with and comprehend his/her world, as well as coordinate other capabilities. On the other hand, the term ‘*emotional*’ refers to the role that emotions play in organising developmental processes (Greenspan & Wieder, 2006).

The DIR model recognises six early stages of development that correspond to the six core capacities as outlined in Table 2.9. Infants and children are able to organise sensations and emotional experiences in increasingly complex ways at each level where the adaptive patterns, sensory organisation, and affective organisation are progressing (Greenspan & Wieder, 2006).

The focus of the first stage is shared attention, where children need to be self-regulated, that is, to be able to focus in a calm manner and actively take in information from his/her experiences with others (both physically and through his/her senses) to learn and interact socially. Moving up to the second stage, the focus is for children to build emotional interactions with parents and caregivers. Children learn to distinguish between the pleasures of interacting with the human world and an interest in inanimate objects. This enables them to decipher patterns of voices and facial expressions that reflect parents’ feelings and intentions. Children learn to recognise patterns and organise perceptions into meaningful categories and thus starts to engage and relate with his/her world that usually revolves around parents and caregivers.

Table 2.9
Functional emotional developmental capacities

Level	Age	Core developmental capacities	Functional emotional stages of development
1	0-3 months	Attend to multisensory affective experience at the same time attain a calm, regulated state (e.g., looking at, listening to and following the movement of caregiver).	Shared attention and regulation
2	2-7 months	Engage with and display preference and affection toward familiar caregivers (e.g., greeting mother with joyful smiles).	Engagement and relating
3	3-10 months	Initiate and respond to two-way pre-symbolic gestural communication (e.g., back and forth vocalising with parents).	Two-way intentional affective signalling and communication
4	9-18 months	Organise chains of two-way social problem-solving communications, maintain communication, organise behaviour and affects into purposeful patterns, integrate affective polarities, synthesise an emerging pre-symbolic sense of self and other (e.g., open and close several “circle of communication” in a row, taking mother’s hand to get a toy in a closed lid container).	Long-chains of co-regulated emotional signalling and shared social problem solving
5	18-30 months	Create and use ideas as basis for creative, imaginative thinking, giving meaning to symbols (e.g., engage in pretend play, use one words to convey needs).	Creating representations (or ideas)
6	30-48 months	Bridging two or more ideas, a basis for logic, reality testing, thinking and judgement (e.g., planned pretend play, engage in opinion-oriented conversations).	Building bridges between ideas: Logical thinking

Note. Adapted from Greenspan and Wieder (2006, 2009).

At about six months of age, babies start to communicate through purposefully signalling to their parents what they want and therefore begins the two-way communication process, which is the third stage in the DIR model's functional developmental level. For two-way communication to succeed, parents and caregivers need to read the children's signals and respond appropriately. Parents or caregivers also challenge the babies to read their signals and respond back to them so that a two-way communication process occurs which is referred as a circle of communication (CoC; Dionne & Martini, 2011; Greenspan & Wieder, 2009). By mastering this purposeful two-way communication, this helps keep a child from being repetitive, hence the child can communicate and engage in continuously new purposeful behaviours (Greenspan & Wieder, 2009).

During stage four, children between nine and 18 months of age start to use two-way communication processes to solve social problems together with their parents, regulate their moods and behaviours, and form a sense of self. Social problem emerges at this stage of life and children learn to signal their parents to help them solve the problem. Children use multiple patterns of gestures in various steps (e.g., taking mother's hand, pointing, and gesturing) and multiple elements of a pattern to express their emotional needs and desires to solve the problem or achieve their desired results (e.g., cooing, smiling, squealing, flapping hands).

The action patterns refer to the visual-spatial aspects of locating the desired object involved in getting what they desire, the vocal patterns involved in getting the mother's attention, and social patterns involved in working with parents towards their desired goal. Consider the social problem faced by children with limited language abilities in getting a cookie in a jar kept on the higher tier cabinet. In this situation, children learn to gesture their mother/father towards the direction they want to go (i.e., the cabinet), signal what they need

their mother/father to do that they themselves have no ability to do (i.e., open the door cabinet), and point to what they want (i.e., cookies in cookie jar).

In stage four, children also learn to modulate intense feelings through emotional signalling and negotiating with their caregivers (Greenspan & Wieder, 2009). Children experience many conflicts resulting from their internal and external needs (e.g., hunger, parents' attention) and express how they feel with a signal before it becomes too intense. Hence, the response from the parents is important in giving the child's immediate emotional signal in return that will help them to negotiate and modulate their moods and behaviour. The intentional, regulating, and modulating behaviour as well as multiple problem-solving patterns all form part of a children's definition of self (Greenspan & Wieder, 1998).

An integrated sense of self and interacting with an integrated sense of another emerges when children identify the concept of '*I*' and '*you*'. Furthermore, children start to see the world in different patterns and understand how it works. This leads to mastering the emotional expressions of others and the ability to differentiate a negative response from a positive response. This awareness is then used to respond differently to people depending on the emotional tones projected. This ability to decipher human interactions and pick up emotional cues before words are exchanged is the foundation of children's social lives (Greenspan & Wieder, 2009).

Moving up to the fifth stage, at the age of one and a half, children begin to use language to express themselves. At this stage, children should have the ability to engage in complex emotional signalling. They form symbols and ideas to give meaning to them by connecting emotions and actions which leads to the understanding and usage of words and language (Greenspan & Wieder, 2009). Consequently, children are now managing to symbolise their feelings using words instead of acting on them. For example, a child saying, '*I love you*' symbolises hugs and kisses they give their parents whenever they receive something they

desire. In the DIR model, children at this stage are able to use ideas to communicate something to other people using words, pictures, or symbols meaningfully.

Children manipulate the ideas in their minds and symbolise real or imagined events in their life through pretend play which leads to a new flexibility in reasoning, thinking, and problem solving (Greenspan & Wieder, 2009). Children's language and the use of symbols become more complex with time. The sequence starts with using words and actions together to express ideas, then further maturing into using words to convey bodily feeling. Children then transform into expressing intentions and proceed to express ideas related to feelings in general. Following that, using words to signal something going on inside oneself that makes possible consideration of various possible actions. The last sequence is improving the usage of words in conveying differentiated feelings untied to the action (Greenspan & Wieder, 2009).

The last stage is reached at around two and a half years of age when children are able to connect symbols together logically, making the cognitive skills of thinking and reflecting possible (Dionne & Martini, 2011; Greenspan & Wieder, 2009). At this stage, children learn how one event leads to another, how ideas operate across time and space, and how ideas can explain emotions which teaches them to organise their knowledge of the world. By elevating feelings and impulses to the level of ideas expressed through gestures and words, children's ideas and feelings can be shared and expanded through symbolic play and conversation (Dionne & Martini, 2011). This could be illustrated in the following example:

Mother: Why do you want the doll?

Child: Play

Children at this stage can link someone else's idea with their own as the shown in the above example, the child is linking the idea of the mother's 'why' with his/her own idea of 'play'. They can also connect internal and external experiences and categorise them into

objective and subjective. Moreover, they are able to recognise the differences between what is inside them, their fantasies, their ideas, and the actual behaviour of others. Greenspan and Wieder (2009) described the basis of understanding reality as the ability to logically connect one's own idea to someone else's idea.

Greenspan and Wieder (2009) emphasised that the mastery of these six stages is important for emotional development, cognitive development, higher levels of thinking, and also a fully developed sense of self. This emphasis indicates that emotions lead to symbolic thinking and thus to intelligence (Greenspan & Shanker, 2004). Children are able to expand and elaborate upon their ideas, thoughts and feelings, learn to understand others, and behave in socially appropriate ways via their interactions during play and conversations (Wieder & Greenspan, 2003).

b. Individual-difference (The "I" component)

The 'I', which is the individual-difference component of the DIR model, describes the individual differences in sensory-motor processing and regulation that are important for structuring the program and activities that fit children's capacities and abilities (Dionne & Martini, 2011; Wieder & Greenspan, 2003). This component of the DIR model explains the unique biologically-based ways that each child takes in, regulates and responds to, and comprehends sensations (Interdisciplinary Council on Developmental and Learning Disorders, ICDL, n.d).

At every stage, a child's unique sensory capabilities, including his/her styles of hearing, seeing, touching, smelling, moving, and ways of enjoying day-to-day experiences, supports the child's development for mastering each stage and developmental milestones. For example, to facilitate engagement and relating in stage two of the functional developmental level, parents observe the kinds of interactions that brings children pleasure (such as kisses or tickles) to encourage them to interact and thus begin to engage and relate to others.

c. Relationship (The “R” component)

The last fundamental build-up of the DIR model is the ‘R’, the relationship-based component. This describes the learning relationships with caregivers, educators, therapists, peers, and others who tailor their affect-based interactions to children’s individual differences, developmental capacities, and environment necessary to enable their progress in mastering the developmental milestones (ICDL; Wieder & Greenspan, 2003).

2.6.2 Floortime® approach

Based on the three components that make up the DIR model, intervention programs are planned in a way so that a child can work towards reaching the developmental levels within his/her processing profile of interactive relationships that can best support his/her development. The DIR model proposes a comprehensive program for infants and children who present with a variety of developmental challenges – a Floortime® approach. Floortime®, in general describes the amount of time that parents or caregiver get down on the floor to interact with their child on a daily basis (Greenspan & Wieder, 2009). Floortime® is “spontaneous and led by the child where the caregiver follows the child’s lead and promotes the continuous flow of interactions utilizing affect cues that entice, challenge, soothe and encourage the child further” (Wieder & Greenspan, 2003, p. 427).

There are two goals of Floortime®: (1) to follow the child’s lead; and (2) to coax the child into shared the social world with a continuous flow of interactions (Greenspan & Wieder, 2009; Wieder & Greenspan, 2003). The reason parents have to follow the child’s lead is to try to deduce what the child finds enjoyable and motivating. This provides a window for parents to interact with their child and help him/her move forwards to achieve the next developmental milestones.

The second goal of Floortime® is to bring the child into a shared world, though it is sometimes contradictory to the first goal, especially in children who have ASD who often

present with the characteristic of being in a world of their own. Thus, the first goal really serves the basis for parents to bring their children into a shared world as they become closer to them. At the same time, parents respect their children by inviting them into the shared world. A shared world is deemed to be the place where people are part of the world and for the child to feel a part of that shared world is by making him/her feel respected and understood (Greenspan & Wieder, 2009). Once the child begins to enjoy interacting with their parents, they can start helping the child master the abilities of relating, communicating, and thinking according to the aims of the DIR model.

In the Floortime[®] intervention, parents are encouraged to follow the child's lead but also to challenge the child by being playfully obstructive thereby challenging the play behaviours the child is engaged in. For example, a child with ASD may like to line up toy cars in a straight line and parents have to follow their lead by playing in the same way as them, lining the cars in straight line. But at the same time to entice the child into joining a parent-child's shared world, parents have to playfully challenge the child by putting a toy car at a right angle to the line with a big smile. This might gain the child's attention and be invited to be the play's main player. The parents will follow the child and let them invite the parents into his/her world, and then challenge his/her capability to help him/her develop his/her potential self which majorly revolves around the social world. This interaction and communication with the child is the main goal proposed in the DIR model.

Other than fostering engagement and a continuous flow of interaction, the aim is also to help children interact with objects and people together and to create symbols and ideas (Greenspan & Wieder, 2009). Using toys that children are particularly attached to will promote interactions, so children will slowly develop the skills to be able to use the toys symbolic meanings. This can be done during the daily activities such as meal time, bathing, and getting to sleep. For example, when tucking the child in bed at night, parents can move a

doll in a shivering like movement and talk for the doll saying, “*I’m cold*”. If the child does not respond, parents can then cover the doll with blanket to demonstrate what the appropriate response is supposed to be and repeat the same thing whenever the child is preparing to sleep with the doll.

Greenspan and Wieder (2009) stated that Floortime[®] is not limited to getting on the floor to play with a child, but also includes emphasising interactions with the child. They recommended parents to incorporate day-to-day, real-life activities into Floortime[®] so the child will understand the reasons underpinning the activities and the sequences needed to carry them out. It is helpful for the child to learn about the behaviour by providing the child with verbal reasons while performing an activity once the child has shown interest in the activity. This is especially relevant for children with ASD who are sensitive to tactile input (Wieder & Greenspan, 2003).

The Floortime[®] sessions are recommended to be carried out two to five hours daily, with 20 to 30 minutes per session (e.g., six to ten sessions/day) (Greenspan, 1992a, 1992b; Greenspan & Wieder, 2006). Due to this intensive nature of the Floortime[®] intervention, parents who have more than one child often do not have enough time to adequately carry out the program. Therefore, the authors of the DIR/Floortime[®] approach suggested that the Floortime[®] session should also involve siblings and peers which would overcome the issue. Children should have four or more play dates per week so they can learn to effectively interact and communicate with peers (Greenspan & Wieder, 2009).

It is also suggested that the group’s Floortime[®] should start with a smaller number and then progress to a bigger group with alternating turn to be the leader of the group. Encouraging the developmentally challenged child to gradually engage and interact with a group of people who are not members of their immediate family will increase their understanding of other people and at the same time challenge them by being the leader of the

play group. This will provide opportunities for them to build up their confidence in a shared world environment.

2.6.3 Assessment method of the DIR/Floortime[®] intervention approach

The DIR/Floortime[®] approach is a comprehensive framework and requires a thorough assessment of the child's functional developmental levels, individual differences and challenges, and relationships with caregivers and peers. This is usually completed at least once before and after the intervention program has been initiated. The individualised functional profile captures the child's unique developmental features and serves as a basis for an individually tailored treatment program (Greenspan & Wieder, 2009). In this DIR/Floortime[®], the Functional Emotional Assessment Scale (FEAS) (Greenspan, 1992a; Greenspan, & DeGangi, 1997) is used. It is a clinical rating scale that can be applied to videotaped interactions between infants/children and their caregivers (Greenspan & Wieder, 1997).

One part of the Floortime[®] play approach is the 'Circle of Communication' (CoC) which is the continuous back and forth communication between the child and his/her parents or caregiver, involving both non-verbal (signals or cues) and verbal (sounds or words) (Dionne & Martini, 2011; Greenspan & Wieder, 2009). The closing of the CoC is important in ensuring that the intended message sent by one person is understood by the other person involved in the conversation (Greenspan & Wieder, 1998). Communication plays an essential role in the advanced developmental levels (level three and above) of the model with increasing the length and complexity for each communication circle and increasing the number of communication circles for each session which can serve as an indicator of the progression of the child (Dionne & Martini, 2011; Greenspan & Wieder, 1998).

2.6.4 Effectiveness of DIR/Floortime[®] intervention approach

The specific component of the intervention program based on the DIR model, referred to as Floortime[®], has been shown effective in children with ASD, despite the lack of published articles in measuring its effectiveness. The first published study using the DIR/Floortime[®] approach was completed by the model's authors, Greenspan and Wieder in 1997 where they reviewed 200 cases of children with ASD (aged from 22 months to four years old at the initial evaluations) whom they both had seen for consultation or treatment over a period of two to eight years. The charts reviewed the following information: (1) presenting symptoms and problems, (2) developmental history, (3) child's maturational and constitutional patterns, (4) observations of infant/child and infant/child-parent interaction patterns, (5) family history, and (6) family functioning.

The Functional Emotional Assessment Scale (FEAS) (Greenspan, 1992a; Greenspan & DeGangi, 1997) was used clinically at the initial evaluations and at each follow-up visit. The intervention program used in the study was based on the DIR/Floortime[®] approach that included several elements. Firstly, a home-based, developmentally appropriate interactions and practice that includes (a) eight to ten 20 – 30-minute Floortime[®] sessions per day, (b) five to eight 15-minute or longer of semi-structured problem-solving sessions a day, (c) four or more 15 minutes (or more) spatial, motor and sensory activities integrated with pretend play, and (d) four or more peer play sessions per week. Involving speech therapy sessions three or more times a week and sensory integration-based occupational therapy or physical therapy or both two times a week. In addition, a daily educational program, biomedical interventions, and consideration of nutrition and diet as well as the use of technologies that assist in improving processing abilities.

The outcomes were described by categorising the children into three broad groups – ‘*good to outstanding*’ outcome group, ‘*medium*’ outcome group and ‘*on-going difficulties*’

outcome group. The findings indicated that 116 (58%) of the children fell into the first group, 50 (25%) children fell into the second group, and 34 (17%) of the children fell into the last group. The outcome patterns of the three groups are summarised below in Table 2.10.

Table 2.10
Outcome patterns of DIR / Floortime® intervention

Outcome group	Outcome patterns
Good to outstanding	Children became more interactive, relating joyfully with appropriate, reciprocal preverbal gestures; they engaged in lengthy, well-organised, purposeful social problem solving; they shared attention between various social, cognitive or motor-based tasks; they used symbols and words creatively and logically based on their intent and desires; and they progressed to higher levels of thinking including making inferences and experiencing empathy. Children no longer exhibited signs of self-absorption, avoidance, self-stimulation or perseveration. They shifted into the non-autistic range of the Childhood Autism Rating Scale (CARS), but some still had auditory and/or visual-spatial difficulties as well as some degree of fine or gross motor planning challenges.
Medium	Children made slower, gradual progress but became warm and loving. They gained abilities to relate and communicate with gestures, entered into long sequences of purposeful interaction; they could share attention and engage in problem solving; they developed some degree of language and could talk in phrases, but showed significant problems in developing symbolic capacities and had less sophisticated or abstract thinking skills. Children no longer exhibited self-absorption, avoidance, self-stimulation or perseveration.
On-going difficulties	Children made very slow progress, but did make gains in their ability to relate warmly to others and had decreases in problematic behaviours. They learned to communicate with gestures or simple words and phrases or both, continued to have difficulties with attention and the sequence of gesturing. They also still exhibited evidence of self-absorption, avoidance, self-stimulation and perseveration.

Note. Adapted from Greenspan and Wieder (1997, 2009).

Although the results indicated that the intervention program was effective, the published work only reported the children's outcome patterns and clinical course based on an experienced clinician's observations and detailed notes organised according to FEAS categories with no statistical findings. In other words, the results of the Greenspan and Wieder (1997) were descriptive and of a low level of evidence.

Following the previous described study, Solomon et al. (2007) conducted and published the PLAY (Play and Language for Autistic Youngsters) Project Home Consultation (PPHC) program. The PLAY project involved training the parents of 68 children with ASD aged 18 months to six years using the DIR/Floortime® approach to complete an eight-12 months home-based early intervention program. Parents were encouraged to deliver 15 hours of one-to-one interactions per week with their child. The PLAY Project's consultants visited the families at their homes monthly with three to four hours per visit to teach the parents how to provide the intensive, one-to-one, play-based approach and recorded a session for assessment of the child's progress.

The FEAS was administered pre- and post-intervention to identify changes in the children's behaviours and development as well as parents' behaviours. The FEAS was completed by consultants who provided clinical ratings of children's developmental progress using a six-point scale with increments related to the six functional developmental levels as well as intensity (the average number of hours per week that the intervention method was provided at home).

Results indicated that there was no significant change in parents' FEAS scores pre- and post-intervention ($p = 0.63$). There was a significant increase in the children's total and scaled FEAS score over a 12-months period ($p \leq 0.0001$) and based on the scores, 45.5 % of children made good to very good functional developmental progress over the period the study was conducted. There was no statistically significant association between the intensity of

sessions provided with the children and the outcomes obtained; however, the study's data suggested an association between fewer hours per week of intervention and lower outcome scores.

The study showed that clinical functional developmental level (FDL) increased significantly from baseline compared to the end of one year of intervention and based on the clinical scores. Over half (52%) of the study's sample made very good progress (1.5 FDLs or better), 14% made good progress (1FDL), and the rest made fair progress (0.5 FDL or lower). Although there are statistically significant changes in the children's FEAS scores before and after intervention, there was no statistically significant association between the intensity of intervention and outcome scores ($p = 0.09$).

For parents who spent less time engaging in DIR/Floortime® sessions at home, their children were found to not make as much progress as other children whose parents invested more time interacting with them. The study did not have any control group which made it impossible to know for sure whether the changes in post-intervention FEAS scores were directly due to the home-based intervention the children took part in. One disadvantage of the method used in the study was the daily logs kept by the children's parents, where they recorded the number of hours of intervention completed, since some parents sometimes forgot to log the time spent engaging in the intervention. Instead, they made rough estimates thus making the recording of the intensity of the intervention less accurate.

Following this study, PLAY project was evaluated in a one-year randomised controlled trial (RCT) involving 64 children with ASD aged two to five years and their families in each community service (control group) and the PLAY groups (intervention group) (Solomon et al., 2014). The project involved a parent-mediated intervention based on the DIR model that involved parents' coaching, modelling and video feedback as well as three hours-monthly home visit consultancies provided by the PLAY consultants.

After a year of home-based intervention, PLAY parents showed significant improvements in their interaction skills with their children with ASD as they become more responsive and affectionate. PLAY children also showed moderate to large effect of improvement in their attention and initiation as well as socioemotional behaviour development. Children in both groups, the autism symptomatology was improved after the completion of this one-year study with children in the PLAY group improving twofold compared to the control group. Although no significant difference in the changes of parental stress and depression between the groups was found, the score showed an improving trend.

This study provides a strong evidence of the effectiveness of parent-implemented home-based intervention founded on the DIR/Floortime[®] approach. However, as with other intervention studies, intervention groups also received other health services therefore making it difficult to assess the intervention (i.e., PLAY) in isolation, limiting the interpretation of its true effectiveness.

Meanwhile, Dionne and Martini (2011) using a single-subject study design reported the effectiveness of the DIR/Floortime[®] intervention when used with a young boy aged 3 years 6 months diagnosed with autism for a nine-week period. He was non-verbal, only using a few oral words and the picture exchange communication system (PECS) to communicate. The study was structured into two phases; (1) Phase A: observation, eight sessions (two weeks) of semi-structured activities (e.g., fine motor tasks, free play) and observation of participant's play skills and interactions; and (2) Phase B: intervention, 28 sessions (seven weeks) of the Floortime[®] play intervention conducted by an occupational therapist trained in the DIR/Floortime[®] intervention approach.

The child was seen by the researcher (who is also an occupational therapist) four times a week for 45 minutes (30 minutes observation or intervention, and last 15 minutes discussion with child's mother) in a private clinic. During phase B, the time was used to

coach the mother with respect of the Floortime[®] intervention technique. All sessions were video-recorded with the first and last five minutes being removed, placed in random order and the number of CoCs during each session were coded by two blind raters. The most commonly used method of analysis in the single subject design, a visual statistical analysis (celeration-line approach and two standard deviation band method) of the graphed data was completed. Analysis of the graphed data found a significant difference between the numbers of CoC in phase B as compared with the number of CoC in phase A. The child's mother was given a journal for her to document the average number of sessions using the Floortime[®] intervention approach daily and her personal impressions of the child's progress.

Based on the mother's journal documentation, there was an average of three sessions per day with shorter weekday sessions (10 minutes) and longer weekend sessions (45 minutes). Although the intervention period of this study was shorter and less intense than recommended by Greenspan and Wieder (1997), it still provides an indicator, although a weak one, that the Floortime[®] intervention approach when used with children with ASD can be effective. The major criticism of this study is the lack of generalisability of the findings and the possibility of implicating the changes demonstrated by the participant, due to the intervention approach itself, given that it only involved a single subject.

Another recent study that investigated the effects of the DIR/Floortime[®] home-based intervention program was done in Taiwan involving 11 children with ASD, aged 45 to 69 months with their mothers (Liao et al., 2014). A ten-week, home-based intervention involving a pre-test session, where demographic information of participants was gathered, followed by three weeks of pre-intervention sessions was implemented. In the intervention session, all participating mothers attended a one-on-one training course that provided information about DIR/Floortime[®] intervention approach, basic concepts of DIR method, play strategies as well as how to set individualised goals for each child. After the training, the home-based

intervention program was continued for 10 weeks where the mothers provided intervention for at least 10 hours per week at home, and they received a visit from the first author for one-on-one counselling regarding the program and/or difficulties they experienced every two weeks.

Results of Liao et al.'s (2014) study showed that the mean scores of the overall FEAS and six FEAS domains increased over the course of intervention, and the effect size for total score was 0.49 and varied from 0.30 to 0.58 for the six domain scores (medium to large effect). There was a significant difference for the children's total FEAS score ($z = -2.31, p < 0.05$) as well as in the domains of engagement and relating ($z = -2.44, p < 0.05$), two-way purposeful emotional interaction ($z = -2.70, p < 0.01$), and social problem solving ($z = -2.50, p < 0.05$). There were also significant improvements in the total score of Vineland Adaptive Behavior Scales (VABS-2) ($z = -2.19, p < 0.05$) and communication domain ($z = -2.02, p < 0.05$), daily living skills ($z = 2.45, p < 0.05$), and social domain ($z = -2.09, p < 0.05$). The Parenting Stress Index was also measured and a significant decrease in parent-child dysfunctional interaction score was found ($z = -2.11, p < 0.05$) although the effect size was small (0.27), it still showed that mothers perceived greater positive parent-child interactions post-intervention.

Although significant findings were found, there was no control group, the sample size was small and the assessors were not blinded to the study's aim. There is also the potential for cultural bias issues given the DIR/Floortime[®] was developed in the US. It is not known if all of the DIR/Floortime[®] intervention approach's principles are directly applicable in a non-western culture, particularly Taiwanese cultural context.

The DIR/Floortime[®] intervention has also been utilised and assessed in another non-western culture country besides Taiwan. A randomised controlled study was undertaken in Thailand to investigate the effectiveness of the DIR/Floortime[®] intervention with a group of

mother-child with ASD dyads. The study involved an intervention group comprised of 15 mother-child dyads and a control group of 16 mother-child dyads (Pajareya & Nopmaneejumruslers, 2011). Parents of children with ASD attended training workshops on the DIR/Floortime® intervention approach's principles before starting the home-based intervention. Parents were asked to carry out the DIR/Floortime® regime and semi-structured problem-solving activities for a minimum of 20 hours per week. The FEAS was completed by two blind raters, rating a 15-minute videotaped session of a mother and child play, playing with a standard set of toys (symbolic, tactile and movement play materials). The Thailand's version of Functional Emotional Development Questionnaire (FEDQ) (Greenspan & Greenspan, 2002) was also used to determine the clinical progression of the participants.

Results showed that the intervention group performed the DIR/Floortime® intervention program on average of 15.2 hours per week based on the weekly logs that the mothers kept. It was found that the pre-intervention and three-months-post-intervention's FEAS score was significantly different ($p = 0.031$) with overall developmental progress of 7.0 ($SD = 6.3$) compared to the progression of the control group of only 1.9 ($SD = 6.1$). The changes of FEDQ were also significant ($p = 0.006$). The children of the parents who provided the home-based the DIR/Floortime® intervention program ten hours per week or more, made greater functional emotional gains in FEAS than the children of the parents who provided the intervention less than ten hours per week, however, the difference was not statistically significant ($p = 0.95$). Overall, results of the study demonstrated that the intervention approach was effective.

The strength of the study is that there was a control group; however, participants were not matched for age or gender. In addition, the outcomes that were measured were limited and may have lacked sensitivity to change. Similar to the results of the Liao et al.'s (2014)

study, it is not known if all of the DIR/Floortime[®] intervention approach's principles are directly applicable or relevant in a Thai cultural context.

An extension of Pajareya and Nopmaneejumruslers' (2011) study was conducted for a year with 34 children with ASD aged two to four years in Thailand. The study involved parents' training, modelling, coaching and feedback, monthly group meeting for three hours, follow-up every three months, as well as semi-structured problem-solving activities with pre-set goals and home program for them to engage in (Pajareya & Nopmaneejumruslers, 2012). Parents were asked to implement the DIR/Floortime[®] intervention at home with their child for a minimum of 20 hours per week. The study measured the changes in children's autism symptomatology, functional developmental level (e.g., FEAS) that were assessed pre- and post-intervention.

The findings showed that almost half of the children with ASD made a good improvement in their developmental level while 23% of them made a fair progress after completing the one-year study. Children's symptomatology also improved with the implementation of the intervention. In average, parents engaged in 14.2 hours of Floortime[®] sessions per week at home, which is less than parents in their earlier study (Pajareya & Nopmaneejumruslers, 2011). The findings provide an evidence of the applicability and effectiveness of DIR/Floortime[®] intervention in a similar cultural context as the Malaysian context.

Previous studies' results found that the effectiveness of the DIR/Floortime[®] intervention approach appears promising, but in a very preliminary way. However, the methodologies have not been replicated, the studies have all been completed in differing cross-cultural contexts, and have had very small sample sizes, and the methods of data collection were prone to bias. Therefore, the effectiveness of the DIR/Floortime[®] approach is still very limited. Further studies about this intervention method are needed. Hence, the

present study intended to discover the extent of effectiveness of the DIR/Floortime[®] approach in dyads of parents and children with ASD in the Malaysian cultural context. The present study is interested in the DIR/Floortime[®] model with an emphasis on engagement which is also a central component in the Canadian Model of Occupational Performance-Engagement (CMOP-E), one of the models that underpins this present study.

2.6.5 Parent-child interactions

The DIR/Floortime intervention approach emphasises parent-child interaction as it is crucial for fostering children's development (Wieder & Greenspan, 2003). As outlined in the DIR model, parent-child interaction is the main change agent for each stage of development. Parents are typically children's first interaction partner, and this is how they begin to become familiar with the external world. Parent-child interactions help children to recognise and reorganise their perceptions of the world into meaningful categories. This not only helps the child to regulate themselves, it assists children to communicate, develop their self-concept, social and emotional abilities, adaptive behaviours, cognitive skills as well as their play skills (Bornstein & Tamis-LeMonda, 1997; Freeman & Kasari, 2013; Greenspan & Wieder, 2009; Landy, Smith, Swank, & Miller-Loncar, 2000).

Children with ASD are known to have difficulties with interaction and communication skills. Having parents interact with their children in a style and at a level adapted to the child's current level of presentation is highly recommended since it enhances children's responses and in turn fosters their communication skills (Green et al., 2010). Children's early stages of development involve the child being emotionally engaged with parents and the environment and being able to self-regulate themselves. This is one of the best ways to promote children's learning processes (Exkorn, 2005). In most studies, interventions that focused on parent-child interactions were conducted with either a mix of therapist-led interventions in a clinic environment and parent-led intervention activities at home or solely

via parent-mediated interventions at home with follow-up sessions at a clinic. In both contexts, the implementation of these types of interventions had shown positive outcomes for both children and parents (Dionne & Martini, 2011; Green et al., 2010; Liao et al., 2014; Pajareya & Nopmaneejumrulers, 2011, 2012; Solomon et al., 2007, 2014; Wetherby et al., 2014).

Green et al. (2010) conducted a multiple site randomised controlled trial (RCT) utilising a parent-mediated communication-focused intervention program with children presenting with autism and their parents. The findings showed that with the implementation of the intervention in both clinic and home contexts, parent-child interactions as well as children's verbal ability, social communication and autism symptoms all improved. In another study that adopted a parent-implemented social intervention approach for toddlers diagnosed with ASD, Wetherby et al. (2014) found that after nine months, low intensity delivery of mixed therapist-led and parent-mediated interventions at home resulted in improved children's social communication, socialisation, daily living and expressive language skills.

Interventions that focused on parent-child interactions targeted the change in parents' style of interaction by promoting parental responsiveness to their child during their interactions. Typically, parents utilised a more directive style of communication with their child with ASD. Therefore, interventions utilising positive parent-child interaction requires parents to develop and actively implement a new style of social interaction. This might cause some parents to feel stressed and/or anxious (Bradshaw et al., 2017; Koegel, 2000). However, the changes in parents' interactions, in turn, promoted children's skill development and positive behaviours (Ginn, Clionsky, Eyberg, Warner-Metzger, & Abner, 2017; Meadan, Ostrosky, Zaghawan, & Yu, 2009). Ginn et al. (2017) demonstrated that after eight weeks of applying positive interaction strategies with children with ASD, their challenging behaviours

reduced. This also positively impacted parents' wellbeing, particularly in reducing parental distress related to their child's behaviour (Ginn et al., 2017; Osborne, McHugh, Saunders, & Reed, 2008).

2.7 *Theoretical Foundations and Practice Models*

In this section, discussions of the Canadian Model of Occupational Performance and Engagement (CMOP-E; Polatajko, Townsend & Craik, 2007), the International Classification of Functioning, Disability and Health (ICF; WHO, 2001) and the Bronfenbrenner's Ecological System Theory (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006) will be provided. These practice models and theories guide the research outline and the relationship between variables that can impact each other as well as the findings.

2.7.1 *The Canadian Model of Occupational Performance and Engagement (CMOP-E)*

The CMOP-E (Polatajko et al., 2007) was expanded from the original version, the Canadian Model of Occupational Performance (CAOT, 1997). The main focus of this model is occupational performance and the engagement in the occupation, which is the outcome of the dynamic interplay between the three components of the model: the person, the occupation and the environment. This model is based on the assumptions that occupations are both determined and influenced by the contextual factors and developmental factors of an individual. Figure 2.1 provides an illustration of the CMOP-E, where the person component located in the centre is intertwined with occupations within the environment.

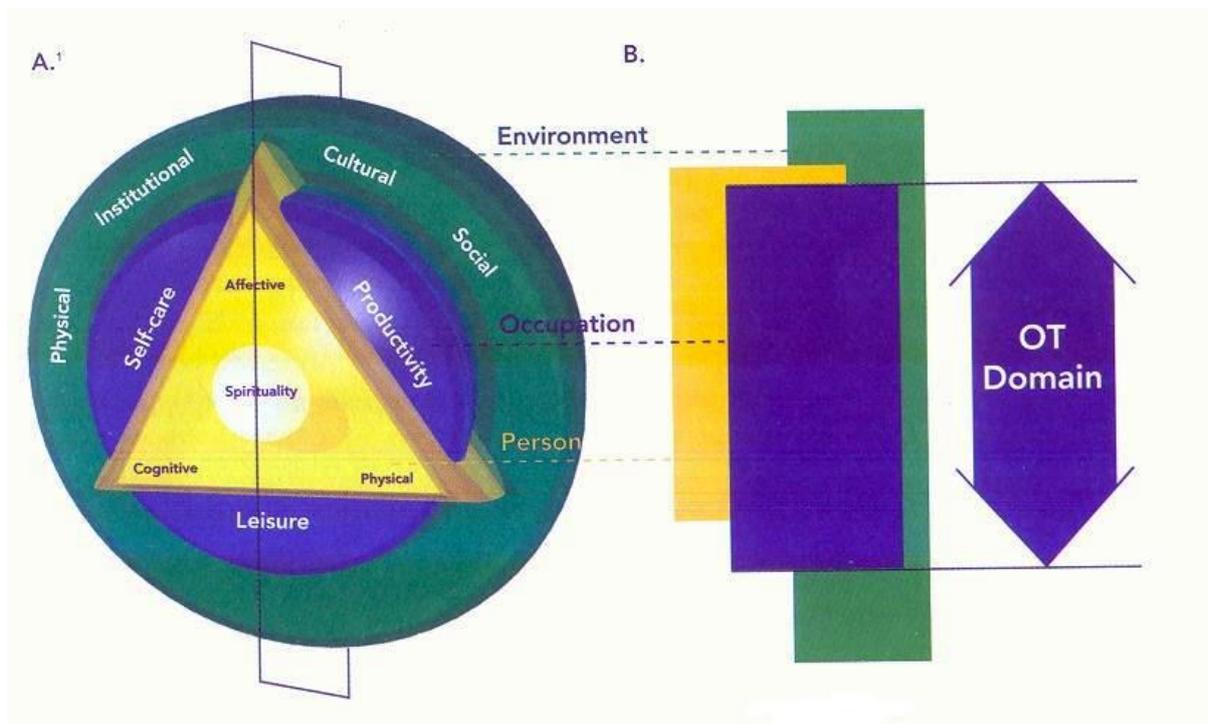


Figure 2.1. The Canadian Model of Occupational Performance-Engagement (CMOP-E) and trans-sectional view of the CMOP-E. Note. Reprinted from *Enabling Occupation II: Advancing an Occupational Therapy Vision of Health, Wellbeing, & Justice through Occupation*. (p.23), by E. A. Townsend & H. J. Polatajko, 2007, Ottawa, ONC: Canadian Association of Occupational Therapist.2007.

In Figure 2.1, the person is at the centre of the model that makes up of three major performance components: cognitive, affective and physical. Each component is located in each corner of the triangle. In this framework, spirituality which is the essence of self is acknowledged as the core of the person. It is shaped and expressed through occupations. The person in the model is depicted as existing within the environment.

The core component of the CMOP-E model is the occupation. In this model, it is referred to as occupational purposes, which include self-care; productivity and leisure (play in children). This component is represented by the inner circle in Figure 2.1. Environment is represented as the outer circle within which individuals exist and perform their occupations. In CMOP-E, the environment encompasses four components: physical, cultural, institutional

and social environment. It influences the person and the occupation as this is where the individuals are presented with occupational opportunities.

All components have an interdependent relationship with each other, thus a change in one of the components results in changes in the others. Implication of any limitations in any of the components will cause the dysfunction in occupational performance and engagement.

2.7.2 *The International Classification of Functioning, Disability and Health (ICF)*

The International Classification of Functioning, Disability and Health (ICF) is an international classification developed by the World Health Organization (WHO) that provides a unified and standard language and framework describing health and health-related states (WHO, 2001). One of the aims of the ICF is to provide a scientific basis for understanding and studying health and health-related states, outcomes and determinants; as well as a useful research tool in measuring the outcomes, QoL or the environmental factors involved in the problems been studied.

This classification serves as a framework that provides a description of situations with regard to human functioning and its restrictions by organising the information in two parts which are (1) functioning and disability, and (2) contextual factors, with each part having two components. The components of functioning and disability are (1) the body component that comprises functions of body systems and body structures; and (2) activities and participation that involve the aspects of functioning from individual and societal perspectives. On the other hand, the contextual factors comprise of (a) environmental factors which have an impact on components of functioning and disability and (b) personal factors which contribute to individual's functions but are not classified in the ICF because of the large social and cultural variance associated to them.

An individual's functioning and disability is perceived as a dynamic interaction between health conditions that includes diseases, disorders, injuries and traumas, and

contextual factors. Each component can be expressed in both positive and negative aspects (WHO, 2001). In the ICF guidelines (WHO, 2001), '*body functions*' is defined as physiological functions of body systems and includes the psychological functions, whereas the '*body structures*' are anatomical parts of the body such as organs, limbs and their components. The constructs of this component are changes in body functions and body structures. The positive aspect of this body functions and structures component is functional and structural integrity, whereas the negative aspect is impairment which is the problem in body function or structure, such as significant deviation or loss.

The guidelines define activity as the execution of a task or action by an individual, while participation is defined as involvement in a life situation. The constructs building up this component are capacity which describes executing tasks in a standard environment and performance which is executing tasks in the current environment. The positive aspect of this component is being able to participate, being involved in life situations, while negative aspects of it are activity limitations, described as difficulties an individual might have in executing activities, and participation restriction, which are problems an individual might experience in involvement in life situations.

Meanwhile, for the contextual part, the first component is environmental factors that includes the physical, social and attitudinal environment in which individuals live in and conduct their lives. The personal factors are the particular background of an individual's life, this includes both individual's non-health condition or health states features. The constructs of this component can either facilitate or hinder the impact of the environmental factors; and the impact of attributes of the person for the personal factors. There are two aspects for the contextual part which are positive and negative. The positive aspect is called facilitators and negative aspect is called barriers. These aspects are only applicable to the environmental

factors, but not applicable to personal factors. This is because that environmental factors did not varies as much as personal factors which is unique to each individual (WHO, 2001)

However, ICF is a classification and it does not model the process of functioning and disability, but it can be used to describe the process. Individual’s functioning in a specific domain is the result from the interaction between the health condition and contextual factors. The interaction is bidirectional where it is both affected and affecting each other. Although the ICF is a classification, the visualisation of the interaction between the various components is applicable to be utilised in this study context. The interactions between the ICF’s components is presented in Figure 2.2 below.

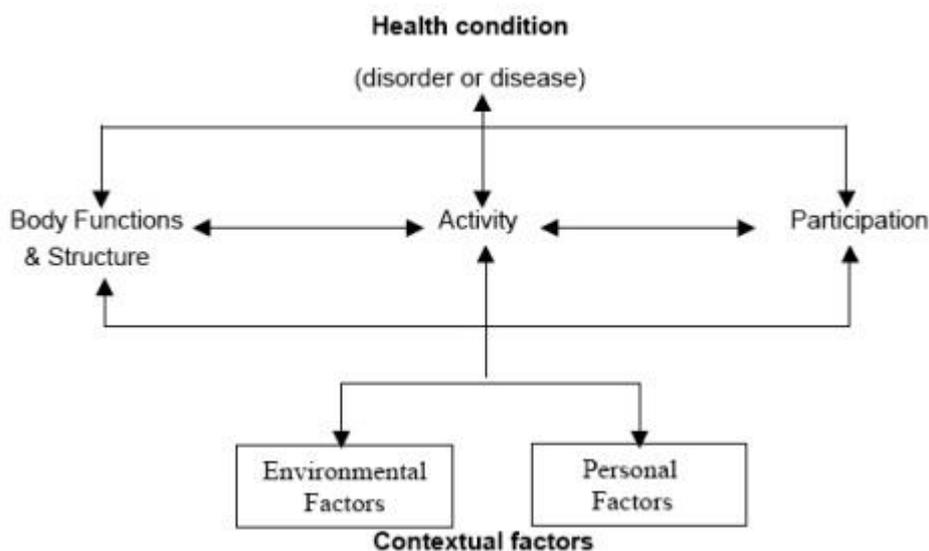


Figure 2.2. Interactions between the components of International Classification of Functioning, Disability and Health (ICF). Note. Reprinted from *International Classification of Functioning, Disability and Health (ICF)*. (p.xx), by World Health Organization, 2001, Geneva, World Health Organization. 2001.

2.7.3 Ecological System Theory / Bioecological theory

Bronfenbrenner’s ecological model encompasses five nested subsystems that are interrelated to each other, these include the microsystem, mesosystem, exosystem, macrosystem and chronosystem (Bronfenbrenner, 1974, 1977, 1979, 1986). The model is illustrated in Figure 2.3 below. In this model, the individual is surrounded, being affected and

affecting the five interrelated systems in both a direct and indirect fashion. This model has evolved and is now known as the bioecological model of human development (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006), where development is defined as the phenomenon of continuity and change in biopsychological characteristics of human beings that extend over the life course (Bronfenbrenner & Morris, 2006). In the current model, in addition to those nested interrelated environments is the four principal components which have an interactive relationship among them which serves as the defining properties of the bioecological model: (1) process, (2) person, (3) context, and (4) time (Bronfenbrenner & Morris, 2006).

The core of the model is '*process*', the interaction between organism or individuals and the environment, that is also known as '*proximal processes*' (Bronfenbrenner & Morris, 2006). The '*process*' is the primary mechanisms in human development that operates over time and influenced by the individual's characteristics and their environmental context (Bronfenbrenner & Morris, 2006). The second component is the '*person*' component. This is the most influential component in shaping the course of development because it poses characteristics that are capable to influence both the direction and the power of '*proximal process*' (Bronfenbrenner & Morris, 2006). The characteristics of the '*person*' component include (a) dispositions which can set the process and continue to sustain, (b) bioecological resources of ability, experience, knowledge and skills required for effective functioning of the process and (c) demand, that encourage or discourage reactions from the social environment which can foster or disrupt the operation of the proximal processes. These characteristics are not only applied to the individual but also extend into the microsystem including the characteristics of parents, relatives, friends, teachers, neighbours and whoever participates in the life of the developing individual on a fairly regular basis over extended periods of time (Bronfenbrenner & Morris, 2006).

The third component is the ‘*context*’ which emphasises the interaction not only between people but also with objects and symbols in the microsystem level (Bronfenbrenner & Morris, 2006). It can either foster or interfere with the development of proximal processes especially in a way of human competence and characters which are shaped within the family, schools, and neighbourhoods. For example, a hectic, unstable and chaotic environment of a family might cause interference to the environment and family dynamic of the developing child, which leads to negative impacts to their interactions hence the occupational performance.

The last component is ‘*time*’, which in the present model has a prominent place at three successive levels and can be both affecting and affected by the process and outcomes of human development (Bronfenbrenner & Morris, 2006). ‘*Microtime*’ refers to continuity versus discontinuity in ongoing episodes of proximal process, whereas ‘*mesotime*’ is periodicity of episodes across broader time intervals (days, weeks) and ‘*macrotime*’ focuses on the changing expectations and events in the larger society.

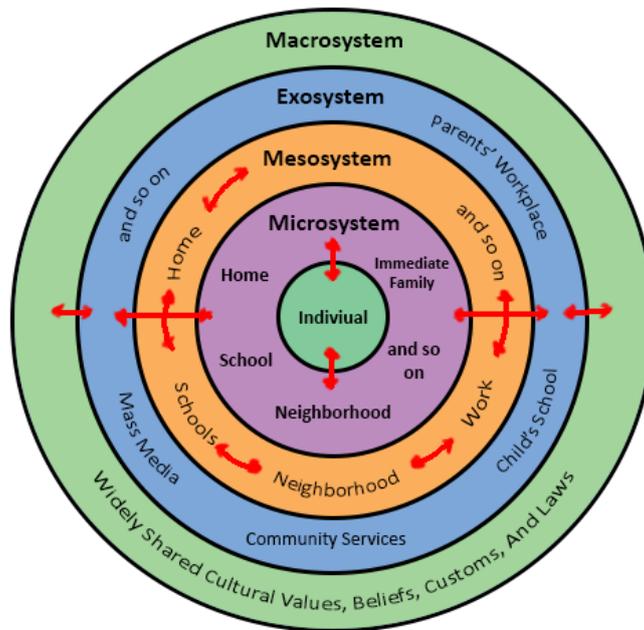


Figure 2.3. The Bioecological Model. Note. Retrieved from <http://psychology.wikia.com/>

As shown in the above Figure 2.3, '*microsystem*' is the closest system or environment to the individual in the centre of the model. '*Microsystem*' defined as "a pattern of activities, social roles and interpersonal relations experienced by the individual in a direct setting of particular physical and social setting with symbolic features that invite, permit or inhibit engagement in sustained, progressively more complex interactions with, and activity in the immediate environment" (Bronfenbrenner, 1994, p.1645). The adjacent system, the '*mesosystem*' is defined as the relationships existing between two or more microsystems (Bronfenbrenner & Morris, 2006). The second outer system enveloping the mesosystem is the '*exosystem*'. This system comprised of individual's distant environments and settings such as parents' workplace, community service that are interconnected. Although these settings are not linked directly with the child, the outcomes of the events occurring in the settings are indirectly influencing the process within the child's immediate settings (Bronfenbrenner, 1993).

The '*macrosystem*' is defined as a context encompassing any group, including culture, subculture or other extended social structure whose members share the same value or belief systems (Bronfenbrenner, 1993). The '*chronosystem*' although is not illustrated in Figure 2.3 as this is the evolved model, it is the transition and shifts in lifespan. This system describes the micro-, meso- and macrotime that has been explained in previous paragraphs (Bronfenbrenner, 1993).

2.7.4 *Application of theories and models in present study*

The three models described in previous sections are used to guide the present study in terms of looking into factors affecting and affected by the occupational performance of an individual, that are pretend play of children with ASD, parents' QoL and wellbeing, and their perceived sense of competence in parenting in this study. In both CMOP-E model and Bioecological model, the individual is placed in the centre of the model surrounded by the

environment which will act as one of the factors both affected by and affecting each other, whether directly or indirectly. The individual in CMOP-E is intertwined with the occupation component, that is the main focus in occupational therapy. However, the individual needs to have basic biological abilities and skills within a supportive environment to functionally perform and engage in an occupation, as shown in all three models.

As in the CMOP-E model and interactions of components in the ICF (illustrated in the previous section), activity or occupation performance depends on the individual factors and environment factors. In the context of this study, two groups of individuals are being studied which are children with ASD and the parents of children with ASD. In the following subsection, the application of the models in relation to each group of participants will be discussed briefly.

a. Children with ASD

In this subsection, the three interrelated components: individual, occupation (activity) and environment will be discussed in association to the three models used in this study. The first component is the individual, which in this study context is children with ASD. In the CMOP-E model, the individual is built up of three components which are physical, cognitive and affective, and these three components need to be taken into account for an individual to functionally perform and engage in any occupation. While in the ICF classification, the individual is reflected in the body components which comprises of two classifications – functions of body systems and body structures.

Children with ASD have deficits in their cognitive and affective components as indicated in the CMOP-E model and in functions of body systems according to the ICF classification. On the other hand, the bioecological model has lined out three characteristics for a person that will assist the process of interaction with other people, object and symbols in their everyday life: dispositions, bioecological resources, and demands in which children with

ASD have a degree of problems in all of them. Due to the problems and deficits, children with ASD experience challenges in performing and engaging functionally in their occupations - which is pretend play in this context of current study and the impact can extend to affecting other people in their direct social context, including parents, siblings, neighbours, peers and teachers.

Children with ASD have persistent deficits in social communication and social interaction with restricted and repetitive behaviours (APA, 2013), which can cause great distress to people in contact with them and limiting the children's occupation performance and engagement. The characteristics that children with ASD exhibit and its known impacts contributed to the variables examined in this current study which is the parent-child interactions, pretend play, parents' QoL and wellbeing, and parents' perceived competence in parenting. The difficulties experienced by children with ASD in pretend play (as discussed in the Section 2.4) might be caused by the lack of theory of mind, which accounts for the individual or person factor in all three models. In order to understand how deficits in an individual is affecting their functioning, it has to be examined through their performance, participation and engagement in an activity. Thus, the occupation or activity is another essential component of the CMOP-E and the ICF classification is affecting and being affected by both person and environment factors.

In this study, children with ASD's pretend play was assessed which is the occupation or activity as reflected in the CMOP-E and ICF. According to the CMOP-E, pretend play can be seen as one of the leisure activities (one of the occupations) that children pursue. The performance of and the engagement in play are the main concerns to be assessed in this model, which is the same as the ICF's classification. In the ICF's classification, activity and participation was examined through the aspects of functioning from the perspectives of

individual's and the society, and focusing on whether an individual has the capacity to execute and perform the activity.

An occupation is not only performed by the individual, but, in order for the occupation to serve its function, the individual has to engage in the occupation. In this present study, pretend play is the occupation to be examined and not only serves as a play activity for children in their free time, but it is also a way to facilitate cognitive, emotional, and social development. Pretend play involves substituting objects for another object or person, attributing imagined properties to objects and reference to the absent object in their play (Lewis & Boucher, 1997). The individual's capacity can be a result of the deficits that they possess that can only be examined through the performance of an activity, which is influenced by individual factors and the contextual or environmental factors where an individual performs an occupation within. Hence, determining children with ASD's capacity and performance in pretend play, that is attempted to be done through this present study, needs to consider the environmental factors as well.

Environment and occupations are two important factors in promoting or limiting an individual's occupational performance and engagement. In the present study, the environmental factors are guided mainly by the bioecological model, as it considers both the direct environmental impacts on the child, but also those indirect environmental impacts to the child through other people in the child's life. The environmental factor has been represented and indicated as having complex, dynamic, bidirectional interactions with individuals and occupations (activity) in both the CMOP-E and the ICF, however, the bioecological model illustrated this link in further detail.

Bioecological model (as illustrated in Figure 2.3) is represented as nested circles of the environment surrounding the individual that interacts with one another either directly or indirectly. In the ICF's classification, environmental factors are something that is not within

the child's control such as family, work, government agencies, laws and the cultural beliefs, which are the same as in the CMOP-E model that categorise it into physical, social, institutional and cultural environments. All these environmental factors are reflected in the bioecological model with details description of which level of the environment in relation to the child. The bioecological model also indicates the contact of the specific environment with the child, for example in the microsystem, the interaction is between the individual and other people in his immediate environment.

The interaction between the child and other people (e.g., parents, siblings, peers, and relatives) in their direct everyday setting either promotes or challenges the child's development. In addition, the interaction of other environments that do not come into contact with the child directly is also considered important in the bioecological model. This implicates on the dynamic interaction of the individual in the immediate environment with the individual in the '*microsystem*' (e.g., the interaction of parents with co-workers at their workplace will be affecting the way parents interact with the child at home). Positive interactions between environments ensure a positive interaction of people close to the child which can promote the development of the children and encourage the child to engage and perform in their play which has been the anchor of this present study.

In both the CMOP-E and ICF, the environment has been indicated as the physical, social (both in CMOP-E and ICF), cultural, institutional (only in CMOP-E) and attitudinal (in ICF classification) which have been established to have a bidirectional effect to the occupation and the individual. In the bioecological model, the relationship between the environmental factors has been elaborated. It is depicted in four environment systems pertaining to the individual (illustrated in Figure 2.3) that affects the capacity of the individual and their performance of activities. The '*microsystem*' is the environment depicting all people that are directly in contact with the child in a regular basis over extended

periods of time. This includes parents, siblings, family members, neighbours, peers and teachers. These people not only will interact with the child but also produce objects and symbols that the child will interact with. Hence, making the people in this environmental system to be the nurturer, supporter or promoter of child's development, performance and engagement in beneficial activities.

However, ensuring people in the microsystem environment to be at their best depends on the interaction with the other environments, as shown in mesosystem environment where one '*microsystem*' (e.g., parents) interacts with another '*microsystem*' (e.g., neighbour). It is a chain reaction, where one reaction in the interaction will give an impact on other interactions. This reaction can be illustrated in the following situation. In a community holding a cultural belief of limiting the contact of a father in a playful way with a child because the father is the main breadwinner ('*macrosystem*') may cause the father to pay extra attention and spend more time in his workplace to support the high expenditure of the household including the cost of the child with ASD needs ('*exosystem*'). The father would spend less time with helping out around the house and therefore, know less about the struggles the child with ASD and mother can face in school ('*mesosystem*') which lead to a negative outcome. One possible outcome is a disagreement or friction between the father and the mother ('*microsystem*') so as affecting the family dynamic and finally the interaction with the child with ASD.

These can then impact the child with ASD's performance and engagement in the pretend play due to incapability of father to play with him/her and also the mother who is unable to attend and spend time to play with the child as there are other perceived more important errands to be done. In the life of a developing child with ASD, parents play the most important role in enhancing the chances of the child to develop to the maximum

possibility. Parents are imperative in providing a supportive environment to promote their children's development and this will be discussed further in the following subsection.

b. Parents of child/children with ASD

As aforementioned, parents play the most important role in the development of children with ASD, as well as the child's engagement and performance in any everyday activities. In the present study, the pretend play of children with ASD, the parents' QoL and wellbeing, and perceived sense of competence in parenting will be examined. Guided by the CMOP-E and bioecological models and the ICF classification, the role of parents relating to this study will be discussed in this subsection.

Among the models and framework, the CMOP-E model and ICF classification refer to the parents as the individual. In the CMOP-E, the three components of the individual cognitive, affective and physical, are important for parents to be at their top condition in order to carry out their occupation of taking care of their child/children with ASD. These three components reflected in the parents' QoL and wellbeing (including depression, anxiety and stress) and their perceived sense of competence in parenting. Most of the time parents of children with ASD's cognitive, affective and physical quality levels are lower than parents of typically developing children due to the bidirectional effect of the occupation to them (Bekenkamp et al., 2014; Eapen et al., 2014; Kuhlthau et al., 2014; Rapin, 2001).

Parents' level of physical health is lower as they are tired, experience lack of sleep, experience muscle pain, and headaches because taking care of child/children with ASD is challenging in order to fulfil the special care that they need. Similar to the physical health, parents' cognitive and affective quality are affected by and will affect the development and performance of their children. This is due to the level of energy used and time spent to take care of their child with ASD's special needs, alongside with the other typical developing children, their spouse and work if they are involved in a paid job. Parents are exposed to

experience a high level of stress as they have to manage their own personal matters, their family's wellbeing as well as their own work. This then lead to a negative impact on their performance in their occupation of taking care the child and family and their paid work. Furthermore, it would also negatively affect their sense of competence and QoL.

Similarly, in the ICF classification where the parents' functions of body systems (physiological and psychological functions) are negatively impacted and will disrupt the participation and performance of an activity. This might be due biological deficits that they might have or the environment (home, workplace, community) or the occupation of taking care of a child/children with ASD that will be examined in this present study.

In the present study, a home-based intervention (DIR/Floortime[®] approach) will be used aiming to improve the engagement and interaction between the parents and their children with ASD, which can reduce the stress level of parents, making the parents feel more confidence about their parenting and positively affect their QoL. The present study is not focusing on the occupation of taking care of child/children with ASD, but the parents' QoL and wellbeing as well as their sense of competence in parenting, which can be greatly affected by this particular occupation.

As discussed in earlier sections of the chapter, taking care of child/children with ASD is challenging and consumes a lot of energy and time due to the special care and attention the child needs. Children with ASD usually have some sensory issues, which adds layers of complexity to the daily living task which takes up more time than it usually requires with typically developing children. For example, bathing children with ASD who are hypersensitive to touch will take up more time compared to typically developing children or children with no sensory issues. Due to the hypersensitive to touch it is harder for the parents to dry the child. Playing with their child/children with ASD is another occupation that parents often find difficult which may be due to the child/children condition (such as lack of shared

attention, eye contact or rigidity of play preferences) or parents' own physical and psychological wellbeing status.

As reflected in both the CMOP-E and ICF's classification, the participation, engagement and performance of occupation is greatly affected by the '*person*' factor as discussed earlier. In this study, parents are the essential component as they would be the one implemented the home-based intervention with the main aim of improving the children with ASD's skills and capabilities. For example, parents may either play an active role in engaging themselves in the pretend play with their children or play a relatively less active role in encouraging their children to engage in the play by constructing and providing a supportive environment that enhances the play of children. It is therefore a concern that play be a part of the parents' occupation as this is an important vehicle for children's development. In addition, the DIR/Floortime[®] approach used in this study is expected to help parents improve their child's engagement and performance in daily activity (including play) and reduce their dependability on parents to perform their occupations. Hence, reduce the level of stress in parents, improve their physical and psychological health and wellbeing.

The last and important component to be taken account in any performance of occupation is the environment where the individual exists and occupations takes place. In all two models and framework used in the present study, environment factors have bidirectional interaction with the individual and the occupation. Only in the bioecological model, parents of children with ASD are reflected in the environments ('*microsystem*') that either facilitate or hinder the developing children. However, parents' wellbeing and occupation are shown to be affected by environmental factor in all guiding models and framework.

The environmental factors indicated in the CMOP-E and ICF are placed in different level of systems of environment in the bioecological theory. According to the bioecological theory, parents play the main role in providing children with the most supportive environment

to promote their development. Due to its bidirectional interaction, parents' wellbeing can also be affected by the other person in the same environment with the child/children with ASD, including immediate family members, neighbours, teachers, peers ('*microsystem*' of Bioecological theory, social environment in CMOP-E). The interaction that occurs between the parents and others in an environment, that is not directly in contact with children with ASD, will also affect the engagement and performance of children in activities ('*exosystem*' in Bioecological theory, institutional in CMOP-E model), for example, the interaction of parents and co-workers in their workplace.

The cultural environment indicated in the CMOP-E ('*macrosystem*' in Bioecological theory) also influences the ways parents play with and take care of the child/children with ASD in the present study. How parents interact with others in the same environment, who directly or indirectly come in contact with the child, can affect parents' interactions with their child/children with ASD. This will be shown in the example based on the Bioecological model. Taking care of a child with ASD is challenging and might cause a great level of stress to the parents. This high stress level might affect negatively to the parents' interaction with their child having ASD, thus can lead to demoting the child's development at the '*microsystem*' level.

Parent's stress might be triggered from the problematic interactions between parents themselves, or parents and the other siblings' failure to communicate and understand the special care needed for the child with ASD. Although these interactions occur in the '*mesosystem*' environment, which does not interact directly with the child, it will still affect the children's activity participation or development. In the '*exosystem*' environmental level, although it might never come in contact with the child directly in a regular basis, it can still cause disturbance to the child in the context of physical and psychosocial environments. At the most outer level of the environment, the '*macrosystem*' such as the cultural values that

community hold could be a factor a person misjudged a situation or parent's capability which influence parents' wellbeing. For example, the parents might be seen as not competent in taking care of their child upon seeing a child throw temper tantrum in public places causing the parents to be stressed or even depressed. In this study, play of children with ASD might be affected negatively if the parents are unable to play with their child in a supporting way because of their high stress level, low general health level and poor sense of competence in parenting, therefore limiting them to enjoy themselves.

In summary, the engagement and performance of the child/children with ASD in their pretend play is greatly affected by both individual and environmental factors. The DIR/Floortime[®] intervention approach is used to promote pretend play in children with ASD as this approach places a great emphasis on the engagement in the activity first to enable children's performance in the activity. In accordance with the models described in this section, engagement or participation is one of the factors promoting the occupational performance. To be able to engage with the child enables the parents to understand the limitation of the child/children with ASD in playing. Through the use of DIR/Floortime[®] intervention approach parents will put emphasise on engagement with the child, then slowly bring the child to share their experience and focus on the performance of an occupation. In the same time, to promote the engagement with the child as well as with the play activity, parents have to provide a supportive environment considering the needs of the child/children with ASD.

2.8 *Proposed methodology*

This study aims to examine the impact of the parent-mediated home-based DIR/Floortime[®] intervention approach on child-parents' interactions, parents' QoL and wellbeing, parents' perceived competency, and the pretend play of children with ASD. This

study also explores parents' views and experiences implementing this intervention at home with their child with ASD.

In the literature, there are several methodologies used by researchers to investigate the use of this intervention approach. The methodology adopted for the present study is a single case design approach, also known as single-subject research. The method will be discussed in this section including the variety designs of a single subject study as well as the strengths and limitations of this methodological approach.

2.8.1 Single-subject research

Single-subject research is based on within-subject performance, with the unit of study being one person or a single group that is considered collectively (Deitz, 2006). The participant in this research design serves as his/her own control, as it involves the repeated collection of information including dependent variables over a period of time (Campbell, 1992; Deitz, 2006) where the treatment and outcomes variables are controlled (Reboussin & Morgan, 1996). This method is useful in examining the effectiveness of specific interventions for specific individuals in clinical research (Deitz, 2006; Zhan & Ottenbacher, 2001) and findings from the study can be used to inform and justify an intervention and inform larger scale investigations (Ottenbacher, 1990).

The unique feature of this method is that it provides a comparison for intervention as a series of data points are collected before the intervention is instituted to establish a baseline; and then a series of data collection points are taken during the implementation of the intervention. The study's data points represent individual's specific behaviour and the changes in data points between the baseline and intervention phase would be an indicator of the effect of intervention on the behaviour (Zhan & Ottenbacher, 2001).

Single-subject research data collection involves plotting data points of the dependent variables in a measurable form such as frequency or score prior to the start of the intervention

to establish the baseline, and is then followed by plotting data points of the same variables post institution of intervention for comparison between the two phases. Regardless of the variations of the single-subject research applied in a study, the same process of plotting the data points are done for both baseline and intervention phases. There are several common single-subject research designs that will now be discussed in the next section.

2.8.2 *Single-subject research designs*

The single-subject research design uses a simple notation system where *A* represents the baseline, *B* represents the intervention phase and all other subsequent letters represent additional interventions or conditions (Deitz, 2006).

a. The A-B design and variations

As previously mentioned, *A* denotes the baseline (non-treatment) condition and *B* is the intervention administration (treatment) (Zhan & Ottenbacher, 2001). Data points are collected in the phase prior to the institution of treatment which acts as the baseline (Deitz, 2006). Repeated measures of the target behaviour are done in the baseline phase and then the intervention is administered (Zhan & Ottenbacher, 2001). The intervention is administered for the purpose of changing the target behaviour with the target behaviour continuing to be measured (Zhan & Ottenbacher, 2001). The information gathered from these two phases is analysed and any changes or relationship between the intervention and target behaviour are examined (Zhan & Ottenbacher, 2001). Since the data collection stops after the intervention phase, it is therefore called the *A-B* design.

Another common variation of the *A-B* design is the *A-B-C* successive intervention design. A second intervention, a *C* phase is introduced after the first intervention phase ends. This design is usually adopted when the researcher attempts to find out which intervention is more effective in changing the target behaviour (Deitz, 2006). Within this design, another common variation is the *A-B-C* changing criterion design, which is characterised by having

three or more phases with the criterion for success changing consecutively from one intervention phase to the next intervention phase (Deitz, 2006). This design is well suited for research intended to modify interventions gradually as the criterion for success is changed incrementally with each successive intervention phase especially if the goal involves a stepwise increase or decrease of accuracy, frequency, duration, latency or magnitude (Hartmann & Hall, as cited in Deitz, 2006).

The simple *A-B* and *A-B-C* designs are useful clinical tools since they can show changes of the target behaviour with the administration of interventions (Horner & Odom, 2014). However, a limitation of this basic design is that it is subject to internal validity problems since behavioural changes might occur due to other elements or experiences the subject has been exposed to in addition to the intervention administered (Deitz, 2006). As well, it does not meet the minimal criterion to allow demonstration of experimental control design which involves withdrawal of the intervention at least once before reinstating the intervention to observe whether the intervention is the factor producing changes in the baseline phase as used in the withdrawal design (Horner & Odom, 2014).

b. Withdrawal Design

The withdrawal design is denoted by the notation system *A-B-A* or *B-A-B* design which consists of a minimum of three phases and can be extended to include more phases. For example, a commonly used design is the *A-B-A-B* design (Deitz, 2006). In this design, baseline data and intervention phase data are collected in a similar manner as the simple design (as described above). The difference is at the end of the intervention phase where the intervention administered is withdrawn, thus being referred to as the withdrawal design (Deitz, 2006; Zhan & Ottenbacher, 2001). After withdrawal of the intervention, the baseline is re-established, as in the *A-B-A* design, while the intervention is reinstated in the *A-B-A-B* design (Deitz, 2006; Horner & Odom, 2014; Zhan & Ottenbacher, 2001).

The strength of this design is that it represents a true experimental design in the sense that causal inferences can be made related to the participant or participants as the behaviour under consideration reverts back to its original or near to original form once the intervention is withdrawn (Dietz, 2006). When the behaviour pattern in the second intervention phase returns to its prior pattern observed in the first baseline phase, this adds confidence to the likelihood of a functional relationship between the introduction of the intervention and the changes in the target behaviour (Horner & Odom, 2014). With each successive change, external confounding factors are less likely to be the reason for the change as it is unlikely that these factors will lose their effect at the point of withdrawal and reinstatement of the intervention (Gonella, 1989; Zhan & Ottenbacher, 2001).

This design also has stronger internal validity as it records a distinct change in behaviour when treatment was first administered, when it is withdrawn and when it is resumed (Gonella as cited in Zhan & Ottenbacher, 2001). In addition, this design meets the pattern of replicated effects which is deemed to have documented experimental control (Homer & Odom, 2014). However, this design is limited since it can only be used with behaviours that are reversible once an intervention has been removed (Dietz, 2006, Homer & Odom, 2014; Zhan & Ottenbacher, 2001). It can also be unethical to withdraw an intervention once it is initiated especially when it appears to be effective (Dietz, 2006, Zhan & Ottenbacher, 2001). Thus, the use of this design is limited since most behaviour is not reversible and if it is, it would be unethical if the treatment that improves the behaviours in a positive way are discontinued.

c. Multiple-Baseline Designs

This multiple-baseline design category requires at least three repeated measures of baseline conditions (Deitz, 2006), it is a series of separate *A-B* units over the same time span (Zhan & Ottenbacher, 2001). The switch from baseline condition to intervention condition

takes place at different points in time for each different *A-B* design (Zhan & Ottenbacher, 2001) with each successive baseline being longer than the previous baseline (Dietz, 2006). This is so due to the starting point of each baseline in the series being the same but at the end of it, or the starting point for administration of the next intervention is only begun after some predetermined period of time prior to the previous *A-B* unit's intervention section started. Multiple-baseline designs can be done (a) across behaviours, (b) across participants, and (c) across settings (Dietz, 2006; Zhan & Ottenbacher, 2001).

i. Multiple-baseline design across behaviours

To adapt the multiple-baseline design across behaviours, the same treatment variable is applied sequentially to separate behaviours in a single participant (Dietz, 2006). The target behaviours are collected for a period of time to establish the baseline phase (A), and then the intervention is administered to one of the target behaviours, while other remaining target behaviours remain in the baseline phase. After a predetermined period of time, the intervention is terminated for the first target behaviour. Once the first intervention is terminated for the first series, the second target behaviour will move into the intervention sphere. The same process is repeated for the rest of the target behaviours. The findings can determine if each specific intervention administered was able to have an impact on the behaviours in the same group of problems (for example, antisocial behaviours or is effective to one of the behaviours in the group) (Dietz, 2006).

ii. Multiple-baseline design across participants

The main difference in this design is that the target behaviour is targeted using the same intervention across matched participants. The procedures are the same as the one adopted in the multiple-baseline design across behaviours discussed previously. The intervention is administered to the first participant once they have reached a stable baseline, followed by other participants after the previous one has been terminated for a predetermined period of

time. Concurrently, other participants continue to be in the baseline phase (Deitz, 2006; Zhan & Ottenbacher, 2001).

iii. Multiple-baseline design across settings

With this design, the same behaviour or behaviours are examined in several different settings or environments. The behaviour will be observed in several settings where it causes problems for several days to generate the baseline (Deitz, 2006). For each setting, the behaviour or behaviours have to be observed during the same day when collecting the baseline data points. The intervention, just like the other two designs, is administered in one setting at a time for a predetermined period before it is terminated and applied to the participant in other settings while the behaviour in the other setting remains in the baseline phase (Deitz, 2006). With multiple-baseline designs, the effectiveness of an intervention is determined by the changes in behavioural trends or variability only if it occurs when the intervention is introduced and maintained throughout the intervention phase (Deitz, 2006).

Multiple-baseline designs are mostly used by clinicians to examine complex interventions (Zhan & Ottenbacher, 2001) as they are easy to manipulate and many of their clients face difficulties across several different settings. It is also a common practice in clinical settings that clinicians deal with a series of client's problems sequentially and not all at once. Deitz (2006) stated that this design is better when it is compared to the other two single-subject research designs. For example, it has strong internal validity because the intervention started at a different time for each individual, behaviour, or setting. Furthermore, since changes can be demonstrated by different individuals, a possible causal relationship could be presented when the intervention is affecting different behaviours across several settings. Another strong point of the design is the absence of the reversal or withdrawal of interventions which makes it practical for changing behaviours that do not have the reversal characteristic. Most of the behaviours could not be reverted back to the original form prior to

the implementation of the intervention, hence, the advantage of the usage of this single-subject design's variation.

However, a general limitation of this design is that the concurrent measurement of the behaviours across different participants, behaviours or settings is typically not easily achieved (Horner & Odom, 2014; Zhan & Ottenbacher, 2001). Sometimes some behaviours or participants are required to remain in the baseline phase for long periods of time to reach relatively stable patterns (Dietz, 2006) or to even demonstrate a notable change (Horner & Odom, 2014). This requires a longer time to conduct the study which is the main limitation that most researchers need to take into account. It is also difficult to obtain several participants with similar problems at approximately the same time for the researcher to start collecting data points for the baseline phase (Zhan & Ottenbacher, 2001). However, there is an alternative design which is the non-concurrent multiple baseline design proposed by Watson and Workman (1981). Another limitation is the possibility of interdependency between series especially in the multiple-baseline across behaviour, in that a change in one of the behaviours that is correlated with others, which have been targeted in the study, might cause changes in the others (Zhan & Ottenbacher, 2001).

d. Alternating-treatments design

Alternating-treatment design is also known as multiple-element baseline design, the randomisation design and the multiple schedule design (Barlow & Hayes, 1979). It involves the fast alternation of two or more different interventions or conditions, with baseline data points not being an absolute requirement (Deitz, 2006; Zhan & Ottenbacher, 2001). It is an efficient and flexible design (Zhan & Ottenbacher, 2001), but has not been widely used. In the typical alternating-treatments design, two alternating treatments are administered after a baseline phase and effects of treatments across phases are examined and compared (Zhan & Ottenbacher, 2001).

The treatments will be administered during the same day at two different times (for example, morning and afternoon) where time for each treatment to be administered at is randomised. The effectiveness of the treatments thus can be examined and compared by studying the patterns of both interventions in the intervention phase without taking the baseline phase into consideration. This design can also be applied using the same intervention, but with different therapist on a different day or one time of day compared to another time of day (Deitz, 2006; Zhan & Ottenbacher, 2001).

Alternating-treatment designs have several advantages including no withdrawal of treatment requirement, hence the phases can be very short. This allows the comparison of the effectiveness to be completed more quickly. In addition, the no requirement for baseline phase can make it easier and shorter sessions compared to the other designs (Deitz, 2006; Zhan & Ottenbacher, 2001) that has been recommended to have stable baseline data points before proceeding to implementing an intervention. Despite its advantages, the design is still the least used approach because of several constraints including: (a) behaviours usually take time to change or treatment to show an effect, (b) not being suitable for situations where changes are expected in time due to factors like the disease process (e.g., rheumatoid arthritis) or natural recovery process (e.g., burn), or (c) where multiple intervention interference or carry over effects from the first intervention to the next one occurs (Deitz, 2006; Zhan & Ottenbacher, 2001).

2.8.3 Collection of data in single-subject research

In collecting the measurable dependent variables that are operationally defined, the technique that is used most commonly is the interval recording technique (Deitz, 2006). Three interval recording techniques that are commonly used are (a) momentary time sampling, (b) partial-interval recording and (c) whole interval recording (Richards, Taylor, Ramasamy, & Richards, 1999). With the momentary time sampling, a data response is

recorded if it occurs precisely at a predetermined time where the most used method is incorporating a beep which serves as the predetermined time or moment in the video recording of the observed behaviour (Dietz, 2006). On the other hand, during partial-interval recording, a response is scored if it occurs in any part of the interval where researchers have already predetermined how long the interval will be (Dietz, 2006). The last technique, whole interval recording, requires the participant to exhibit the behaviour during the whole interval time (which has been predetermined) (Dietz, 2006).

2.8.4 Data reporting in single-subject research

Typically, the data in single-subject research is presented in a graph format with dependent variables being on the y-axis and time on the x-axis. The vertical line in the graph indicates the phase changes while the data points will be connected by a line or dotted line in order to see the pattern (Dietz, 2006).

2.8.5 Analysis of single-subject data

Single-subject studies are usually analysed using visual analysis and have been highly recommended to perform statistical analysis to supplement the visual analysis findings. Visual analysis can be performed using the readily available Microsoft Excel (Deochand, Costello, & Fuqua, 2015; Dixon et al., 2009). However, the commonly used statistical packages such as Statistical Package for the Social Sciences (SPSS) are not built with options to analyse single-case data (Bulté & Onghena, 2013). Therefore, an open source software, R was used to perform both visual and statistical analyses since it has excellent graphical abilities as well as a flexible statistical environment (Kelley, 2007). To analyse the data obtained from child-parent free play videos, both visual and statistical analyses were conducted using the R commander with SCDA (Single Case Data Analysis) plug-in (Bulté & Onghena, 2013). R Commander is a graphical user interface to R created by Fox (2005) and SCDA plug-in was created for analysing single case data which comes with three packages

for visual analysis, randomisation tests, and meta-analysis (Bulté & Onghena, 2008, 2009, 2012, 2013)

a. Visual Analysis

Visual analysis method is the most widely used and accepted method of data analysis for single-subject design research (Parsonson & Baer, 1984; Zhan & Ottenbacher, 2001). The graphed data is visually inspected so a judgement of the reliability or consistency of the intervention effects can be made (Tawney & Gast, 1984). The changes in level, trend, slope and variability between phases when the treatment is instituted or withdrawn were made to infer conclusions about the potential cause-effect relationship (Ottenbacher & York, 1984; Wolery & Harris, 1982; Zhan & Ottenbacher, 2001).

A change in level is an abrupt rise or fall in the participant's performance or changes across two or more phases are observable, while variability is when the degree of fluctuation in a series of data points is large (Ottenbacher, 1986), and a change in trends occur when the direction of data patterns changes (Zhan & Ottenbacher, 2001). On the other hand, slope changes can be determined by the steepness of the data paths across phases (Zhan & Ottenbacher, 2001). The advantages of this method of analysis are (a) it is an easy and cost-effective method to use, (b) allows continuous monitoring of the performance, (c) well suited to individualised treatments and outcomes, and (d) widely recognised and understood (Harbst, Ottenbacher, & Harris, 1991; Kazdin, 1982; Ottenbacher, 1986; Tawney & Gast, 1984).

The disadvantage of this method of analysis is the low agreement between raters (e.g., inter-rater reliability) as there are no well-defined decision rules in interpreting the graphed data (Zhan & Ottenbacher, 2001). It is also limited to data with a very clear pattern with sufficient numbers of observations and a stable baseline (Bloom & Fischer, 1982). When changes in performance are small, this makes it hard to detect (Zhan & Ottenbacher, 2001).

In the case of analysing graphed data, it does not necessarily produce a clear judgement about the changes; therefore, performing another analytical technique that quantifies the changes are useful in interpreting the data.

Another technique that was used to support the findings from visual analysis of changes in trend, level, slope and variability is the two standard deviation bands analysis. Although this analysis was developed from a statistical technique, it has been recommended that it is used to supplement the visual analysis (Manolov, Moeyaert, & Evans, 2016) instead of as a statistical analysis. Using this technique, the differences in between the measurement in baseline and intervention phases are evaluated based on the data points that fall within and outside of the stable envelope or the two standard deviation bands above and below the mean of baseline data (Pfadt & Wheeler, 1995). This technique is based on the differences of intervention phase's data points compared to the expected baseline phase's variability (i.e. whether the scores fall between the standard deviation bands or out of the bands).

Another analytical technique commonly employed to supplement the visual analysis are techniques that are based on the nonoverlap indices. The nonoverlap indices technique expresses the results in percentages or proportions of the data points in the intervention phase to improve the baseline measurements (i.e., behaviour) (Manolov & Moeyaert, 2017; Parker, Vannest, & Davis, 2011). Several analytical techniques are available using this approach, but the most frequently used and easy to interpret is the percentage of nonoverlapping data (PND) (Scruggs & Mastropieri, 2013) which was used in analysing the child-parent interactions data of this study.

b. Statistical Analysis

Statistical analysis is a highly suggested method that can be used if visual analysis is unable to provide a clear judgement especially if the baseline is not stable (Kazdin, 1982). Since child-parent interaction data is likely to be difficult to interpret based only from the

graphical examination, a statistical analysis is utilised. There are several analytical techniques that could be utilised, however, the piecewise regression analysis (Center, Skiba, & Casey, 1985-86) was done to evaluate the effect of the intervention implementation on child-parent interactions. The technique is based on the linear regression model that measures the change in both slope and level after the introduction of intervention (Center et al., 1985-86).

Another method is the randomisation test described by Edgington (1996) where it is possible to reduce internal validity threats and permit valid inferences about the effects of the intervention administered. It is done by randomly assigning the baseline and intervention conditions and the number of sessions of intervention in each of the intervention conditions applied to a participant. The average participant's performance for each phase is calculated and evaluated to determine whether the differences between the phases are significantly different from the performance that the conditions were not randomly assigned to (Edgington, 1996; Zhan & Ottenbacher, 2001). Although randomisation test is a useful and most accurate analysis compared to the other analytical technique such as piecewise regression or visual analysis, it can only be used with interventions that have reversible effects and a large number of phases to show statistically significant changes (Zhan & Ottenbacher, 2001).

Although there are a number of analytical techniques that could be used to analyse single-case data, the analytical techniques employed in this study are chosen based on the aim of the study as well as the characteristics of the data (Manolov & Moeyaert, 2017). The quantitative data collected in this study, child-parent's interaction based on the rating of free play videos were analysed using visual analysis for the changes in trend, level, slope and data variability that was supported with the standard deviation bands analysis and the PND. In addition, piecewise regression analysis was also chosen to quantify and aid the interpretation of the data.

In summary, single-subject research designs are useful for evaluating interventions, developing fidelity standards for interventions, providing information about intensity or dosage of treatments that should be used and flexible to ensure response to treatment (Kaiser, 2014). However, the major limitation is the issue of generalisability where the findings from this research design that are gained from the implementation of an intervention with an individual cannot be extended to others. Although as an approach, single-subject research has strong internal validity, it also has weak external validity (Dietz, 2006). The findings might be replicable with other individuals or in other settings, but it requires a long process of research, that requires a lot of time, resources and funding. However, one way to overcome this is to conduct multiple single case studies and then combine them into a larger dataset where more robust analyses can be completed. Therefore, the present study adopted the multiple single-subject studies using the simple *A-B* design.

2.9 *Autism in the Malaysian context*

Malaysia is a country located in the Southeast Asia and consists of thirteen states and three federal territories. Currently, the Malaysian population is approximately 32 million and of that, 7.7 million comprised of children between one to 14 years old (Department of Statistics Malaysia, 2017). Malaysia's population are made up of three major ethnicity groups – Malay, Chinese and India, as well as numbers of indigenous groups. Based on the statistics of new registration of people with disabilities from 2014 to 2016, approximately 88,000 children up to age 12 years old are registered as to have Learning Disabilities which include children diagnosed with Down syndrome, global developmental delay, Autism, Attention Deficit Hyperactivity Disorder (ADHD) and other specific learning problems such as Dyslexia, Dyscalculia and Dysgraphia (Malaysia Department of Social Welfare, 2014, 2015, 2016).

In Malaysia, individuals with ASD can register with the Department of Social Welfare as a person with a disability once they are diagnosed by a qualified medical officer. Once registered, they are eligible to receive a monthly allowance of MYR150, enrol in a special education program offered in a public school, as well as being exempted from any fee for medical treatment (including receiving therapy services from occupational therapy) in any public, governmental funded hospital or clinic (Malaysia Department of Social Welfare, n.d.).

Most children with ASD in Malaysia are registered with the Department of Social Welfare and were referred to an occupational therapist by the medical officer for a rehabilitation program suited to the child's needs which they could receive a treatment without any fees. Typically, the therapy session takes approximately 45 minutes to an hour. Although it does not take up a lot of time, due to a large number of clients compared to the number of occupational therapists in the hospital and/or clinic, usually the session is scheduled once a month. This sometimes leads to parents seeking therapy services offered in private clinics where they have to pay for the services at an hourly rate. Although with all the facilities and privileges that children with ASD are eligible to receive, children with ASD and their families, particularly parents still face a lot of challenges.

Reviewing and discussing the literature related to autism in Malaysian context is quite difficult as there are a limited number of studies published (Neik, Lee, Low, Chia, & Chua, 2014). A Scopus search with the keywords "autism and Malaysia" resulted in 54 articles from across research areas including medicine and health, psychology, social sciences and special education. Meanwhile, the search on Ovid Medline only resulted in nine articles. Studies published include prevalence of autism, characteristics of autism, parental wellbeing and family functioning, therapeutic and school-based intervention, special education as well as early education for autism. Nevertheless, it provides this current study a glance of the current

situation, interventions recommended and practiced in managing ASD, as well as the parents' perspectives and wellbeing of parents of children with ASD in Malaysia.

Although limited, there is a study conducted with parents of child/children with ASD from all three ethnic groups exploring their perspectives on having and taking care of a child diagnosed with ASD in Malaysia (Ilias et al., 2017). Ilias et al.'s (2017) findings revealed that mothers voiced the need for more support from the government to provide more special schools, therapeutic services and financial aid. Mothers also mentioned that they had significant financial problems due to the cost of getting private therapy for their children with ASD. The nature of autism disorder is universal, children with ASD mostly have behavioural difficulties that result in parents experiencing stress, fatigue, low QoL, depression, sadness and worry. Ilias et al. (2017) reported that having a child with ASD is taking a toll on parents' mental, physical and emotional health and wellbeing.

Studies published about autism in Malaysia are limited particularly relating to the intervention implementation with children with ASD, and the studies mostly reported the use of sensory-based approach and sensory integration therapy. A study by Kadar et al. (2015) reported that most occupational therapists working with children with ASD in Malaysia use play therapy and sensory integration therapy. Two other studies also reported that sensory integration therapy was provided by the service centre to children with disabilities including ASD (Leong, Carter, & Stephenson, 2013; Leong, Stephenson, & Carter, 2011). As of November 2017, there is no study published about the implementation of DIR/Floortime® in Malaysia although it has been recommended by Malaysia Ministry of Health (2014) as one of the interventions in managing ASD.

There is only one study published on the current practice of Malaysian occupational therapists with children with ASD (Kadar et al., 2015) and DIR/Floortime® was not listed as one of the interventions used. Since most of the participants in Kadar et al.'s study is working

in hospital settings, it could be inferred that most of them are working in public hospitals and they did not use DIR/Floortime[®] as an intervention approach when treating children with ASD. Based on the list of providers on the Interdisciplinary Council on Development and Learning (ICDL) registry, there are at least three DIR/Floortime[®] providers in Malaysia. The ICDL is the organisation that provides DIR/Floortime[®] training and certificates for individuals to provide DIR/Floortime[®] interventions to clients. However, all of the DIR/Floortime[®] providers are in private centres where parents would need to pay a certain amount of treatment fees. This limits the utilisation of DIR/Floortime[®] intervention with families of children with ASD in Malaysia.

As mentioned above, the client to occupational therapist ratio is high, limiting the intensity of therapy provision for children and families. Parents would opt to find additional therapy to improve their children's course of treatment but faced financial challenges in doing so, particularly related to the limited Floortime services provision. Scholars have recommended that parent-mediated intervention is one of the ways to overcome this issue (Ginn et al., 2017; Hastings, Robertson, & Yasamy, 2012). In other words, parents of children with special needs are empowered and skilled up to provide direct intervention with their own children in their own daily living environments on a daily basis as required. Hence, the rationale of the study being delivered as a parent-mediated intervention.

Home programmes are a common mode of promoting occupational therapy practice delivery with children and families. Therefore, parents being active members of the intervention team is not a novel concept for families with children with ASD, including in Malaysia (McConnell, Parakkal, Savage, & Remple, 2015; Kadar et al., 2015). Kadar et al. (2015) reported that occupational therapists often involved parents during their sessions. Various parent-mediated that focus on parent-child interactions interventions (including Floortime-based programs) demonstrated promising results in promoting children's social

interaction, communication, language, and adaptive behaviours as well as reducing autism's severity (Green et al., 2010; Liao et al., 2014; Pajareya & Nopmaneejumruslers, 2011, 2012; Solomon et al., 2014; Wetherby et al., 2014). While the provision of therapist-lead intervention has been producing positive outcomes in children's development, parental involvement in the intervention was reported to be a key component to ensuring positive and long-term change in children with ASD. This justified the current study as the degree of children's individualised contextual-focused intervention delivered was increased (Hastings et al., 2012; Koegel, 2000; Meadan et al., 2009).

Parents in parent-mediated intervention are recruited to be the therapist's partner in planning and implementing the therapy programs since parents are the experts in relation to their children's needs, difficulties, routines, likes, dislikes, triggers, and daily live contexts (Greenspan & Wieder, 2009; Meadan et al., 2009). Parents received training and ongoing coaching about how to plan and implement specific interventions effectively and efficiently with their children with ASD in their home environments (Liao et al., 2014; Pajareya & Nopmaneejumruslers, 2011, 2012; Solomon et al., 2007, 2014).

In the current study, the researcher who is also an occupational therapist acted as an educator, consultant and assessor where the researcher conducted parent training sessions, planned the intervention with parents, and consulted with parents throughout the intervention period. Although recruiting parents to be the main implementer of their child's therapy program could potentially impact on parental wellbeing, several strategies were incorporated to reduce this. This included providing effective coaching, and individualised intervention strategies that were highly contextual and easily fit in with families' daily routines (Bradshaw, Koegel, & Koegel, 2017; Koegel, Bimbela, & Schreibman, 1996).

The review of scholarly articles related to autism, children with ASD and their parents, particularly in Malaysia showed that more studies exploring the care, the effectiveness of

interventions to improve children's abilities as well as improving parental wellbeing are needed. Home-based intervention has been recommended by many scholars as an alternative and effective method to help improve both children with ASD and their parents. The DIR/Floortime® intervention has been utilised as a parent-mediated home-based intervention in previous studies with children with ASD, and in concordance to Malaysia Ministry of Health's recommendations, this intervention was used and explored in this study. The intervention's impact on child-parent interactions, children with ASD's pretend play and parental QoL, psychological wellbeing and parental sense of competence as well as parents' perspectives on implementing the intervention were examined. Details of the study's methodology in investigating these aims are discussed in the next chapter.

Chapter 3

Methodology

3.1 Introduction

In the previous chapters, the study aims and objectives; review of the pertinent literature including children with Autism Spectrum Disorder (ASD) and parents of children with ASD, play of children, the theoretical and practice models that underpin the current study as well as the proposed methodology are detailed. This chapter outlines the research design, participant selection criteria, intervention program based on the DIR/Floortime® model approach and the ethical considerations taken into account for implementing the intervention program. The chapter will also describe the instruments used to measure the variables examined in the study as well as the procedure of the study. Both quantitative and qualitative data analyses will also be described in the later part of the chapter.

3.2 Design

This study used mixed methodologies involving a multiple single subject research design. A multiple single subject design was adopted to ensure the findings of the study (i.e., effect of intervention) are reliable and robust. Although the study involves a small group of participants, Johnston and Smith (2010) suggest “smaller, more practical research designs are needed to advance knowledge in many areas of OT practice” (p.5). In addition, a single subject design is an effective and scientific approach in examining independent variables’ effect on dependent variable as well as to identify intervention effectiveness (Gage & Lewis, 2014). A mixed methods research combining both qualitative and quantitative methodologies in a single study can strengthen the understanding of the research topic (Creswell & Plano

Clark, 2011; Johnson, Onwuegbuzie, & Turner, 2007; Wisdom, Cavaleri, Onwuegbuzie, & Green, 2012).

This research design is adopted to examine the impacts of a parent-implemented home-based intervention program based on the DIR/Floortime[®] approach (Greenspan & Wieder, 2009) on a child with ASD-parents' interactions, parents of children with ASD's quality of life (QoL) and wellbeing, as well as their parental sense of competence; and the pretend play of children with ASD. It is also intended to explore the parents' views and self-reported experiences when implementing the intervention program with their child/children with ASD.

3.2.1 A-B Design

The single subject research with an *A-B* design was adopted in this study where multiple data points were plotted for each baseline phase (non-intervention) and intervention phase (Deitz, 2006; Zhan & Ottenbacher, 2001). This simple design is chosen due to the irreversibility of children with ASD's behaviour once intervention is instated. The baseline phase (or the *A* phase) consists of pre-intervention stage while the intervention phase (or the *B* phase) comprises of the intervention and post-intervention phase's stage. The changes from the last point of baseline and points in intervention phase were examined to determine the changes in the participants' behaviour and performance. This then will be used to interpret the effectiveness of the DIR/Floortime[®] intervention. In both phases, quantitative measurements involving children with ASD as well as their parents (child's pretend play assessment, parents' report assessments, CoC observation from parent-child free play) were conducted.

Meanwhile, the qualitative component of the study involved key informant interviews with parents of children with ASD. This type of interview was used as it provides a comprehensive picture of both the effectiveness and impacts of the DIR/Floortime[®] intervention approach on parents and children with ASD; and practicality of implementing

the intervention at home. The research design including the measurements is illustrated in Figure 3.1.

3.2.2 *Participants*

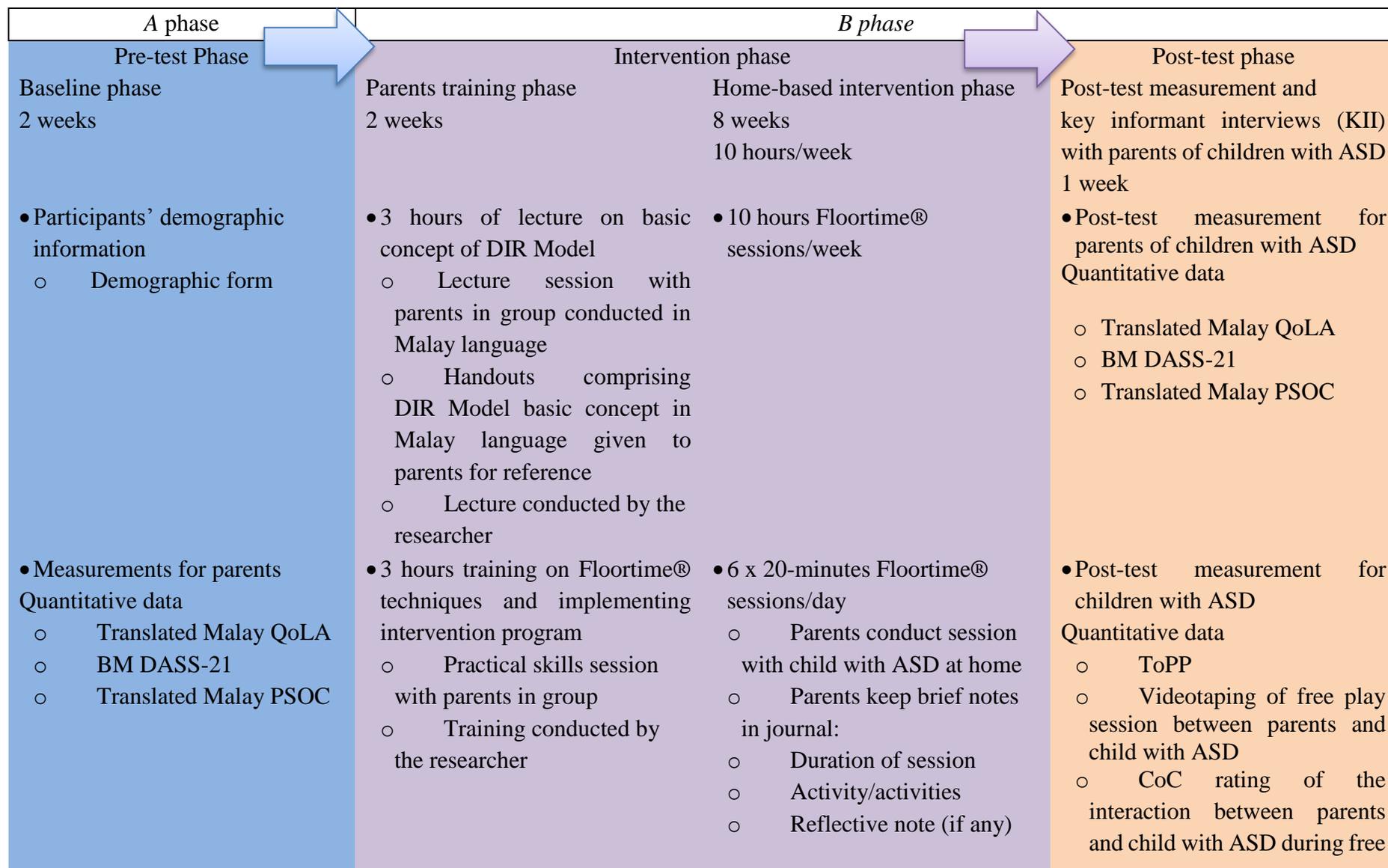
The study involved dyads of children with ASD and their parent/s (some dyads only involved the child and the mother). Potential participants were recruited from an Occupational Therapy (OT) clinic and four community-based rehabilitation (CBR) centres. However, the study's participants were all from those recruited in the OT clinic. A number of parents had expressed their interests in participating in the study during the recruitment phase. Both children with ASD and their parents who participated in this study met the inclusion criteria outlined below.

Inclusion criteria for children with ASD:

- i. aged three to nine years old at the time of study commencement
- ii. diagnosed as having Autism Spectrum Disorder (ASD) by a qualified Medical Officer for a minimum period of six months prior to the time of recruitment
- iii. not diagnosed as having any other medical diagnoses unrelated to the ASD symptoms
- iv. have been attending the CBR centres and therapy sessions at the occupational therapy clinic regularly for more than three months prior to the time of recruitment
- v. are not involved in any other intervention study during the study period
- vi. have the ability to understand simple spoken Malay language

Exclusion criteria of children with ASD are as follow:

- i. younger than three years and older than nine years old at the time of study commencement
- ii. diagnosed as having ASD by a qualified Medical Officer less than six month prior to the time of recruitment



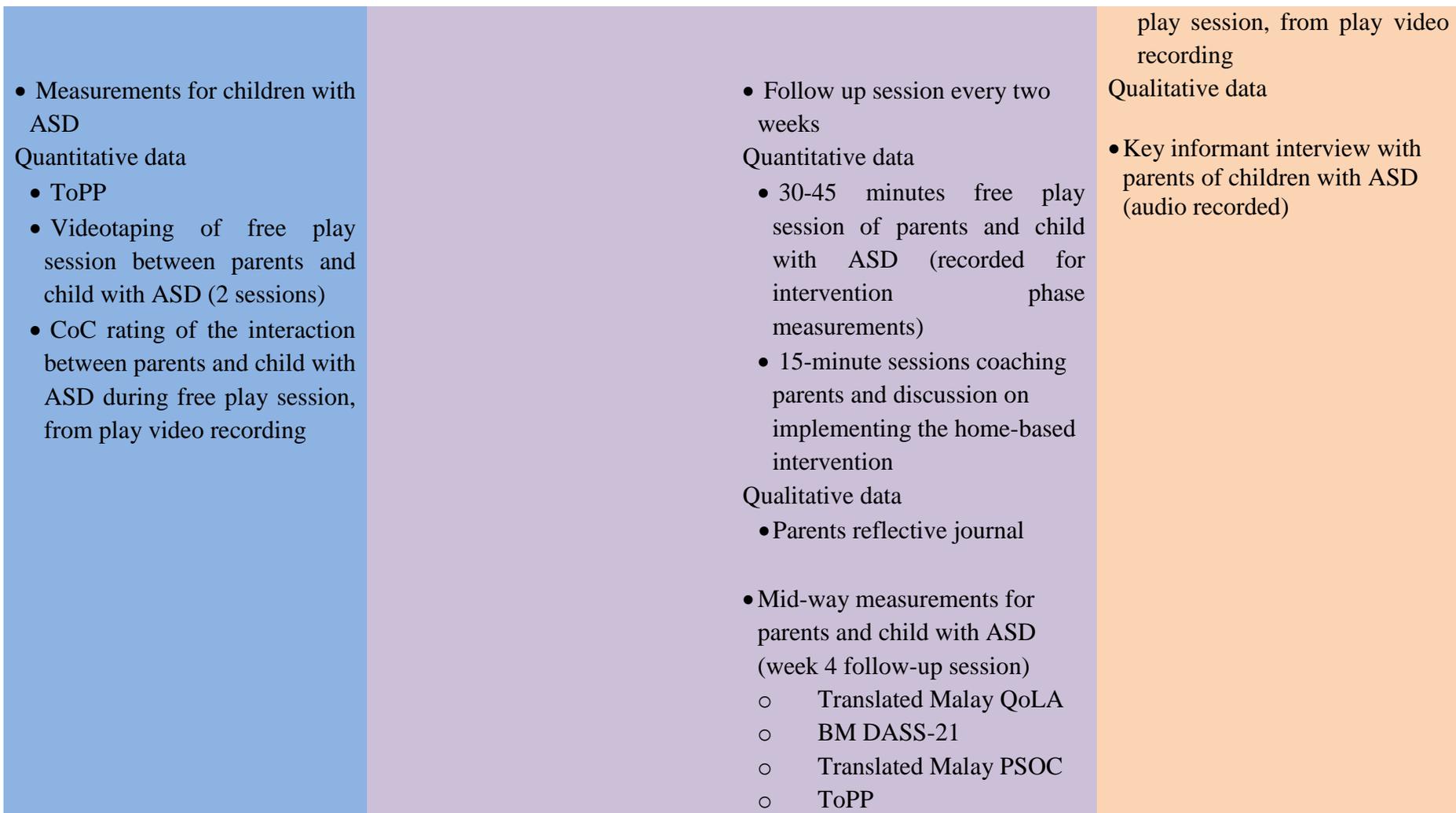


Figure 3.1. Schematic of the research design and data collection. ASD = Autism Spectrum Disorder; BM DASS-21 = Bahasa Malaysia Depression Anxiety Stress Scale-21; CoC = Circle of Communication; DIR Model = Developmental, Individual-difference, Relationship based model; KII = Key informant interview; PSOC = Parental Sense of Competence Scale; QoLA = Quality of life in Autism; ToPP = Test of Pretend Play.

- iii. diagnosed as having ASD by other professional than qualified Medical Officer (e.g., therapist)
- iv. children have not been diagnosed as having ASD
- v. children with ASD diagnosed with other medical diagnoses unrelated with ASD symptoms
- vi. typically developing children
- vii. have not been attending CBR centre and therapy sessions at the occupational therapy clinic regularly for more than one month prior to the recruitment
- viii. involved in any other intervention study during study period
- ix. do not have the ability to understand simple spoken Malay language

The study requires parents/caregivers to conduct the parent-implemented home-based intervention based on the DIR/Floortime[®] intervention approach with their child with ASD, thus parents' participants involved in this study had met the criteria listed below.

Inclusion criteria for parents/caregiver of children with ASD are as follow:

- i. have the ability to read and understand spoken Malay language (completion of at least Standard 6 of primary school)
- ii. have the ability to communicate verbally in Malay language (completion of at least Standard 6 of primary school)
- iii. have primary care responsibility over the child with ASD
- iv. give consent to take part in the study
- v. are not involved in any other intervention study during the study period

Exclusion criteria for parents/caregiver of children with ASD are as follow:

- i. do not have the ability to read and understand spoken Malay language (have not completed at least Standard 6 of primary school)

- ii. do not have the ability to communicate verbally in Malay language (have not completed at least Standard 6 of primary school)
- iii. do not have primary caregiving responsibility over the child with ASD
- iv. do not give consent to take part in the study
- v. are involved in any other intervention study during the study period

3.2.3 *Sample size*

The proposed sample size for this study is eight dyads of children with ASD and their parents. Semantically misleading by the name, single subject design studies typically involve several participants but can range from one subject to 12 subjects (Betker, Szturm, Moussavi, & Nett, 2006; Dionne & Martini, 2011; Idland, Sylliaas, Mengshoel, Pettersen, & Bergland, 2014; Slijper, Svensson, Backlund, Engstrom, & Sunnerhagen, 2014; Sukhodolsky, Groman, Scahill, & McGuire, 2013) or even more. Neither power analysis nor statistical tests were performed since the number of participants is small which does not fulfil the minimum requirement of any statistical tests.

3.2.4 *Recruitment of participant*

The recruitment of participants took place in several recruitment sites including OT clinic, Department of Occupational Therapy, National University of Malaysia, Kuala Lumpur Campus and four CBR centres in Selangor. Recruitment process commenced after the ethical approvals were obtained from Malaysia Economic Plan Unit (EPU), Monash University Human Research Ethics Committee (MUHREC), National University of Malaysia (Occupational Therapy clinic's recruitment site), and Malaysia Department of Social Welfare (CBR centres' recruitment site). The ethical approvals obtained from all ethical committees are presented in Appendices 1 to 4.

The process started with advertising the study at the OT clinic and CBR centres by posting information flyers on the bulletin board of all the recruitment sites. Information

including the title of the study, intended group of participants and brief description of the home-based intervention program to be implemented was provided in the information flyers. The flyers as well as the explanatory statement sheets (refer to Appendices 5 and 6 for details) were also given to the occupational therapists working in the clinic and CBR centres for them to hand out to their clients who they deemed would be suitable or who expressed their interest in participating in the study.

Purposeful convenience sampling method was used in recruiting the participants as they responded to the advertisement and volunteered to take part in the study after they had been informed about the aims, the structure of the study including training sessions, parent-implemented home-based intervention program, follow-up visits, measurements involved and their responsibilities. Once participants agreed to participate in the study, they were asked to give their consent and fill out the consent form (refer to Appendix 7 for details). Detailed procedures involved in the recruitment process were provided in the procedure section.

3.3 *Instrumentation*

This study aims to explore the impacts of the parent-implemented home-based intervention program based on the DIR/Floortime[®] approach on children with ASD and their parents' interactions, and its impacts on children with ASD's pretend play. Another objective of the study is also to investigate the intervention's influences on parents of children with ASD's QoL, psychological wellbeing, as well as parenting competence.

In order to objectively determine whether any changes in participants' behaviours were affected by the implementation of the home-based DIR/Floortime[®] intervention approach, valid and reliable instruments were used. Several measurement tools were used including the Test of Pretend Play (ToPP; Lewis & Boucher, 1997), Quality of Life in Autism (QoLA; Eapen et al., 2014), Bahasa Malaysia Depression Anxiety Stress Scale-21 (BM DASS-21; Musa et al., 2007), and Parental Sense of Competence (PSOC; Johnston & Mash, 1989). The

targeted variables related to each component of the study were measured at three points of time –prior to, during and post implementation of the parent-implemented home-based intervention program. The following subsections provide details of the instruments used during the data collection process with children with ASD and parents of children with ASD to gather the quantitative data part of this study.

3.3.1 *Instruments used with children with ASD*

The study hypothesised that the parent-mediated home-based intervention program, based on the DIR/Floortime® approach, promotes pretend play in children with ASD. Pretend play of children with ASD were assessed using the adapted version of the Test of Pretend Play (ToPP). The ToPP (Lewis & Boucher, 1997) is a standardised assessment tool that measures a child's ability to play symbolically both in structured and unstructured play conditions. This tool was developed for use with children one to six years of age. However, the suggested age range can be expanded to eight years old for children with developmental difficulties. The ToPP comprises of four sections that assess different types of symbolic play ability. The sections are divided according to how the child is playing and the objects involved. Section I is '*self with everyday objects*' assessing child's pretend play with the support of everyday objects. Section II is '*toy and representational materials*' that assesses the substitution types of pretend play using both toys and non-representational materials. Meanwhile, Section III is '*representational toy alone*' evaluates four types of pretend play abilities – referencing to an absent object, attributing imagined property, substitution and sequencing play. The last section, Section IV is '*self alone*' assessing four types of pretend play without any object or toys.

The ToPP can be administered in either a structured or non-structured play situation depending on the child's preference or which situation facilitates the child's play better. Administration of the ToPP in a structured play situation involves using several

representational toys and non-representational materials in certain orders as outlined in the ToPP's manual. For each section, the child is presented with the toys or materials appropriate for the purpose of each section and subsection.

When tested in a structured play situation, children are given the opportunity to perform pretend play spontaneously (referred to as elicited play level) after presented with the toys and materials. Whenever the children are facing difficulties in playing spontaneously, the assessor can encourage them by using gestures or using vocalisations and single words or short phrases. The assessor can also model a play action for the child to copy in the nonverbal version of the test or instruct the child to perform a play action. If the child manages to copy the modelled play action or play activity as instructed, the child is still given another opportunity to perform the play activity spontaneously once again before proceeding to the next test item.

The ToPP has moderate to good level of concurrent validity with the Preschool Language Scale-3 (PLS-3; Zimmerman, Steiner & Pond, 1992), and Leiter International Performance Test (Leiter, 1980) and Symbolic Play Test (Lowe & Costello, 1988). The correlation between ToPP and PLS-3 is 0.88, and Leiter test, $r = 0.63$ and ToPP with Symbolic Play Test is 0.62. The internal validity of the ToPP is in the range of moderate to good with scores in all of the sections are highly correlated with one another and with the total raw score. The test reliability is at a good level ($r = 0.868$) where the total raw scores in two test sessions are highly correlated (Lewis & Boucher, 1997).

The scoring for structured ToPP is similar for both nonverbal and verbal versions. Scoring of all items follows these four principles: (a) the child is credited for appropriate spontaneous pretend play (elicited level) if it occurs during the course of test administration whether or not it occurs during the administration of the appropriate test item, (b) spontaneous pretend play scores double than the score for response to an instruction or copy

of a modelled play behaviour (if score for modelled play is one, the spontaneous play is doubled, thus the score is two), (c) a response to an instruction or copying of a modelled play behaviour receives the same score, and (d) the child scores either by producing original (elicited) pretend play or for responding to an instruction or to a modelled play, or he/she fails to score at all (score is only credited for either original or instruction/modelled play).

Each item is scored 2 for spontaneous pretend play (e.g., referencing to an absent object, attributing imagined property and substitution) and for each object used in substitution, a score of 2 is given to a maximum of 8 points (Section II). Meanwhile for scripted play, all three types of pretend play have to be demonstrated earning the child a score of 6 when successfully demonstrated them (Items III.4 and IV.4). The child's total raw score of the test is calculated by summing the scores for Sections I (the best score obtained), II (the highest score obtained), III (the sum score of all items) and IV (the sum score of all items). These would then be interpreted accordingly by converting the total raw score to an age equivalent score. The age equivalent scores were derived from the total scores of children who completed the ToPP during its standardisation. Age groups and corresponding mean total raw scores, as well as the age norms for the total raw scores are included in the ToPP manual and can be used to interpret the scores obtained.

The unstructured or free play test administration condition assesses the same categories of play as the structured play. The child's play is observed in two 20-minute periods, with a gap of at least one day between each period but not longer than one month. The play observations should be completed in situations where the child regularly engages in play and is at ease in these contexts (e.g., playroom, classroom, child's home, and park). Possibly, the presence of any adults or more skilled children in the play situation should be avoided, however, younger or less advanced children may be present playing alongside the child who is being observed.

Highly familiar play materials in the play situation should also be excluded as much as possible. This prevents the child from copying or following instructions and suggestions from others instead of producing or generating the play behaviours originally (i.e., spontaneously). It also minimises the reproduction or copying of learned play routines. In order to minimise the production of the functional use of representational objects, the number of representational toys in the immediate play environment should be limited to two or three items. The child's play should be observed in more than one type of play situation, as it provides the child with more opportunities to engage in different types of symbolic play (e.g., table top play, floor play, outdoor play, water play).

The child is credited for appropriate spontaneous symbolic play (elicit level) for each test item that is observed only during one or both of the observation periods. Any play that occurs outside the observation periods, including verbal report by others, is not credited. Scores given for each item is the same as the score for elicited play given in the structured test.

The total raw score on the unstructured test section of the ToPP may be compared with the child's raw score of elicited play on the ToPP's structured test section. The ToPP unstructured test total raw score can also be compared to the normative scores for elicited play in the structured test section provided in the test manual. The comparison of the ToPP unstructured test total raw score with the normative scores can only be done in an informal way and interpreted with caution since the standardisation procedures of the ToPP only involved children assessed in a structured play situation.

3.3.2 Instruments for parents of children with ASD

In chapter two, the impacts of taking care of a child with ASD on parents was discussed and several assessments examining the impact on parents' QoL, psychological wellbeing and sense of competence were reviewed. This study aims to investigate the impact of the

implementation of the home-based DIR/Floortime® on parents' QoL, wellbeing and sense of competence in parenting. In the current study, the QoL of parents was assessed using the QoLA (Eapen et al., 2014), parents' psychological wellbeing was assessed using BM DASS-21 (Musa et al., 2007) while parenting competence was measured using PSOC (Gibaud-Wallston & Wandersman as cited in Johnston & Mash, 1989).

a. Quality of Life in Autism (QoLA)

The QoLA was developed to measure the QoL of parents of children with ASD aged 2-18 years old. It consists of two subscales, the Quality of Life subscale (Part A) and Impact of ASD Symptoms subscale (Part B). Part A of the QoLA comprises of 28 items designed to measure parents' overall perception of their QoL which reflects their self-reported emotional wellbeing, social inclusion and interpersonal relationships (Eapen et al., 2014). Items are measured on a five-point Likert scale ranging from one ('*not very much*') to five ('*very much*'). Four items are reverse scored in Part A (i.e., Items 2, 4, 17 and 22).

Part B consists of 20 difficulties that children with ASD can experience and parents rate how problematic these difficulties have been for them. Parents rate the items in this part on a five-point Likert scale from five ('*not much of a problem for me*') to one ('*very much of a problem for me*'). All 48 items of the QoLA are presented in Table 3.1. Parents can also indicate their overall rating on their QoL at the end of the assessment on a visual analogue scale ranging from 0 ('*not at all satisfied*') to 10 ('*extremely satisfied*'). When completing this self-report assessment, parents are asked to reflect on how they have been feeling over the past four weeks prior to completing the assessment.

Scores of Part A can range from 28 to 140 with higher scores indicating greater perceived QoL by the parents, whereas scores of Part B can range from 20 to 100 with higher scores representing fewer problems. Since the two subscales are not measuring the same construct, they are scored separately (Eapen et al., 2014).

The internal consistency coefficients for both QoLA Part A and B subscales are strong with $\alpha = 0.94$ and $\alpha = 0.92$ respectively. The QoLA also has evidence of construct validity where the total subscale scores of Part A and B of parents of children with ASD were significantly lower compared to parents in a control group (Eapen et al., 2014).

The QoLA Part A subscale has strong concurrent validity where its scores are positively correlated with scores on subscales of the World Health Organization Quality of Life Questionnaire (WHOQoL-BREF) (Eapen et al., 2014). The QoLA Part A subscale was also negatively correlated with maternal depression and stress subscales of the DASS-21 and were positively associated with maternal satisfaction of PSOC. Meanwhile, QoLA Part B subscale scores were negatively correlated with the Social Communication Questionnaire (SCQ) and the maladaptive behaviour index of the Vineland Adaptive Behaviour Scales Second Edition (VABS-II) (Eapen et al., 2014).

Table 3.1
Quality of Life in Autism Questionnaire (QoLA) items

Item	Part A (QoL subscale)	Part B (impact of ASD symptoms subscale)
1	I am satisfied with my life	Socialising with people
2	I feel stressed	Having friends
3	I feel happy and content	Understanding others' feelings
4	I feel depressed or anxious	Holding a conversation
5	I feel good about myself as a person	Communicating needs
6	I am satisfied with my close relationships	Taking a literal meaning of comments
7	People are there for me when I need them	Saying things that are socially embarrassing
8	I am satisfied with my social life	Needing to stick to a routine
9	I am satisfied with my family life	Being overly interested in a particular topic
10	I am satisfied with my financial situation	Getting anxious in a specific situation or during changes

11	I am satisfied with where I live	Sensitivity to certain sensations
12	I have enough money to meet my needs	Understanding the rules of social interaction
13	I am satisfied with my achievements	Managing emotional responses
14	I am satisfied with my general health	Needing to do things a certain way
15	I have a healthy lifestyle	Destructive behaviours including anger and aggression
16	I am satisfied with my leisure activities	Showing inappropriate emotional reactions
17	Health problems stop me doing things that I want to	Unusual repetitive behaviours or body movements
18	I feel in control of my life	Engaging in reckless or tactless behaviours
19	I set and achieve goals in my life	Doing daily living tasks independently
20	I can make a plan of action and follow it	Responding when approached socially
21	I can make my own decisions	
22	I feel guilty	
23	I am part of a community	
24	I can get the support that I need from the community	
25	I am able to get to where I need to	
26	I feel safe in my everyday life	
27	I feel respected in my everyday life	
28	I am satisfied with the availability of health services	

Note. ASD = Autism Spectrum Disorder; QoL = quality of life. Reproduced from “Conceptualisation and development of a quality of life measure for parents of children with autism spectrum disorder,” by V. Eapen, R. Črnčec, A. Walter, and K. P. Tay, 2014, *Autism Research and Treatment*, 2014, p. 4. Copyright 2014 by “Valsamma Eapen et al.”.

The QoLA Part B subscale scores were not significantly correlated with scores on the QoLA Part A, or any of the WHOQoL-BREF, DASS-21 or PSOC subscale scores. This provides evidence of the convergent and divergent validity of the QoLA Part B subscale. For

the purpose of this study, given the QoLA is a self-report scale, it was translated from English into the Malay language.

The QoLA was translated into Malay by qualified translators who have extensive experiences in translating documents from English into Malay and have knowledge in health-related topics. Once translated, three experienced Malay-speaking health care professionals examined the translated Malay version of the QoLA. This was to ensure that its terminology and phrasing were understandable, consistent with the original QoLA, and culturally appropriate to be used in the Malaysian context. The discrepancies or issues identified by the three Malay-speaking health care professionals were discussed with the translator and all the required, appropriate revisions were made.

The Malay-translated version of the QoLA was then back-translated into English language independently by three bilingual Malay-English speakers. All three back-translators were not qualified translators but had at least a health-related master's degree and had studied in an English-speaking country. Any phrasing or wording discrepancies between the three back-translated versions of the QoLA were discussed and revisions were made. This ensures that the Malay-version of the QoLA has adequate fidelity to the original English-language version of the QoLA as well as providing evidence of its face and content validity. The details of the translation and adaptation process is described in Section 3.4.

b. Depression Anxiety and Stress Scale (DASS-21)

Psychological wellbeing is typically measured using the DASS-21 (Lovibond & Lovibond, 1995), a shorter version of the original 42 item version. It is a self-report scale that assesses three dimensions of negative emotional states - depression, anxiety and stress. The scale generates separate scores for each subscale indicating the levels of symptomatology perceived by respondent in the past one week (Eapen et al., 2014; Lovibond & Lovibond, 1995). The DASS-21 has shown to have excellent psychometric properties ($\alpha = 0.93$) (Henry

& Crawford, 2005; Lovibond & Lovibond, 1995; Tully, Zajac, & Venning, 2009), and is suitable to be used with clinical and nonclinical groups (Musa et al., 2007; Oei et al., 2013; Ronk et al., 2012).

Since the study takes place in Malaysia where the culture and first language of participants were different than the original population where the assessment was developed, it is useful and recommended to use a translated version that is validated for use in the language of the target research population (Oei et al., 2013). Therefore, the study used the translated and validated BM-DASS-21 (Musa et al., 2007).

The BM DASS-21 is in the first language of participants (Bahasa Malaysia or Malay language) and has been validated in Malaysia, where this study took place, making it more useful to be used in this study. It helped participants to better understand the items, thus provided a more accurate and truthful response. In addition, the BM-DASS-21 is easy and simple to administer to the general population without any special training required and is applicable to the general population in Malaysia (Musa et al., 2007).

The scale exhibits good internal consistency ($\alpha = 0.904$) while its depression, anxiety and stress subscales exhibit fair to good internal consistency levels with Cronbach's alpha of 0.84, 0.74 and 0.79 respectively (Musa et al., 2007). It also has good factor loadings for most of the items ranging from 0.39 to 0.73 and has shown inter-correlations between subscales ranging from 0.54 to 0.68 (Musa et al., 2007).

Each of the BM-DASS-21's subscales consist of seven items with four response options: zero (*'did not apply to me at all'* or *'tidak langsung'*), one (*'applied to me to some degree or some of the time'* or *'sedikit atau jarang-jarang'*), two (*'applied to me to a considerable degree or good part of the time'* or *'banyak atau kerap kali'*) and three (*'applied to me very much or most of the time'*, or *'sangat banyak atau sangat kerap'*). The following Table 3.2 lists all the BM-DASS-21's items according to each subscale. A maximum score is

42, which is generated by multiply each item by two to make the scores comparable to the DASS-42. Higher scores are indicative of severe emotional distress. When completing this self-report questionnaire, parents rated their response to the statement that most accurately represents their situation during the past week.

c. Parenting Sense of Competence Scale (PSOC)

Parenting Sense of Competence Scale (PSOC; Gibaud-Wallston & Wandersman as cited in Johnston & Mash, 1989) is a self-report assessment scale, which measures parents' self-efficacy in their parenting role and parents' satisfaction with parenting through two subscales identified as Efficacy and Satisfaction. The PSOC is comprised of 17 items originally but the final item is often omitted, as it does not load on any specific factor as reported by Johnston and Mash (1989) (Gilmore & Cuskelly, 2009; Rogers & Matthews, 2004). The Efficacy and Satisfaction comprise of seven and nine items respectively, with the problematic Item 17 being omitted (Johnston & Mash, 1989). All 17 items are presented in Table 3.3 with factor loading provided by Johnston and Mash's study (1989).

Table 3.2
BM DASS-21 Items

Depression subscale	Anxiety subscale	Stress subscale
<i>Saya tidak dapat mengalami perasaan positif sama sekali</i>	<i>Saya sadar mulut saya terasa kering</i>	<i>Saya dapati diri saya sukar ditenteramkan</i>
<i>Saya sukar untuk mendapatkan semangat bagi melakukan sesuatu perkara</i>	<i>Saya mengalami kesukaran bernafas (contohnya pernafasan yang laju, tercungap-cungap walaupun tidak melakukan senaman fizikal)</i>	<i>Saya cenderung untuk bertindak keterlaluan dalam sesuatu keadaan</i>
<i>Saya rasa saya tidak mempunyai apa-apa untuk diharapkan</i>	<i>Saya rasa menggeletar (contohnya pada tangan)</i>	<i>Saya rasa saya menggunakan banyak tenaga dalam keadaan cemas</i>

<i>Saya rasa sedih dan murung</i>	<i>Saya bimbang keadaan di mana saya mungkin menjadi panik dan melakukan perkara yang membodohkan diri sendiri</i>	<i>Saya dapati diri saya semakin gelisah</i>
<i>Saya tidak bersemangat dengan apa jua yang saya lakukan</i>	<i>Saya rasa hampir-hampir menjadi panik/cemas</i>	<i>Saya rasa sukar untuk relaks</i>
<i>Saya tidak begitu berharga sebagai seorang individu</i>	<i>Saya sedar tindakbalas jantung saya walaupun tidak melakukan aktiviti fizikal (contohnya kadar denyutan jantung bertambah, atau denyutan jantung berkurangan)</i>	<i>Saya tidak dapat menahan sabar dengan perkara yang menghalang saya meneruskan apa yang saya lakukan</i>
<i>Saya rasa hidup ini tidak bermakna</i>	<i>Saya berasa takut tanpa sebab yang munasabah</i>	<i>Saya rasa yang saya mudah tersentuh</i>

Note. BM DASS-21 = Bahasa Malaysia Depression Anxiety Stress Scale-21. Adapted from Musa et al. (2007).

Table 3.3
Parenting Sense of Competence Scale (PSOC) items

Item	Subscale
1 The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired	Efficacy
2 Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age	Satisfaction
3 I go to bed the same way I wake up in the morning, feeling I have not accomplished a whole lot	Satisfaction
4 I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated	Satisfaction
5 My mother was better prepared to be a good mother than I am	Satisfaction
6 I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent	Efficacy
7 Being a parent is manageable, and any problems are easily solved	Efficacy
8 A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one	Satisfaction

9	Sometimes I feel like I'm not getting anything done	Satisfaction
10	I meet my own personal expectations for expertise in caring for my child	Efficacy
11	If anyone can find the answer to what is troubling my child, I am the one	Efficacy
12	My talents and interests are in other areas, not being a parent	Satisfaction
13	Considering how long I've been a mother, I feel thoroughly familiar with this role	Efficacy
14	If being a mother of a child were only more interesting, I would be motivated to do a better job as a parent	Satisfaction
15	I honestly believe I have all the skills necessary to be a good mother to my child	Efficacy
16	Being a parent makes me tense and anxious	Satisfaction
17	Being a good mother/father is a reward in itself	-

Note. Adapted from Johnston and Mash (1989).

Parents rate their level of agreement with each of the statements using a six-point Likert scale: (1) strongly agree, (2) somewhat agree, (3) agree, (4) disagree, (5) somewhat disagree and (6) strongly disagree. The total score is calculated by summing all the item scores together. Eight of the PSOC's items are reverse scored when the total score is calculated, so that higher scores represent higher degrees of satisfaction and efficacy thus reflecting positive parental experience (Gilmore & Cuskelly, 2009; Johnston & Mash, 1989; Rogers & Matthews, 2004).

The PSOC has been shown to have acceptable levels of internal consistency ranging from 0.57 to 0.88 (Gilmore & Cuskelly, 2009; Johnston & Mash, 1989; Lovejoy et al., 1997; Ohan et al., 2000; Rogers & Matthews, 2004). The construct validity was reported as a good fit and accounted for 36% variance in both parents (Johnston & Mash, 1989), while Gilmore and Cuskelly (2009) reported 47.3% variance for mothers and 50.1% for fathers. In this

study, the 16-item version with factors loadings reported by Johnston and Mash (1989) were used.

For the purpose of this study, the scale was translated from English language into Malay language, undergoing the same process described previously for translating the QoLA. The detailed process of translation and adaptation of the scale is presented in the following Section 3.4.

3.3.3 Effectiveness of DIR/Floortime[®] intervention approach using frequency of Circles of Communication (CoC)

In this study, the parent-implemented home-based intervention was designed based on the DIR/Floortime[®] approach. The DIR model proposes six developmental milestones and one of the fundamental concepts in DIR is ‘circles of communication’ (CoC). The CoC refers to the reciprocal communication between two participants (e.g., parents and child with ASD) both verbally and non-verbally (Dionne & Martini, 2011; Greenspan & Wieder, 2009). Since two-way communication is one of the fundamental concepts, hence, the effectiveness of the intervention program is evaluated by measuring the changes in child-parent interactions (i.e., the number of CoCs). It was rated by two raters from the video recording of free play involving the parents-child with ASD.

3.4 Translation and adaptation of QoLA and PSOC into Malay language

As previously stated, for the purpose of this study both the QoLA and PSOC assessments were translated from English into Malay language. The translation process followed a modified forward-backward, cross-cultural translation and adaptation, modelled from the stages described by Beaton et al. (2000), Wang et al. (2006), and Sousa and Rojjanasrirat (2011). As illustrated in Figure 3.2, these six steps were involved during the translation and cross-cultural adaptation of both QoLA and PSOC:

1. Forward-translation from English into Malay language

2. Pilot testing and review process with native Malay speakers similar to the intended participants
3. Translation and cultural equivalences testing via expert committee discussion
4. Blind back-translation from Malay into English
5. Translation equivalence testing via review and evaluation of the back-translated English language version by a native English and a bilingual Malay and English speakers
6. Pre-testing of the final translated Malay version

3.4.1 Step 1: Forward-translation from English into Malay language

The process began once the authors of the QoLA and PSOC granted the permission to use and translate the scales into Malay language (refer to Appendix 9). Once permission was granted from the authors, the original English versions of the QoLA and the PSOC were sent to two qualified translators to be translated into the Malay language. Both qualified translators possess a certificate of translation from the Malaysian National Institute of Translation (*Institut Terjemahan & Buku Malaysia, ITBM*).

The first translator had completed a higher education degree in special education thus is knowledgeable and familiar with the health care terminology and content areas of the QoLA and PSOC as recommended in translation literature (Sousa & Rojjanasrirat, 2011; Streiner & Norman, 1995) while the second translator is knowledgeable about the cultural and linguistic nuances of the target language (i.e., Malay language) (Sousa & Rojjanasrirat, 2011; Streiner & Norman, 1995).

At the end of Step 1, two Malay translated versions were produced for both QoLA and PSOC, from each translator. Translator 1 produced QoLA-M1 and PSOC-M1, while translator 2 produced QoLA-M2, PSOC-M2. This strategy reveals a number of inconsistencies in the wording, phrasing and meaning that helped in determining the

appropriate terms that fit the Malay language, Malaysian culture and the content of both assessments. The inconsistencies were noted by the researcher while leaving the translated version of QoLA and PSOC intact.

3.4.2 Step 2: Pilot testing and review process with native Malay speakers

This step involved a group of Malaysian parents having children with ASD and/or typically developing children reviewing both versions of the forward-translated QoLA and PSOC. Parents were asked to mark the items, words, or phrases that were not commonly used or deemed to have ambiguous meaning to them, while leaving both translated versions intact. Parents' notes and comments were gathered and brought into the next step for the expert committee to refer to.

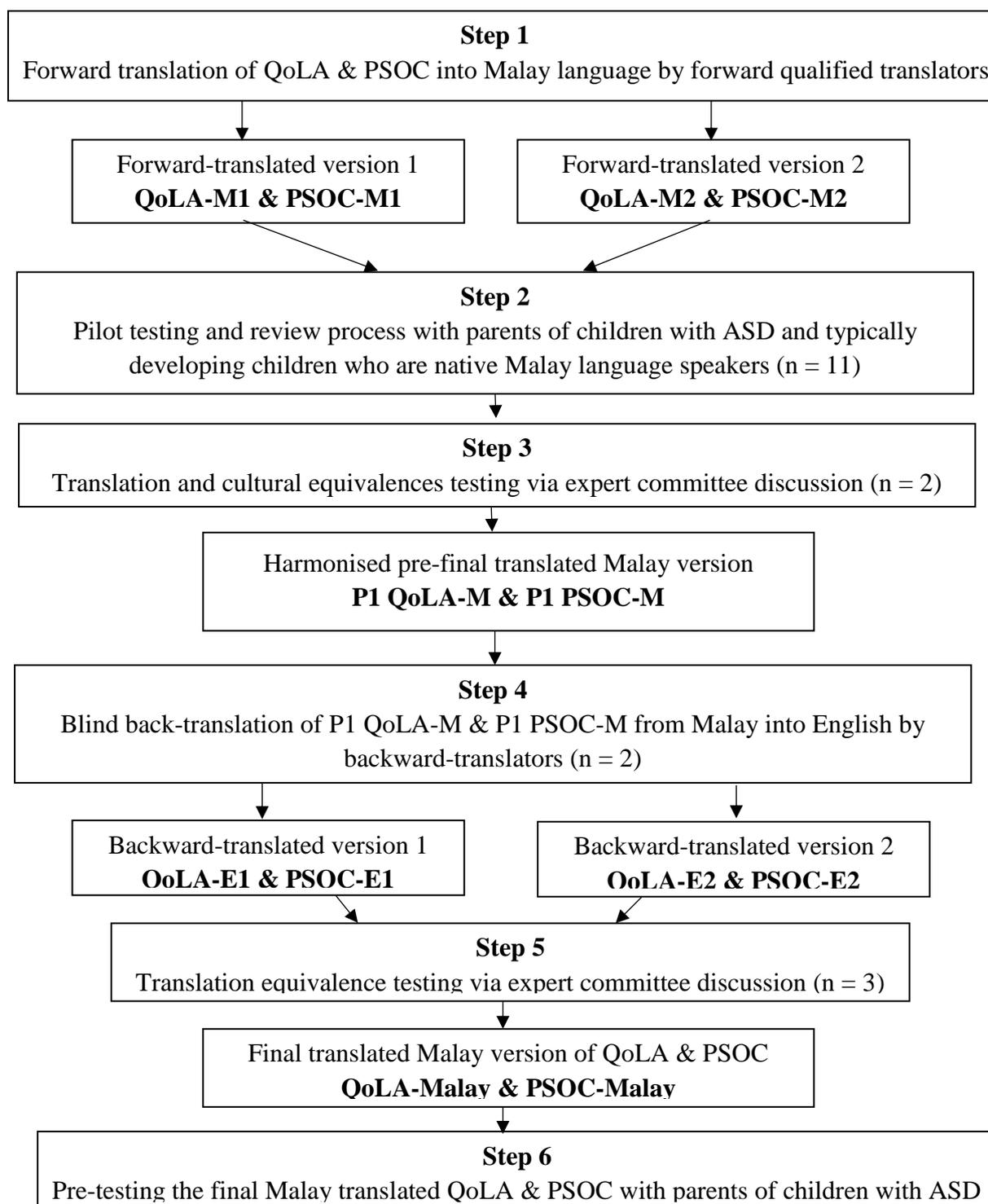


Figure 3.2. Translation and adaptation process of QoLA and PSOC. ASD = Autism Spectrum Disorder; P1 PSOC-M = Pre-final Parental Sense of Competence-Malay translated version; P1 QoLA-M = Pre-final Quality of Life in Autism-Malay translated version; PSOC = Parental Sense of Competence Scale; PSOC-E1 = Parental Sense of Competence-English back-translated version 1; PSOC-E2 = Parental Sense of Competence-English back-translated version 2; PSOC-M1 = Parental Sense of Competence – Malay forward-translated version 1; PSOC-M2 = Parental Sense of Competence – Malay forward-translated version 2; QoLA = Quality of Life in Autism; QoLA-E1 = Quality of Life in Autism-English back-translated version 1; QoLA-E2 = Quality of Life in Autism-English back-translated version 2; QoLA-M1 = Quality of Life in Autism – Malay forward-translated version 1; QoLA-M2 = Quality of Life in Autism – Malay forward-translated version 2.

3.4.3 Step 3: Translation and cultural equivalences testing via expert committee discussion

An expert committee reviewer team was formed comprising of two bilingual experts (who speak and read both Malay and English fluently) who had medical and/or clinical knowledge background. The researcher was also present during the discussion. The expert group committee reviewed, re-examined, discussed and revised the Malay translated version of QoLA and PSOC produced by the qualified translators. The expert committee review was completed to validate the cultural relevance of the translated versions of the assessments and to ensure that they were comprehensible by the intended population (Sperber, DeVellis, & Boehlecke, 1994; Wang et al., 2006).

Prior to the expert committee review meeting, the experts were sent both the original English versions of the scales (i.e., QoLA and PSOC), and the Malay forward-translated versions of the scales (i.e., QoLA-M1, PSOC-M1 and QoLA-M2, PSOC-M2) via email. Both experts independently reviewed the translated versions of the scales in comparison to the original language versions of the scales. They noted any inconsistencies in words, terms, phrases, sentences and meanings and provided related comments. All comments from each committees' members were gathered and compiled via email. The compilation of committee members' comments was then exchanged between the members so they could prepare and respond to the comments prior to the meeting.

The expert committee review meeting was held in Malaysia so all members could attend the group discussion at a time convenient for all experts. They had examined and cross-compared each of the translators' versions as well as with the original scales. During this meeting, the experts also evaluated and discussed the translated versions with regards to the parents' comments gathered in Step 2. The scales' applicability and cultural relevance for use in Malaysian contexts, the congruency of terminology used, and the utility of the scales in evaluating parents of children with ASD's QoL and parental sense of competence were

assessed. The discussion led to the committee selecting the most linguistically and culturally appropriate words, terms or phrases from each of the translated version. Then, a harmonised, pre-final Malay translated version of QoLA and PSOC are produced, titled the P1 QoLA-M and P1 PSOC-M.

3.4.4 Step 4: Blind back-translation from Malay into English

In this step, the harmonised, pre-final Malay translated version of QoLA and PSOC were back-translated into English. The translation was done by two bilingual back-translators who were blinded to the original and translated versions of the assessments. Both translators' mother language is Malay language. Similar to the criteria for the forward translators, the first back-translator is familiar with the health care terminology and content areas of the scales' constructs while the second back-translator is knowledgeable about the cultural and linguistic nuances of the source language.

The pre-final versions of the two scales were independently back-translated from the Malay language into English. At the end of this step, an English back-translated QoLA and PSOC were generated by back translator 1 (QoLA-E1, PSOC-E1) and back translator 2 (QoLA-E2, PSOC-E2).

3.4.5 Step 5: Translation equivalence testing via review and evaluation of the back-translated version

The back-translated versions of the QoLA and the PSOC produced by back translator 1 and 2 were evaluated by a monolingual (native English speaker) and a bilingual (both English and Malay) speaker. They compared the back translated versions of the scales to the original English versions and examined whether the meaning of the translated versions had changed. Words, terms and phrases in the English back translated versions that were deemed to have changed the meaning of the original English versions were then reviewed resulting in changing the Malay translated version of the scales' words, terms or phrases.

Words that were found to be inconsistent between the back-translated and the original English versions were examined. The words were then cross-checked with the forward-translated versions of the scale to identify which version the words are originated from. After that, the translator was then contacted to discuss and review the usage of words and their relevance. The qualified translator reviewed and provided their justification of whether to change or retain the same word as the first time it was translated. Some discrepancies were found which resulted from grammatical differences between the two languages where some principles in English do not apply to Malay language.

This affected the back translators to translate a Malay translated word to a different word in English. For example, an 's' is added at the end of a regular noun for plural in English, whereas in Malay language, it is grammatical correct for a plural being written the same way as a singular noun or written the noun twice (e.g., '*pencapaian*' is the translation of achievement as well as achievements; while '*pencapaian-pencapaian*' is the translation of achievements). Another way to denote the noun in a plural state is to add a classifier which is not suitable for all the nouns as it might change the meaning of the word in English.

In addition to the issue of singular and plural nouns, the structure of a sentence in English is reversed in Malay language. This is one of the reasons that caused some of the back translated sentences to be slightly different from the sentences in the original English version. However, the meanings of the sentences were the same as the original English version. Hence, the sentences were retained for the translated Malay version.

Another source of discrepancy detected is the use of polysemic words or terms in Malay which have several definitions with one of them fits the meaning of the word used in original English version. For example, '*menyampaikan*' can be translated literally to '*delivering*' as well as translated to '*communicating*' by the definition. Some words in the Malay language that are used in a grammatically correct sentence, when translated into

English could be both a noun and a verb. For example, the word ‘*understand*’ and ‘*understanding*’ can both be translated into the same word ‘*memahami*’ in the Malay language.

All the items in the original English version, the harmonised Malay translated version, the back translated version (for both back translator 1 and 2) and comments from both monolingual and bilingual speakers are presented in a table and compared with each other to produce the final version. Since the study involved both parents, the word ‘*mother*’ used in the original PSOC was changed to ‘*parents*’ or ‘*ibubapa*’ in Malay version of PSOC to make it gender-neutral. This was done so the fathers involved in the study would be able to provide their response to these items.

Once the discrepancies found in the English back-translated version in comparison with the original English version were resolved, a final Malay version of the QoLA (BM-QoLA) and PSOC (BM-PSOC) was generated. The BM-QoLA and BM-PSOC was used with parents of children with ASD in the current study. Items in the original English version and the final Malay versions of QoLA and PSOC are presented in Table 3.8 and Table 3.9, consecutively. The complete version of BM-QoLA and BM-PSOC are provided in Appendices 9 and 10.

The translation procedures are illustrated in Figure 3.2. Steps involved in the translation process of the two scales ensure that the scales’ content validity; as well as examining the meanings of the translated versions (i.e. the Malay language versions) are similar to the original language versions (i.e. English language versions). It also serves to document the steps in the translated versions of the scales’ face validity, or in other words, determining the translated version is measuring what the original versions of the scales intended to measure.

Table 3.4
Original English QoLA and Malay version of QoLA

Item	Original English version ^a	Finalised Malay version
	<u>Part A</u>	<u>Bahagian A</u>
1.	I am satisfied with my life	<i>Saya berpuas hati dengan kehidupan saya</i>
2.	I feel stressed	<i>Saya berasa tertekan</i>
3.	I feel happy and content	<i>Saya berasa gembira dan puas hati</i>
4.	I feel depressed or anxious	<i>Saya berasa murung atau bimbang</i>
5.	I feel good about myself as a person	<i>Saya berasa senang dengan diri saya</i>
6.	I am satisfied with my close relationships	<i>Saya berpuas hati dengan hubungan rapat saya</i>
7.	People are there for me when I need them	<i>Orang lain berada di sisi saya apabila saya memerlukan mereka</i>
8.	I am satisfied with my social life	<i>Saya berpuas hati dengan kehidupan sosial saya</i>
9.	I am satisfied with my family life	<i>Saya berpuas hati dengan kehidupan berkeluarga</i>
10.	I am satisfied with my financial situation	<i>Saya berpuas hati dengan situasi kewangan saya</i>
11.	I am satisfied with where I live	<i>Saya berpuas hati dengan tempat tinggal saya</i>
12.	I have enough money to meet my needs	<i>Saya mempunyai wang yang cukup untuk memenuhi keperluan saya</i>
13.	I am satisfied with my achievements	<i>Saya berpuas hati dengan pencapaian saya</i>
14.	I am satisfied with my general health	<i>Saya berpuas hati dengan kesihatan umum saya</i>
15.	I have a healthy lifestyle	<i>Saya mempunyai gaya hidup yang sihat</i>
16.	I am satisfied with my leisure activities	<i>Saya berpuas hati dengan aktiviti masa lapang saya</i>

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| 17. | Health problems stop me doing things that I want to | <i>Masalah kesihatan menghalang saya daripada melakukan perkara yang ingin saya lakukan</i> |
| 18. | I feel in control of my life | <i>Saya rasa dapat menguasai hidup saya</i> |
| 19. | I set and achieve goals in my life | <i>Saya menetapkan matlamat dalam hidup saya dan mencapainya</i> |
| 20. | I can make a plan of action and follow it | <i>Saya boleh merancang tindakan saya dan mengikutinya</i> |
| 21. | I make my own decisions | <i>Saya membuat keputusan saya sendiri</i> |
| 22. | I feel guilty | <i>Saya berasa bersalah</i> |
| 23. | I am part of a community | <i>Saya sebahagian daripada masyarakat</i> |
| 24. | I can get the support that I need from the community | <i>Saya boleh mendapatkan sokongan yang saya perlukan daripada komuniti</i> |
| 25. | I am able to get to where I need to | <i>Saya berupaya pergi ke tempat yang saya perlu pergi</i> |
| 26. | I feel safe in my everyday life | <i>Saya berasa selamat dalam kehidupan seharian saya</i> |
| 27. | I feel respected in my everyday life | <i>Saya berasa dihormati dalam kehidupan sehari-hari saya</i> |
| 28. | I am satisfied with the availability of health services | <i>Saya berpuas hati dengan perkhidmatan kesihatan yang sedia ada</i> |

Part B

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|----|--|---|
| | | <u>Bahagian B</u> |
| 1. | Socialising with people | <i>Bersosial dengan orang lain</i> |
| 2. | Having friends | <i>Mempunyai kawan-kawan</i> |
| 3. | Understanding other's feelings | <i>Memahami perasaan orang lain</i> |
| 4. | Holding a conversation | <i>Berbual</i> |
| 5. | Communicating needs | <i>Menyampaikan keperluan</i> |
| 6. | Taking a literal meaning of comments | <i>Memahami komen secara literal (tanpa berkias)</i> |
| 7. | Saying things that are socially embarrassing | <i>Menyebut perkara yang memalukan dari segi sosial</i> |
| 8. | Needing to stick to a routine | <i>Terlalu mengikut rutin</i> |

9.	Being overly interested in a particular topic	<i>Terlalu meminati topik tertentu</i>
10.	Getting anxious in a specific situation or during changes	<i>Berasa bimbang ketika dalam situasi tertentu atau menghadapi perubahan</i>
11.	Sensitivity to certain sensations	<i>Sensitif terhadap deria tertentu</i>
12.	Understanding the rules of social interaction	<i>Memahami peraturan dalam interaksi sosial</i>
13.	Managing emotional responses	<i>Mengawal tindak balas emosi</i>
14.	Needing to do things a certain way	<i>Sentiasa ingin melakukan sesuatu perkara dengan cara tertentu</i>
15.	Destructive behaviours including anger & aggression	<i>Tingkah laku merosak termasuk marah & agresif</i>
16.	Showing inappropriate emotional reactions	<i>Menunjukkan tindak balas emosi yang tidak sesuai</i>
17.	Unusual repetitive behaviours or body movements	<i>Tingkah laku pengulangan atau pergerakan badan yang luar biasa</i>
18.	Engaging in reckless or tactless behaviours	<i>Melibatkan diri dalam tingkah laku yang melulu atau kurang bijak</i>
19.	Doing daily living tasks independently	<i>Berdikari melakukan tugas dalam kehidupan harian</i>
20.	Responding when approached socially	<i>Memberikan respons apabila disapa</i>

Note. ^aAdapted from Eapen et al. (2014).

Table 3.5
Original English PSOC and Malay version of PSOC

Item	Original English version ^a	Finalised Malay version
1.	The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.	<i>Mengikut pemahaman saya, masalah menjaga anak mudah diselesaikan jika anda tahu bagaimana tindakan anda boleh mempengaruhi anak anda.</i>
2.	Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age.	<i>Walaupun menjadi ibubapa boleh memberikan kepuasan, saya kini berasa kecewa dengan anak saya pada umurnya sekarang</i>
3.	I go to bed the same way I wake up in the morning, feeling I have not accomplished a whole lot.	<i>Saya rasa sama sahaja apabila hendak tidur dan bangun pada waktu pagi, masih banyak perkara yang tidak dapat dilaksanakan.</i>
4.	I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.	<i>Saya tidak tahu mengapa, tetapi kadang kala apabila saya sepatutnya sudah boleh menguasai keadaan, saya rasa saya telah dimanipulasi.</i>
5.	My mother was better prepared to be a good mother than I am.	<i>Ibubapa saya lebih bersedia untuk menjadi ibubapa yang baik berbanding dengan saya.</i>
6.	I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent.	<i>Saya boleh menjadi contoh yang baik kepada ibubapa muda untuk mempelajari apa yang perlu diketahui untuk menjadi ibubapa yang baik.</i>
7.	Being a parent is manageable, and any problems are easily solved	<i>Menjadi ibubapa suatu perkara yang mudah diuruskan dan apa-apa masalah mudah diselesaikan.</i>
8.	A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one.	<i>Masalah yang sukar diatasi dalam menjadi ibubapa adalah anda tidak tahu sama ada anda dapat</i>

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| 9. | Sometimes I feel like I'm not getting anything done. | <i>menjalankan tugas anda dengan baik atau tidak baik.
Kadang kala saya berasa saya tidak dapat menyudahkan sebarang kerja pun.</i> |
| 10. | I meet my own personal expectations for expertise in caring for my child. | <i>Saya memenuhi jangkaan saya untuk kemahiran menjaga anak saya.</i> |
| 11. | If anyone can find the answer to what is troubling my child, I am the one. | <i>Saya tahu jawapan tentang apa yang mengganggu anak saya.</i> |
| 12. | My talents and interests are in other areas, not being a parent. | <i>Bakat dan minat saya adalah dalam bidang lain, bukannya menjadi seorang ibubapa.</i> |
| 13. | Considering how long I've been a mother, I feel thoroughly familiar with this role. | <i>Setelah sekian lama menjadi ibubapa, saya sangat memahami peranan ini.</i> |
| 14. | If being a mother of a child were only more interesting, I would be motivated to do a better job as a parent. | <i>Jika menjadi ibubapa kepada anak suatu perkara yang menarik, saya akan lebih bermotivasi untuk menjalankan tugas yang lebih baik sebagai ibubapa.</i> |
| 15. | I honestly believe I have all the skills necessary to be a good mother to my child. | <i>Sejujurnya, saya yakin saya mempunyai semua kemahiran yang diperlukan untuk menjadi ibubapa yang baik untuk anak saya.</i> |
| 16. | Being a parent makes me tense and anxious. | <i>Menjadi ibubapa membuatkan saya berasa tegang dan bimbang.</i> |
| 17. | Being a good mother is a reward in itself. | <i>Menjadi ibubapa yang baik memberikan kepuasan kepada saya.</i> |

Note. ^aAdapted from Johnston and Mash (1989)

3.5 *Adaptation process of Test of Pretend Play (ToPP)*

The ToPP (Lewis & Boucher, 1997) was originally developed and tested among children in the UK population, thus the toys, materials as well as the items (or tasks) in the test are relevant to the Western culture and climate. However, the study was undertaken in

Malaysia where the culture and climate are different, therefore, adaptation of the ToPP is essential to make it culturally relevant to children in Malaysia. The adaptation was taken place in Malaysia involving a group of children (who have been living and brought up in Malaysia) including children with ASD and typically developing children.

The children in the field test trial group were tested using the structured ToPP using similar set of toys and materials to the original, except for Item II.4 which were replaced with items that can represents a more climate relevant play activities and are described in the latter part of this subsection.

The girls that were tested were able to perform the tasks using a doll and a teddy, however most of the boys did not respond well to the tasks involving a doll and a teddy. Boys were also provided with a boy doll to make them more comfortable, but they still would not respond to the play. Parents' of boys who did not respond well to a doll reported that their child/children played at home but did not play with a doll (neither a girl nor a boy doll). Most of the parents provided the same feedback that dolls are only given to their daughter (if they have any) or are not bought for or given to their sons to play with. When the task involved a teddy, girls played with it, the same as they played with a doll, whereas majority of the boys tested did not play with it.

Dolls and teddies are deemed to be gender-specific toys for girls within the Malaysian culture. In order to provide the best opportunity for boys (2/3 children diagnosed with ASD are boys) to perform their play, a superhero action figurine and a cat soft toy as shown in Figure 3.3 were included in the list of toys presented to children for administering the ToPP. A superhero action figurine was chosen as another option for a doll because children are familiar with superheroes since they have watched a cartoon TV series in Malaysia, and most parents bought them for their sons instead of dolls.

A cat soft toy was chosen as an alternative option for a teddy bear as it is commonly seen in Malaysian households to have a cat as a pet. Although parents in Malaysia rarely give their sons soft cuddly toys to play with, a cat soft toy is a kind of object the boys in Malaysia could relate with since they have seen and played with cats in their real life. Children with ASD, especially boys responded well to the superhero action figurine (i.e., Ultraman) and the cat soft toy although all the dolls and teddies were presented to them as shown in Figure 3.3.



Figure 3.3 Adapted ToPP version's dolls and teddy

In addition to these issues of responding to play involving a doll and teddy, most of the boys had some difficulties in completing the task involving the feeding activity (i.e., during warm up session – using a cup and saucer and pretending to feed the doll). Parents commented that it is not common for their sons to play ‘cooking’ or ‘feeding’. Therefore, some materials involving in dressing activity (i.e., a shirt, shoes, and a cap) were added to the materials originally provided for this item. This is to provide the opportunity for boys to perform their play. In addition, a fork was added to the items presented to children for Item I.1 to provide more objects that are familiar to the children since the item is scored based on the ability to functionally use these objects. The added items did not disrupt the integrity of the test since it is only for the warm-up session to see whether the child could spontaneously perform pretend play.

As aforementioned, Item II.4 was adapted to fit Malaysian context. This item assesses a child's ability to perform substitution using non-representative materials. In the original Item II. 4, the child is presented with a doll, white Perspex reel, white board, wooden box and cotton wool. The materials presented can resembles the activity of snow play (refer to Manual of The Test of Pretend Play, Lewis & Boucher, 1997, p. 21). However, Malaysia is a non-four seasons country; therefore, the materials and resemblance activity is not culturally relevant to be used in Malaysia. An adaptation process for the materials and items were done to make it culturally relevant.

Prior to pre-testing the ToPP with a group of children in Malaysia, the materials for Item II.4 were replaced with another material which can resemble the activity of water play which most Malaysians are familiar with. The new materials – a doll, a clear round reel, an orange board, a round blue plate, and blue cotton wool; and the original layout of the materials presented to children when being tested are shown in Figure 3.4. This can be modelled or instructed to resemble water play using water rings that are usually present in various water theme parks in Malaysia. Although the children with ASD in the pre-testing could not produce spontaneous pretend play, they were able to when instructed or modelled by the parent.



Figure 3.4. The materials for Item II.4 (left) and the original layout for Item II.4 (right)

Although the objects presented were meant to be water play, one of the child tested with these materials spontaneously produced a pretend play of playing see-saw that almost every playground in Malaysia have. The layout of the materials for pretend play of playing see-saw is shown in Figure 3.5. Hence, the tester could model either water play or playing on a see-saw when modelling or instructing the children being tested. The list of original set of toys and materials, and the adapted set of toys and materials are presented in the Table 3.10.



Figure 3.5. Layout for Item II.4 – seesaw play

3.6 Intervention program

In this section, the underlying structure and approach of the intervention program are described while each of the consecutive phases' detailed descriptions are provided in the following procedure section. The home-based intervention program that was used in this study is based on the DIR/Floortime[®] approach developed by Greenspan and Wieder (1997). The format of the DIR/Floortime[®] intervention program was adopted from several previously completed studies that examined the effectiveness of the DIR/Floortime[®] intervention approach including Dionne and Martini (2011), Liao et al. (2014), Pajareya and Nopmaneejumruslers (2011), and Solomon et al. (2007).

Table 3.6
Adapted ToPP set of toys and materials

Item	Adapted ToPP toys and materials
Warm-up	Doll (boy doll and girl doll), superhero action figurine, cup and saucer, green material, clear cube, shirt, shoes, cap
I.1	Bowl, spoon, and fork
II.1a	Doll (boy doll and girl doll), superhero action figurine and yellow top
II.1b	Doll (boy doll and girl doll), superhero action figurine and red cloth
II.2	Doll (boy doll and girl doll), superhero action figurine, white counter and black box
II.3	Doll (boy doll and girl doll), superhero action figurine, brown stick, round white tub, and blue cloth
II.4	Doll (boy doll and girl doll), superhero action figurine, Sellotape, orange board, blue round plate, blue cotton wool
III.1 - III.4	Teddy and cat soft toy

Note. ToPP = Test of Pretend Play.

^aAdapted from Lewis and Boucher (1997).

The pre-intervention phase comprised of gathering demographic information about the participants as well as the baseline measurements of the tested variables through the completion of several measures (including CoC ratings of child-parent/s' interactions, and three parents' self-report assessments – Malay translated QoLA, PSOC, and BM DASS-21). Then, the intervention program moved to the intervention phase. The intervention phase was delivered in two stages: the parents' training stage, followed by the home-based intervention stage.

3.6.1 Parents' training stage

The parents' training stage involved two three-hour training sessions completed over a two-week period (refer to Appendix 12 for details). Parents training was conducted by the student researcher at the OT Clinic in Malay language. The first session introduced parents with the DIR model including the basic concepts of the DIR model and recommended

techniques to be used. It includes developmental capacities of a child as well as a child's unique sensory capabilities that are essential for parents to know to understand their child. This was done to assist parents in understanding the importance of engaging and relating with children with ASD as well as how to plan their intervention at home.

During this stage, parents learnt that each child has unique characteristics including their sensory processing which moulds their behaviours, interaction patterns as well as their preference of toys. Parents were provided with the notes used (presentation slides) and the DIR model's functional developmental capacities level as shown in Figure 3.6. This helped parents to refer to the notes during the training as well as when they were at home implementing the intervention with their child/children with ASD.

The second session of parents' training was conducted in the following week and was presented by the student researcher at the same location. Parents learnt about the Floortime[®] intervention approach and received training to implement the techniques and play strategies with their child with ASD. This underpins the home-based intervention program. Parents were trained to observe their children's cues and follow their lead with the aim of facilitating the child to begin engaging with his/her parents (Greenspan & Wieder, 1997, 2006, 2009; Liao et al., 2014; Pajareya & Nopmaneejumruslers, 2011).

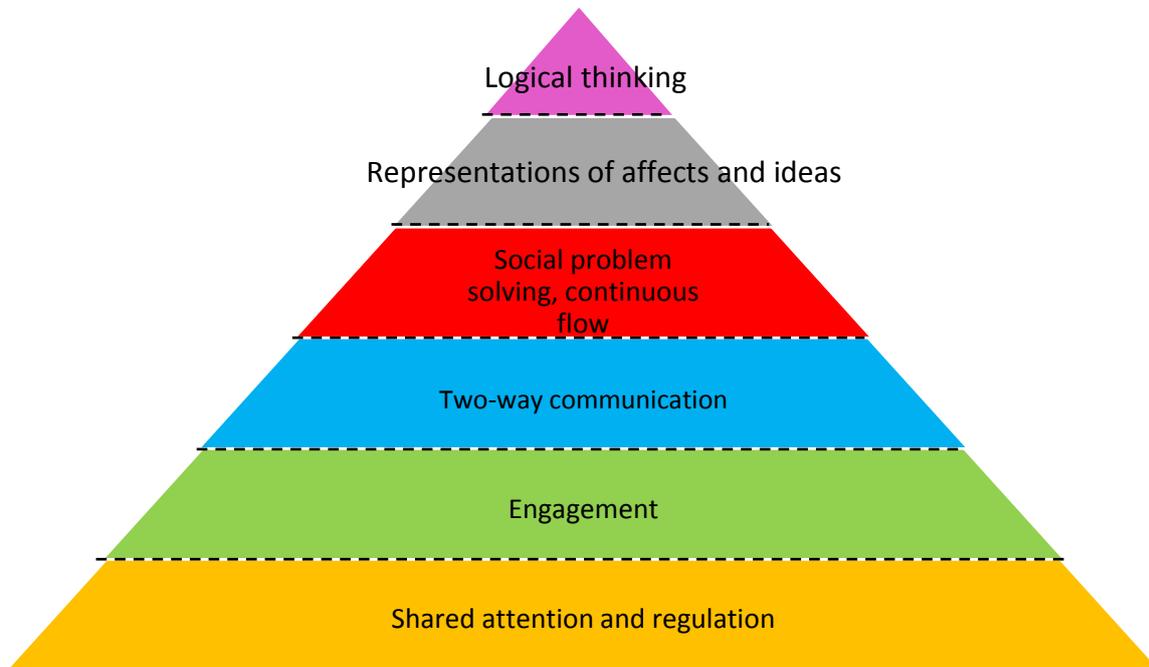


Figure 3.6. Six functional developmental levels based on the DIR model

Parents were also encouraged to aim for sustaining their children’s engagement and relating with them (which is the most basic and important of the functional developmental capacities of the DIR model) and not move on to the next level of the developmental level before building a robust shared attention and engagement with their child. Parents were trained on strategically applying the appropriate DIR/Floortime[®]-related techniques according to their child’s preferences in their way of relating, sensory motor preferences, as well as their current level of functional development (Greenspan & Wieder, 2009; Liao et al., 2014; Pajareya & Nopmaneejumrulers, 2011; Solomon et al., 2007).

During the training session, parents learnt about the home-based intervention program, what they are required to do, the minimum requirements of hours (i.e., 10 hours per week) for implementing the DIR/Floortime[®] intervention with their child, and the structure of the study, which includes the follow-up sessions with the researcher every two weeks at the clinic. Each parent/s was given a journal for them to record their session every day and to note their reflections and thoughts related to the intervention program. The journal was in a template form with pre-set answer options for parents to select and provide information needed for the

study in an easy, time efficient, and less stressful way. It includes items about the session (e.g., 1 /2/3/4/5/6), duration of the session (e.g., 5 minutes/10 minutes/15 minutes/20 minutes), activities (e.g., daily activity routine/free play/pretend play/structured play/outdoor play/indoor play), and the family member involved in the activity (e.g., father/mother/siblings). A blank space was also provided on the template form for parents to write if they had any reflective notes for the session or had any notes for discussion in the follow up session. The journal (refer to Appendix 13) was collected during the follow-up session every two weeks and a new one was given.

Parents were provided with notes from the training, the developmental levels pyramid as shown in Figure 3.6, and a list of reading materials related to the DIR/Floortime[®] intervention approach for them to refer to for when they implemented the home-based intervention. In addition, they were also encouraged to contact the researcher using either text message or email if they needed any help when implementing the intervention at home. The researcher also kept a close contact with the parents to ensure they were not overwhelmed or experiencing any extreme psychological distress and to assist those who needed some additional help while implementing the intervention at home.

3.6.2 Home-based intervention stage

The second part of the intervention phase was the home-based intervention program that began after parents have completed the training sessions. Parents implemented the home-based intervention based on the DIR/Floortime[®] approach with their child with ASD for eight weeks. They were asked to do the DIR/Floortime[®] sessions every day, preferably for six 20-minute sessions per day and for at least a total of ten hours per week, according to both parent's and child with ASD's conveniences. Parents can use the DIR/Floortime[®] approach recommended techniques while playing with their child with ASD alone or with other

siblings, and while performing their daily life routines. Once every two weeks, participants attended a one-hour follow-up session at the clinic.

During the follow up session, the parents were asked to play with their child in a free play session for 15 minutes and the play was recorded as a measurement for evaluating the impact of the intervention on child-parent interactions. After the free play, parents were encouraged to continue playing and the researcher provided feedback to the parents while coaching them on how to improve their interactions as well as how to implement the recommended techniques. If the parents were having some difficulties, the researcher would demonstrate while playing with the child with ASD and the parents. After the play session, a 15-minute discussion and coaching were provided for parents to discuss their progress as well as issues that they faced when implementing the home-based intervention.

The parents' reflective journals were also collected during each of the follow-up visits. This was done to gather information on the number of hours the home-based intervention was completed, parents' comments and also to ensure parents to keep their records of the intervention in the journal. In the case of parents forgetting to bring the journal, they were asked to bring it over during their usual therapy session with their therapist or the next follow-up session. If parents had misplaced or lost the reflective journal during the home-based intervention period between the follow-up visits, parents could notify the researcher and a new one was provided to them. Meanwhile, if the parents did not record their session in their journal or had misplaced it, they were asked the estimation of total hours they had performed the DIR/Floortime[®] sessions and the activities they did for the past week. New journals for the two following weeks were provided at the end of the session.

Follow-up sessions were completed as previously described except for the session in week 4. During this session, a mid-way assessment for both the child with ASD and the parent/s were completed. This involved parent answering the self-report assessments and the

children's pretend play being assessed using the ToPP. Similar to the other follow-up sessions, the session started with 15-minutes of recorded free-play, followed by a pretend play assessment conducted by the student researcher. The 15-minute discussion and coaching session were completed after the child's pretend play assessment was completed.

The intervention phase was terminated after the completion of eight weeks of the home-based intervention. The study then moved into the post-intervention phase. The intervention phase previously described is illustrated in Figure 3.7.

3.7 Procedure

The study involved several steps as shown in Figure 3.8. In this section, each of the steps are describes in detail.

3.7.1 Step 1: Assessment translation and validation

In the study, three parent-report scales (BM DASS-21, translated Malay QoLA, PSOC) were used to measure parents' QoL, psychological wellbeing and parental sense of competence. All three measurements were originally developed in English; however, the study was conducted in Malaysia where Malay is the first language for the parent participants.

Among the three scales, the DASS-21 had already been translated from English into the Malay language and validated for use in Malaysian contexts (Musa et al., 2007). Therefore, the Malay translated version, the BM DASS-21 (Musa et al., 2007) was used in this study. No translated Malay versions of the QoLA or the PSOC are yet available. Hence, the QoLA and the PSOC were first translated from English into the Malay language and the Malay translated versions were used (BM-QoLA and BM-PSOC). The translation and validation of both scales are described in Section 3.4.

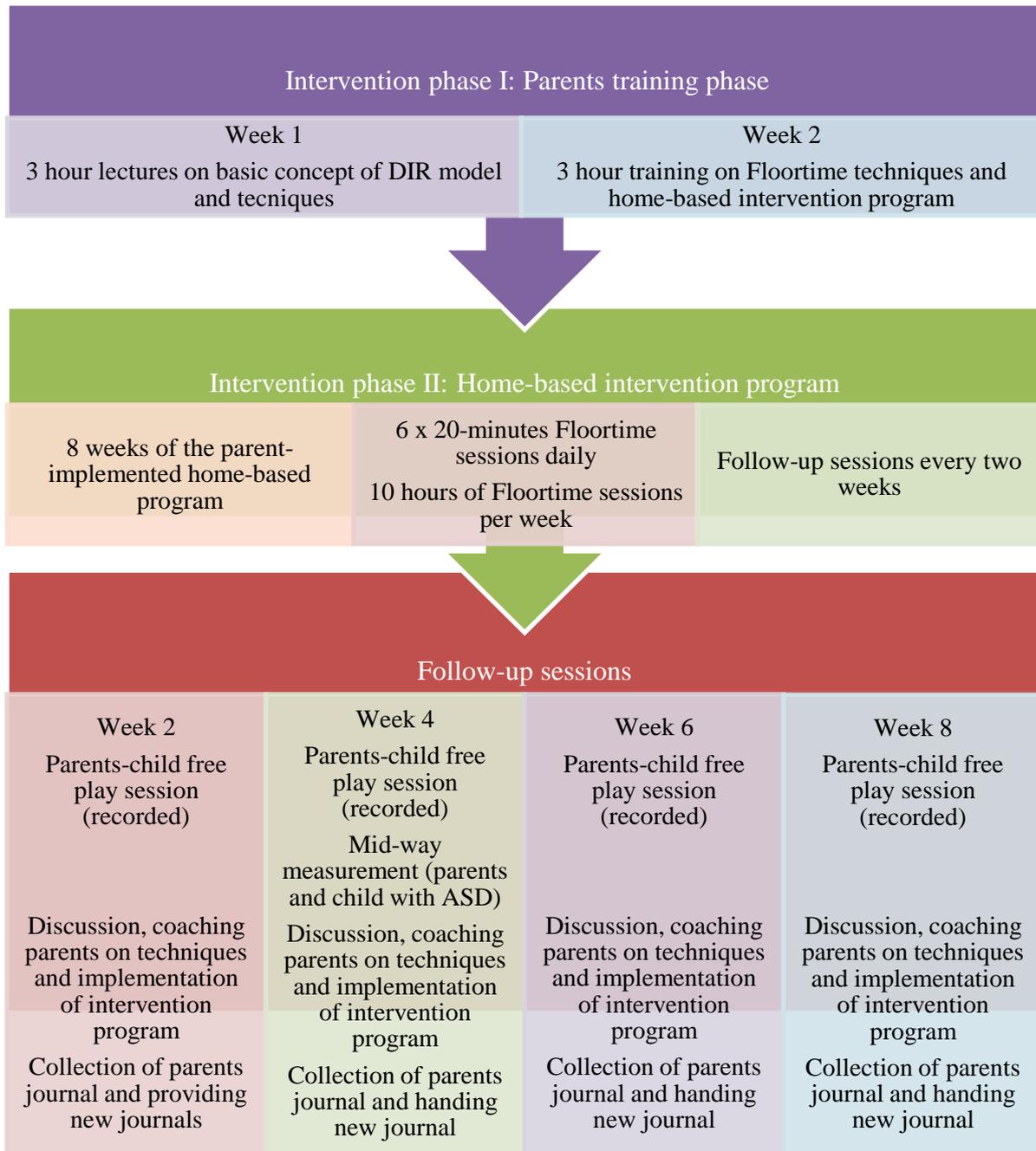


Figure 3.7. Schematic of the intervention phase. ASD = Autism Spectrum Disorder; DIR = Developmental, Individual-difference, Relationship-based.

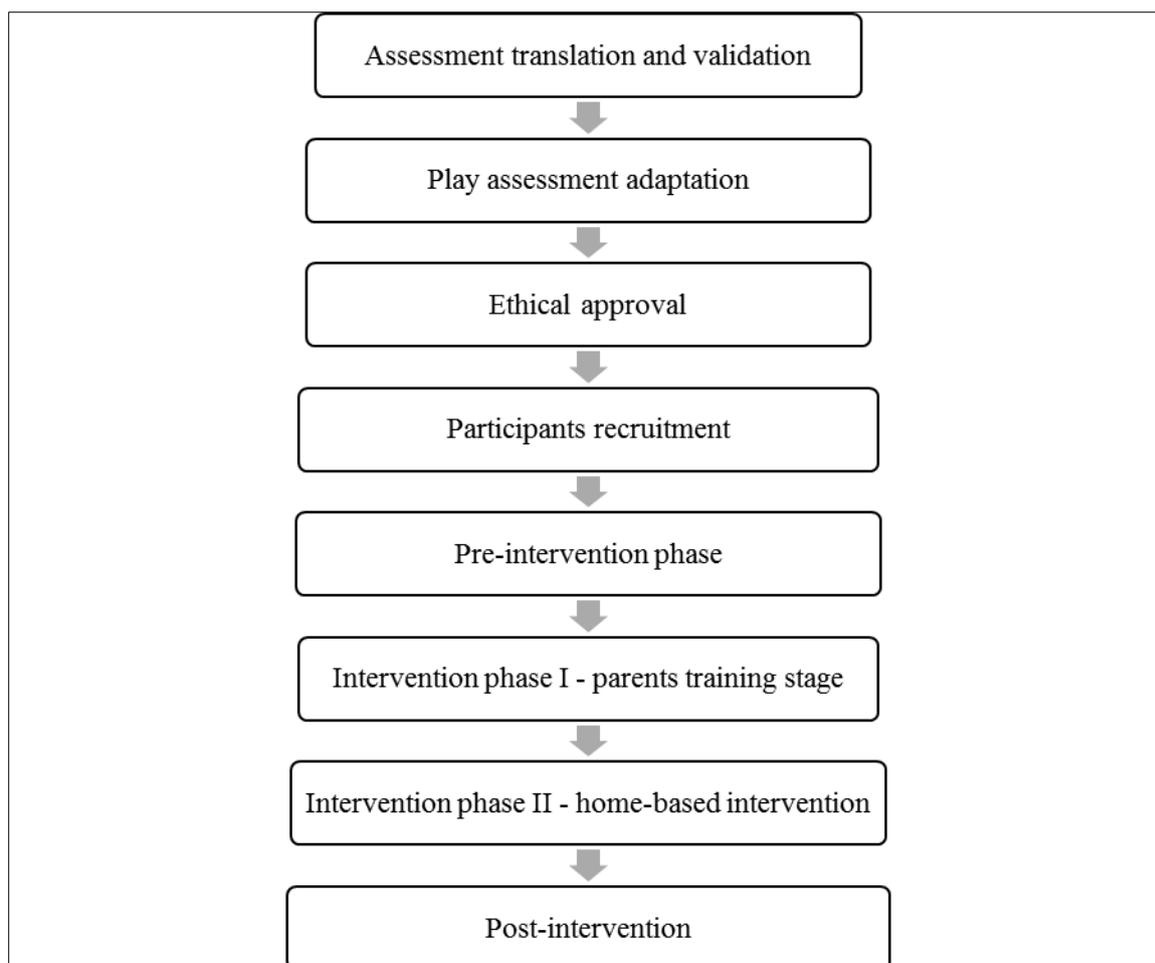


Figure 3.8. Study procedure.

3.7.2 Step 2: Test of Pretend Play's (ToPP) adaptation

The ToPP was used to assess children with ASD's pretend play ability. It was originally developed and tested among children in the United Kingdom (Lewis & Boucher, 1997). The toys including doll and teddy, non-representational materials and the tasks for each item have been tested with wide range of children from different backgrounds. However, although the selected toys and tasks are appropriate and relevant to the Western culture, the present study involves children being raised and living in a non-Western culture country - Malaysia. It is crucial that the materials and the task for each items of the test provides the best opportunity for participants to perform. Thus, a similar set of toys and materials with the original ToPP were developed and tested with children in Malaysia. This step was done to test whether the

materials and items are appropriate and can be performed by children in the population to mimic the intended participants and gather information relating to their performance.

3.7.3 Step 3: Ethical application and considerations

The study recruited participants from several recruitment sites including four CBR centres managed by the Malaysia Department of Social Welfare and Occupational Therapy Clinic in National University of Malaysia (Universiti Kebangsaan Malaysia, UKM). Ethical approvals from Malaysia Economic Planning Unit (EPU), Monash University Human Research Ethics Committee (MUHREC) and Research Ethics Committee Universiti Kebangsaan Malaysia (RECUKM), Malaysia Department of Social Welfare were obtained prior to participant's recruitment in order to gain permission to undertake the research.

The EPU is a governmental unit that manages the research ethical application process for any researcher from a foreign university who intends to undertake a study in Malaysia. The EPU processes the researcher's application by forwarding the research ethical application to the designated agency where participant recruitment and data collection will take place. The permission was granted and includes restrictions that must be adhered to during the study period.

In addition to the application forwarded through by the EPU, an ethical application was obtained from the Research Ethics Committee Universiti Kebangsaan Malaysia (RECUKM) because the Occupational Therapy Clinic is managed by the Department of Occupational Therapy, Faculty of Health Science, National University of Malaysia. The ethical approval was granted prior to the study's commencement. Ethical approval was also obtained from the MUHREC since this study involves human participants taking part in the home-based intervention program, self-report assessments and interviews. Participants in this study were also observed and video-taped by the researcher as part of the data collection process. Recruitment of participants' processes only began after the research ethical applications had

been approved by all the bodies mentioned above. This recruitment process is elaborated in the following section.

3.7.4 Step 4: Recruitment of participants

The process of recruiting participants began once the ethical approvals were granted at several recruitment sites.

a. CBR centres

The CBR centres are based in the community that are managed by community members with governmental support from the Department of Social Welfare (the training and allowances of the staff including the caretaker are provided by this governmental department). Typically, the centre is managed by a supervisor, CBR workers (or called as ‘CBR teachers’) and the caretakers who are volunteers that have been trained by the Department of Social Welfare in taking care of children with special needs. Most of the caretakers volunteering at the centre are parents of the children with disabilities. A qualified occupational therapist, speech therapist and physiotherapist working in the nearest governmental supported hospital or health clinic visit the centre once every two weeks to provide therapy sessions for the children attending the centre.

Children attending the CBR centres are typically from lower socioeconomic status groups since it is free and managed by Department of Social Welfare. However, there are no restrictions on who can attend the centre as long as the parents follow the terms and requirements set by the centre’s committee (e.g., an amount of time with the children at the centre, sending their children to the centre at designated times).

b. Occupational Therapy clinic

The occupational therapy clinic at the National University of Malaysia is managed by the Department of Occupational Therapy, Faculty of Health Science, located in the city centre of Kuala Lumpur. Occupational therapists working in the department conduct the

therapy sessions with clients according to their appointment every month. Clients attending therapy sessions in this clinic are from various family and socioeconomic backgrounds since it is accessible for clients referred by any Medical Officer. Posters consisting of a brief description of the study, the home-based intervention program, and participant's selection criteria were put up on the bulletin board. The poster was also given to the CBRs' supervisors and occupational therapists for them to pass them to their clients who they think would be suitable or benefit from the intervention program.

Interested individuals contacted the student researcher either electronically (email), via phone (SMS or call) or by setting up an appointment via their therapist to obtain further information relating to the study and the home-based intervention program. Once potential participants indicated their interest in taking part in the study, a meeting was set up at a time convenient to the potential participant. During the meeting, the study information sheet, explanatory statement and consent forms were provided to the parents. The student researcher described briefly the purpose of the study, the home-based intervention program, procedures and the assessments involved in the study. The participant's responsibility and expectations throughout the study including attending the parent training phase, conducting the DIR/Floortime[®] sessions with their children with ASD, keeping notes in the parents' journals for their sessions at home, attending follow-up sessions every two weeks and participating in a key informant interview session after the eight weeks of the home-based intervention program were also explained to participants.

Parents were also informed that there would be video- and audio-recording of parents and their child with ASD's play, as well as a post-intervention interview as part of the study's measurements. Due to the sensitivity and confidentiality issues relating to the data gathering methods, participants were clarified on the procedures that would take place in the study. This is to ensure the parents are aware of the steps taken into account in ensuring that the

confidentiality of the data collected is kept at its best including the parents' self-report assessment, children with ASD's pretend play and video recordings of free play sessions.

Potential participants had the details about the study explained to them including their responsibility and the confidentiality issues. If they provided their consent to take part in the study, they were asked to complete the consent form. Parents who completed the consent form consented to – (i) attending the parents' training, (ii) video-recording of play sessions, (iii) audio-recording of the interview session, and (iv) gave consent to the student researcher to use data collected during the period of the study (e.g., to publish the data collected). Parents were also informed that they could withdraw from the study at any point of the study, before the last point of measurement; and their data would be discarded from any publications. Once the study ends, all the data collected was deemed to have permission from the participants to be used and published by the researcher.

After the recruitment of participants' process had ended, participants were informed of the date for the pre-intervention sessions via phone call and text message two weeks prior to the date. A week before the session, parents were reminded through text message and phone call so they could confirm their attendance. Only parents of children with ASD from the occupational therapy clinic responded to the study's advertisement and were recruited to participate in the study. Hence, the study was conducted at the clinic.

3.7.5 Step 5: Pre-intervention phase

The pre-intervention phase began once recruitment of the participants had been completed and involved two sessions. Participants were provided with the date and time of their first session once the recruitment phase ended and were confirmed one week prior. The first session took approximately one hour as all the measurements for both the child with ASD and parents were administered. It began with 15-minutes of child-parent dyad free play which was video-recorded, followed by assessment of the children's pretend play.

Initially, children with ASD were assessed by the researcher using the ToPP in the structured play situation using verbal and nonverbal versions depending on the children's abilities. While the child was being assessed, parents were asked to complete the self-report questionnaires (Malay translated versions of the QoLA, PSOC and BM DASS-21) in the same room so their child was comfortable. Parents were allowed to be in the same room without interfering with the assessment procedure. When the child did not respond well to the researcher and responded better to completing the assessment with parents being involved in the test, parents were asked to assist the child to play only when instructed by the researcher.

The ToPP should be completed in one session (when possible) or as long as the child is enjoying the play activities. However, most children with ASD were tested in both pre-intervention sessions. Once the ToPP was completed, the child played freely for several minutes. When parents assisted with the administration of the ToPP, they were given time to complete the self-reported questionnaires after the session ended or took the assessments home to complete.

The date and time (in the following week) for the second pre-intervention session was set with the parent/parents. The session followed the same procedure as the first one for most participants except for those who had completed the ToPP and parental self-report questionnaires. Parents' completed self-report questionnaires were collected during this session for those who completed the questionnaires at home. If the ToPP assessment was not completed during the previous session, then the assessment was administered by testing two items before the last item where the test has stopped in last session. This was done as a warm-up session to familiarise the child with the nature and structure of the test (e.g., if the test stops at item III.1 in the last session, the tester will start the test with item II.3).

The pre-intervention phase data was collected (Time 1, T1 measurement) for both parents and child's measures (i.e., Malay translated QoLA, PSOC, BM DASS-21 and ToPP).

The number of CoCs were rated from observations of the child-parents' free play video-recording. The number of CoCs for both sessions were denoted as baseline measurement 1 and 2 (Tb1 and Tb2, respectively). Following this phase is the intervention phase that was conducted in two stages which was the training of parents and the home-based intervention.

3.7.6 Step 6: Intervention phase – the training of parents' program

The parents training is the first part of the intervention phase which involved only the parents of children with ASD. The group training was completed over a two-week period. Parents attended these sessions that were held at the occupational therapy clinic. Child care service was provided during the training but no parents brought their children along. Week one of the training comprised of a three hour-session on the DIR model's concept and underpinning knowledge (refer to Appendix 12).

During the training session, a lecture on the DIR model was given by the student researcher to the parents describing the underpinning concepts of the model guiding the intervention approach. Parents were provided with handouts and reading materials relating to the DIR model (refer to Sections 2.6 and 3.6 for further details). The training also included small group discussions and 'question and answer' sessions. In the occurrence of parents unable to attend the training, a new session was arranged for them.

Week two training comprised of a three hour-session training on the DIR/Floortime[®] approach (refer to Appendix 12). Parents learnt about the techniques and principles of the approach which they were recommended to use when implementing the home-based intervention based on the DIR/Floortime[®] approach. The researcher also included sample videos during the training taken from the pre-intervention sessions (permission from parents were obtained prior to using the videos) to show and coach parents on how to implement the recommended techniques including '*following the child's lead*', '*playfully obstructive*', '*pause and play*' and being responsive to their children. Small group discussions and

‘question and answer’ sessions were also conducted throughout the training session.

Handouts and reading materials were given to parents as well.

In this session, the strategies on implementing the DIR/Floortime® daily sessions, the duration of each session as well as suggested activities to be done with their child were explained. The researcher encouraged parents to plan and implement the intervention by first observing their child to learn what they like or dislike, and how and when the child is most productive or motivated to engage in activities. It was anticipated that parents should use the information provided to interact playfully with their child with ASD. Following the interaction, parents were encouraged to analyse or evaluate the success of the interaction and adjust it accordingly to improve their interaction with their child with ASD.

These steps were explained by referring to the example videos of the child-parent free play videos. Both training sessions were held on a Friday morning according to the majority of the parents’ preference. During each session a hearty breakfast and teas were provided for the parents. The training was also attended by the occupational therapists working at the clinic.

3.7.7 Step 7: Intervention phase – parent-implemented home-based intervention program

The home-based intervention program phase began after parents had completed their two sessions of training on the DIR model and the Floortime® intervention approaches. Parents were asked to conduct the DIR/Floortime® sessions with their child with ASD on a daily basis. A DIR/Floortime® session can be done while playing with the child or while performing their daily routine including bathing, dressing, and eating or any activities at any time according to their conveniences. Parents were encouraged to do DIR/Floortime® sessions for a minimum of 20 minutes per session, six sessions per day, totalling up to ten hours per week.

Reflective journals were provided to parents for recording everyday observations about the sessions they do with their child, the length of each session, activity/activities done for each session and any reflective notes, comments or issues they encountered. Parents were encouraged to keep their everyday observational notes in the reflective journal especially the length of each session and the numbers of session completed. The researcher contacted the parents on a regular basis to check on their progress and reassure them that they could ask the researcher for help if they need to. The intervention phase process is outlined in Figure 3.7.

A follow-up session was held biweekly (i.e., during Week 2, Week 4, Week 6, and Week 8) at the occupational therapy clinic. All follow-up sessions involved 15-minutes of a child-parent free play recording session, parental coaching and discussions except for Week 4. During this follow-up session, mid-way measurements for both the child with ASD and parents were administered which lasted for approximately 45 minutes to an hour. Parents discussed any issues that they may have been hindering their performance in implementing the intervention at home. Suggestions were provided to help the parents to try and resolve their issues. During this session, the parent reflective journal was collected and a new one was given to them. This was done as a way to ensure parents to keep writing notes about their sessions. The last follow up session was Week 8, depicting the end of intervention phase.

A detailed field note was kept by the researcher for each participant's follow-up session, and the field notes were used as one of the sources for triangulation in qualitative data analysis. Along with the field notes, the researcher also kept a self-reflective diary about how the sessions went, the performance of participants and if any improvements to the intervention program, implementation of the parents' coaching or anything related to the program could be made. It was used as one of the sources in the triangulation process to ensure the qualitative data was as accurate and dependable. Parents' reflective journals, field

notes and student researcher's self-reflective notes were used for qualitative data triangulation.

3.7.8 Step 8: Post-intervention phase

A post-intervention session was scheduled with parents during their last follow-up session. The post-intervention session was conducted one week after their last follow-up session. During this session, post-intervention measurements for both the child with ASD and parents were completed following the same procedure as Week 4 of follow-up visit. After the session ended, parents were given the option to either be interviewed on the same day or they could book another appointment. All parents opted for being interviewed in the following week during their child with ASD's therapy session with the occupational therapist.

The key informant interview sessions were conducted in the following week at the clinic in a vacant intervention room with only the researcher and parents present. A key informant interview is the qualitative data collection approach being used as part of this study. The interview took approximately 60-75 minutes, and was conducted by the researcher in the Malay language. Parents were asked prior to the interview whether they would like to be interviewed in English or Malay language, all participants said they were more comfortable speaking in Malay language. The interview sessions were audio-recorded.

The researcher presented parents with a list of questions to be asked in Malay language prior to the interview so parents could indicate if any of the questions were deemed to be sensitive and to be excluded from the interview (refer to Appendix 14 for list of questions in Malay language). The list comprised of seven questions about the intervention program, implementation of the intervention's activities, and the effectiveness of the program in helping them and/or their child.

The interview questions were: (a) which part/s of the intervention program that they liked the most, (b) which part/s of the program that they found challenging, (c) whether the

program is effective in improving their children's play and interaction with parents, (d) if the DIR/Floortime[®] sessions were effective in improving their QoL and wellbeing, (e) if the intervention was easy or difficult to implement in their home environment, (f) anything that they think needs improvement, and (g) if they have any recommendations or comments that they think could possibly help them implement and engage in the DIR/Floortime[®] sessions more efficiently.

Parents were encouraged to talk about their experiences throughout the intervention program. Additional questions were asked based on parents' responses to the seven base questions. For participants involving both parents, they were interviewed in the same session and were asked the same questions and encouraged to provide their own responses for each question. This was done so each parents' perspectives were captured as a difference between parents may exist.

3.8 Data Collection

The study uses a mixed methodology design; hence, both quantitative and qualitative data were collected. Data collection was done at multiple points throughout the study's phases. The data collected in this study is described in the following subsections based on the type of data reported.

3.8.1 Quantitative data collection

Quantitative data collected in this study for child-parent interactions were obtained from child-parent free play session videos where the changes in the number of CoCs were rated. Data for parents was gathered using three self-report scales – the Malay translated version of QoLA, PSOC and BM DASS-21. For the children with ASD, their pretend play was assessed using the ToPP administered by the researcher that was sometimes assisted by the parents.

a. Child-parent interactions

Child-parent free play sessions were recorded for 15 minutes for each session in all three phases. A total of seven videos were collected for each child-parents' dyads, two for the pre-intervention phase, four for the intervention phase and one for the post-intervention phase. The two recordings taken in the pre-intervention phase were collected to establish the baseline measurement for each participant, while the four recordings during the intervention phase and the one in the post-intervention phase were used for the intervention measurement. This was done following the requirements of single subject design so as to have multiple data points for both baseline and intervention phases.

The number of CoCs were rated from the child-parent free play videos by the student researcher and a rater who was blinded to the study's aims. The average number of CoCs were calculated from the number of CoCs by both raters. Raters rated four types of interactions between the child with ASD and their parents - (a) parent-initiated directive communication, (b) parent-initiated non-directive communication, (c) child-initiated directive communication, and (d) child-initiated non-directive communication.

Parent-initiated interactions were rated when parents initiated the interaction or opened the CoCs while the child-initiated interactions were initiated by the child with ASD. Each CoCs was rated as either directive or non-directive to specify the nature of the interaction. In directive interaction, the person initiated the interaction in a way of demanding the other person to follow what he/she is asking or saying. In non-directive interaction, the person opens the CoC in a way of suggesting of what the other person involved in the interaction could do. The type of interaction could be rated from both the words the person was saying, the tone, as well as their body language.

b. Parents' self-report questionnaires

Parents completed all three self-report questionnaires – the Malay translated version of QoLA, PSOC and BM DASS-21 once during each of the study's phases. The questionnaires were either completed during the session while the child was being tested, at the end of the session or at home (e.g., parents who did not have spare time after the session).

c. Children with ASD's pretend play

Children with ASD's pretend play was assessed using the ToPP, administered by the researcher with parents' assistance. It was conducted once in each of the study's phases. Only a few children were initially assessed in a structured play situation during the pre-intervention session. The majority of the children were assessed in a free play situation during the intervention and post-intervention session. All children were tested using the verbal version except for one child who is non-verbal.

3.8.2 Qualitative data collection

The qualitative data was collected through a key informant interview with parents in the post-intervention phase. This method was used to obtain in-depth information relating to the effectiveness of the intervention, its impacts on both the child with ASD and parents and the practicality of intervention implementation at home. Interviews were conducted during the following week of the post-intervention session (chosen by parents, due to time limitation factors). The researcher conducted the interview in Malay language as it is participants' first language for approximately 45–60 minutes. All interviewed were audio-recorded.

The qualitative data was supported with information from parents' reflective journals and discussions during the follow-up visits conducted in the intervention phase. Since this is the first time a study utilising a parent-implemented home-based intervention founded on the DIR/Floortime[®] intervention approach has been conducted in the Malaysian context, it was important to get the richest and truest information from parents participating in implementing

the intervention. This helps to examine the effectiveness of the program and identify if any improvements could be implemented for future research or implementation. It also provided additional information to be taken into account when interpreting the quantitative data analysis.

3.9 *Data Analysis*

Descriptive statistics were used to analyse the demographic data of the participants including age, gender, race, number of siblings and parents' occupation. The study involved both quantitative and qualitative data, therefore, the data analysis section is structured into a separate quantitative and qualitative data analysis section.

3.9.1 *Quantitative data analysis*

a. Child-parent interaction through number of CoCs

The majority of published single-subject design studies have used visual analysis as the primary method of outcome evaluation (Busk & Marascuilo, 1992; Dionne & Martini, 2011; Fahmie & Hanley, 2008), therefore, visual analysis was used in this study to analyse the changes in child-parent interactions. It includes analysis of the changes in data level, variability, trend and slope between baseline and the intervention phase. Visual analysis refers to the examination of graphed data to assess the level of a functional relationship between manipulation of an independent variable and a change in a dependent variable (Parsonson & Baer, as cited in Kratochwill et al., 2014).

The independent variable (time) will be represented on the horizontal axis and the dependent variable (response measures – average number of CoCs) will be represented on the vertical axis (Kratochwill et al., 2014). The average number of CoCs for all seven sessions are plotted on a graph with a dashed vertical line drawn between the second and third data points, separating the baseline and intervention phases. The first and second data points are the baseline measurements taken during the pre-intervention session while the following five

data points measured during the intervention and post-intervention phases are the intervention measurements.

From the graph, the patterns of data were visually analysed within condition (i.e. in baseline and in intervention phases) first and then followed with between conditions. Upon the introduction of the intervention (i.e., intervention phase), an immediate change in level and trend were examined as suggested by Lane and Gast (2014). A change in level is detected when there is an abrupt rise or fall in the data points (Ottenbacher, 1986). Changes in trend are examined and determined by the changes in direction of data patterns (Zhan & Ottenbacher, 2001) from baseline to intervention phase. The change in variability is demonstrated by the large degree of fluctuation in data points (Ottenbacher, 1986). Lastly, slope changes are evaluated by the steepness of the data paths across the phases (Zhan & Ottenbacher, 2001).

A clear pattern of change is hard to obtain and therefore it is advantageous to use another method to visually analyse the data (Manolov, Moeyart, & Evans, 2014) as it would provide a better understanding and confidence in the findings (Gast, 2005). It is also helpful and could be comparable between the participants if the changes are in a quantifiable form. Hence, another analytical method was employed, the standard deviation bands analysis (Dionne & Martini, 2011; Janosky et al., 2009).

Using this method, the mean of the baseline data points is calculated and two standard deviation bands (above and below the mean) are added on the graph with the bands extending from the baseline to the intervention phases. To determine if a significant difference between the intervention phase and the baseline phase exists, at least two successive data points must fall outside of the two standard deviation bands (Janosky et al., 2009) or occur more than 5% of the time (Anastas, 1999) depending on the aim of either increasing or decreasing the

measured behaviour. If the data points in the intervention phase fall within the band, then the treatment can be interpreted as having no impact on the participant's performance.

In this study, four types of interactions were observed and two of them were expected to decrease (i.e., child- and parent-initiated directive interactions) while the other two were expected to increase (i.e., child- and parent-initiated non-directive interactions) with the implementation of the intervention. Therefore, for the behaviour that was aimed to increase with the implementation of intervention, the intervention data points should fall above the upper band to be considered as having an impact.

In addition to the visual analysis, two other analytical techniques based on the nonoverlap indices and regression analysis were used, the percentage of nonoverlapping data (PND), and piecewise regression, respectively. These analytical techniques were done to help validate and quantify the visual analysis results obtained (Manolov & Moeyaert, 2017).

The PND indicates that the percentage of the data points in the intervention phase that did not overlap with the baseline, indicating the impact of the intervention, depending on the aim of whether to increase or decrease the behaviour. The impact of intervention is said to be very effective when the PND is above 90%, moderately effective when the PND values are between 70%-90% and considered questionable when the values are between 50%-70% (Scruggs, Mastropieri, & Casto, 1987; Scruggs & Mastropieri, 2013).

Meanwhile, piecewise regression analysis was employed to supplement the visual analysis where this statistical technique's model was developed based on the linear regression model. The piecewise regression model can estimate the changes in slopes and level, resulting from the intervention introduced in a single subject study (Center, Skiba, & Casey, 1985-1986).

Both visual and statistical analyses were conducted using the *R software* with the SCDA (Single Case Data Analysis) plug-in for R-Commander (Bulté & Onghena, 2013). The

standard deviation bands and piecewise regression analyses were done using the codes developed for the two analyses provided in Manolov, Moeyart, and Evans (2016).

3.9.2 *Qualitative data analysis*

Qualitative data analysis involves “searching the data for themes that emerge and then categorising it for analysis” (Liamputtong, 2013, p. 96). Qualitative data obtained from key informant interviews with parents of children with ASD was analysed using Qualitative Content Analysis (QCA; Schreier, 2012). The interview data was supported by the data from parents’ reflective journal entries and follow-up visit discussions. Qualitative Content Analysis is a systematic process of describing the meaning of the material – parents’ interviews. It involves eight steps as described below:

- i. Step 1: Develop research questions

Prior to commencement of the study, research questions were formed. There are six research questions underlying this study, these include: (a) how effective the implementation of the DIR/Floortime[®] home-based intervention program is in improving parent-child with ASD’s interactions, (b) what is the impact of the intervention program on parents’ quality of life, (c) what is the impact of the intervention program on parents’ self-perceived depression, anxiety and stress level, (d) what is the impact of the intervention program on parents’ sense of competence, (e) what is the impact of the intervention program on children with ASD’s pretend play and (f) is the parent-mediated home-based DIR/Floortime[®] intervention applicable in the Malaysian context. Based on the research questions, the semi-structured interview’s questions were formed (refer to Section 3.8 for the list of questions) and used during the interview with additional questions prepared that corresponded to parents’ answers to the questions.

ii. Step 2: Selecting the material

Parents' interviews were all audio-recorded and transcribed verbatim. Although ten parents were interviewed, only eight interviews were included in the analysis. Some questions were asked to build rapport with parents, making them feel comfortable to be interviewed and recorded. In some of the interviews' transcripts, there are parts that the interviewer (the researcher) answered parents' questions relating to the DIR/Floortime[®] intervention and other unrelated questions. These parts of the transcripts were labelled irrelevant and excluded from the analysis as it did not relate to the research questions.

iii. Step 3: Building a coding frame

A coding frame is a structure of the material, which is the parents' interviews in relation to the research questions. The coding frame consists of main categories that describe the relevant aspects of the material and sub-categories for each main category which further explain the meanings of the relevant aspects of the theme (Schreier, 2012). Four requirements are to be met by the coding frame including 'unidimensionality', 'mutual exclusiveness', 'exhaustiveness', and 'saturation'.

The first requirement is '*unidimensionality*', specifying that each main category should only capture one aspect of the material. The next requirement is '*mutual exclusiveness*', this is when the main categories and its subcategories in the coding frame have to be incompatible with one another as one segment of the material should be assigned to only one main category and its subcategories. A coding frame also needs to be '*exhaustive*', that is all parts of the material are assigned to at least one of the subcategories. Lastly, the coding frame should be '*saturated*' where all the main categories and subcategories should be used at least once during the analysis.

Building a coding frame involves four steps – (i) selecting, (ii) structuring and generating, (iii) defining, and finally, (iv) revising and expanding. Initially, the data was

broken down either according to the sources or particular topics related to the research questions. In this study, the coding frame was created from one source of the data, a parent's interview and was later added and expanded to fit other sources (i.e., parent's interviews).

Next, the coding frame can be structured and generated using one of these three strategies – concept-driven, data-driven, and combination of concept-driven and data driven. The concept-driven strategy is a deductive strategy of building a coding frame from prior knowledge, concept, or theory. This can be done without referring to the data and developed entirely based on the known concept. On the contrary, the data-driven strategy of generating a coding frame is an inductive approach that is based on the data itself. It is typically used when the researcher wants to describe the material in depth (Schreier, 2012) and can be done either using the '*summarise*' or '*subsumption*' strategies (Mayring, 2010) as well as adapting the coding procedure used in grounded theory.

'*Summarise*' involves paraphrasing relevant passages and using it to generate the category names while '*subsumption*' involves examining relevant passages in relation to the research questions and deciding whether it is a new concept to developed it into a new subcategory. Grounded theory uses three steps of coding, starting with open, followed by axial and finally selective coding. In generating the categories in a data-driven coding frame, the open coding is frequently used as a strategy for discovering the underlying concepts in the data (Schreier, 2012). The last way is mixing both concept-driven and data-driven strategies.

Since this study is the first one to utilise the DIR/Floortime[®] intervention approach with parents of children with ASD in Malaysia and scarce resources are available, the coding frame was developed using the data-driven strategy from the relevant parts of parents' interviews. The coding frame was generated by the researcher using the same data sources to be analysed. Half of the parents' interviews were examined for generating the main categories and subcategories before stopping as the same points recurred, indicating that the

categories had become saturated. In the process of developing the coding frame, only the researcher was involved.

After a final coding frame had been developed, the categories were then defined. The name specifies what the category and subcategory is about and serves as an indicator of which segment of the data should be coded under the category. The name should neither be overly long nor overly short, but sufficiently capture the essence of the category or subcategory. It is strongly suggested that each category or subcategory is provided with examples showing what the category is and is not (Schreier, 2012).

In the last step of building a coding frame, the researcher examined the main categories and subcategories to decide whether they met the suggested requirements. To do so, the researcher revisited the coding frame and parents' interviews, revised and expanded the coding frame accordingly. Since the process of building a coding frame was only done by the researcher, this step is significant to ensure a complete, good coding frame was developed.

iv. Step 4: Divide material into units of coding

After the coding frame was developed, the material (i.e., parents' interviews) was divided to help make the analysis easier. Each interview is called a unit of analysis, which describes its function as the material to be analysed. The unit of analysis comprised of sentences and words that are both meaningful and not in relation to the research objectives. Therefore, each unit of analysis was further divided into units of coding that comprised of only the sentences or segments that fit the categories and/or subcategories of the coding frame. Dividing the interviews into a unit of coding can be done by following two types of criteria – formal or thematic (Schreier, 2012).

Formal criterion utilises the inherent structure of the material such as dividing the interview by marking the interviewee's answers after been asked a question until another question was asked as one unit of coding. Thematic criterion on the other hand, utilises the

change of topic as an indicator of the beginning and the end of one unit of coding. Each unit of coding using this thematic criterion corresponded to one of the themes developed in the coding frame.

In this study, eight of the ten parents' interviews were selected as the unit of analysis. The researcher marked each unit of analysis with units of coding using the thematic criterion as it was more appropriate since parents' answers typically comprised of mixed topics at once and the topic was often spread throughout different parts of the interview. In this stage, only the researcher was involved in marking the units of coding as the researcher was the one who interviewed the parents and transcribed all audio-recordings into written transcripts and therefore was familiar with the data.

v. Step 5: Test the coding frame

Trial coding was conducted by the researcher with several units of analysis (i.e., parents' interviews) to evaluate whether the coding frame's structure is good, complete (i.e., includes all relevant topics) and whether the categories and subcategories are easy to code. The trial coding involved interviews from participants of various characteristics including a case that involved both parents, a case which both parents are working as well as a case of only mother was involved in the study. This was done to ensure that all variability of the materials was included and the entire coding frame could be tested. Since only the researcher was involved in this trial coding, the researcher recodes the same materials after a few weeks of the first coding was completed. Both trial coding 1 and 2 produced several new subcategories with the already developed categories and subcategories were all used.

vi. Step 6: Evaluate and modify the coding frame

The coding from time 1 and 2 (i.e., trial coding 1 and 2) were compared to assess the consistency of the coding frame, hence determining the level of its reliability. Although the coding from time 1 and 2 resulted in several new subcategories, both coding in time 1 and 2

resulted in high consistency, indicating that the coding frame was reliable. Next, the coding frame's face validity was assessed since it was a data-driven coding frame. The pilot coding of both time 1 and 2 resulted in no residual categories, however, one subcategory was used much often than the other subcategories of the same main category. The subcategory was then reassessed and then transformed into a main category which improved the coding frame's face validity. At the end of this step, the coding frame was modified with newly added subcategories and a main category developed from a subcategory.

vii. Step 7: Main analysis – coding all materials using the modified coding frame

Using the modified coding frame (refer Appendix 15), revised units of coding were marked in the units of analysis (i.e., parents' interviews). Then, the researcher coded all the units of analysis based on the modified coding frame. Again, after two weeks from all the units of analysis had been coded for the first time, the researcher recoded parents' interviews for the second time. During this stage, a second coder was introduced to help code some of the units of analysis to check the coding. No major inconsistencies were detected from the comparison of codes produced by the two coders. The meaning of the analysis' result was then interpreted and discussed.

viii. Step 8: Interpretation and presenting the findings

The analysis' findings were interpreted by the researcher with the aid of a bilingual Malay and English speaker (as the interviews were in Malay language and the analysis was conducted in interviews' original form) and two English speakers (for the translated analysis' findings). The analysis of parents' interviews on the effect of the implementation of the parent-mediated home-based DIR/Floortime[®] intervention on their children with ASD and themselves, as well as the intervention's applicability resulted in five themes with each theme comprising of several main categories and subcategories. A detailed description of each

theme and its categories with illustrative quotes from selected cases are presented in Chapter 5, the qualitative results chapter.

3.10 Research rigour

Research needs to show evidence of rigour. Rigour refers to the means by which the integrity and competence of a research study can be demonstrated (Aroni et al., 1999). Since this study incorporates both quantitative and qualitative research methods, it provides preliminary rigour to the study where the findings from each method compliment and support each other.

In the quantitative component of this study, the measurement tools that were used are reliable and valid. To address the issues of the study findings' reproducibility, a multiple single subject study has been adopted with clear detailed participant selection criteria and a procedure where all the participants followed the same research protocol. This study seeks to examine the impact that the parent-mediated home-based intervention based on the DIR/Floortime[®] approach had on parents and children with ASD. The method used in this study incorporates quantitative measurements that are systematic – children with ASD's performance in pretend play using standardised assessments, interaction between parents and their child through the CoC rating process by two raters, and parents' quality of life, psychological wellbeing and parental sense of competence using reliable, validated self-report scales.

The qualitative strand of the study's rigour (also referred to as trustworthiness) is also detailed. Criteria proposed by Lincoln and Guba (1985, 1989) include credibility, transferability, dependability, and confirmability. These can be used to judge the trustworthiness of the qualitative component of this study. Credibility in qualitative research is equivalent to the internal validity in a quantitative study. It scrutinises the issue of fit between the respondents' view and the researcher's presentation of them (Padgett, 2008;

Schwandt, 2001), whether it is a credible explanation that fits the respondents' descriptions (Janesick, 2000; Tobin & Begley, 2004).

To ensure the credibility of the study's findings, member checking was done by going through the interview transcripts with the participants. While conducting the key informant interview with the parent participants, the encounters are prolonged as much as possible ensuring the participants were able to convey their views in the most clear and elaborate manner as they could. In addition, the information obtained from parents' reflective journals and discussions during follow-up sessions were referred to when analysing and interpreting the data, so it represented a clear, credible presentation of the participants' views.

Transferability or applicability is comparable to the external validity in quantitative research. It is related to the generalisability of the inquiry (Tobin & Begley, 2004) and the applicability of the study's findings to other individuals, groups, contexts, and setting (Bryman, 2012; Liamputtong, 2013). To ensure the applicability of the findings, multiple participants were recruited and involved in the study. Dependability is equivalent to reliability and involves the examination of whether the research findings fit the data that has been collected (Carpenter & Suto, 2008; Tobin & Begley, 2004). It addresses the issue regarding the consistency or congruency of results (Raines, 2011).

In ensuring the findings are dependable, the research and collection of the interview data were clearly documented and pursued in a logical procedure as suggested by Tobin and Begley (2004). The audit trail was performed with the data documentation, methods and the end product. All the data, methods and findings were audited by referring to the documented procedures as well as the researcher's self-critical and reflective notes of the research process made throughout the study.

Confirmability can be compared with the objectivity or neutrality in a quantitative study (Liamputtong, 2013). It demonstrates that the data and the interpretation of findings are

clearly derived from the data gathered in the study and not from the researcher's invention, biases, interests, or perspectives. Hence, the qualitative data was analysed using the data-driven strategy of coding. The interpretation of findings was made with caution by revising and cross referencing it to multiple sources of other data (e.g., researcher's self-reflective journal, parents' reflective journals, and interview transcripts).

A triangulation process was performed throughout the analysis and interpretation data phases since it offers completeness in the study. Triangulation involves "two or more theories, methods, approaches, instruments or investigators providing data on the topic" (Tobin & Begley, 2004, p. 394). Throughout the study, triangulation provides a more inclusive view of participants' world (Tobin & Begley, 2002) and adds additional pieces to the puzzle through both quantitative measurement of performance and qualitative information about the changes in participants' performance, intervention program and experience performing it.

3.11 Summary

This chapter has outlined the methodologies adopted in this study and participants involved in this study. The study's procedures including the translation and adaptation of assessment tools, the detailed process of each of the study's phases including the data collected during all phases as well as both quantitative and qualitative analyses, and the methods involved in establishing the study's rigour are illustrated. Following this chapter, the study's findings are presented in two chapters, the quantitative and qualitative analysis results.

Chapter 4

Results – Quantitative data

4.1 Introduction

The quantitative and qualitative data analyses procedures have been described in detail in Chapter 3. The results of this study were derived from the quantitative and qualitative data analyses of the same topic (e.g., child-parent interactions, child's pretend play, parents' quality of life). The analysis was done separately and will be presented in two separate chapters; the quantitative data analysis results are presented in this chapter and the qualitative data analysis findings in the next chapter. The results then were converged and interpreted in the discussion chapter.

This chapter opens with a brief description of the DIR/Floortime[®] intervention program, followed by the description and list of study participants who completed the 14-week intervention program and the individual cases that were included in the data analysis. The inter-rater agreement (IRR) analysis for all four types of Circle of Communication (CoC) will also be presented in this chapter. Demographic characteristics and the average time spent engaging in the DIR/Floortime[®] sessions at home for each week will be reported collectively followed by the case-by-case profile of the quantitative analysis results.

Three of the eight families' results are presented in detail including the profile of both child and parent(s) participants, the hours of DIR/Floortime[®] sessions' engagement at home, the average frequency of CoCs (mother-child, father-child), the visual analysis as well as statistical analysis of the CoC, and finally the descriptive statistics for both parents' self-report assessments and child with ASD's pretend play. The graphs of visual analysis of other participants (Case 4 to 8) are presented in the Appendix 16. A summary of the quantitative results for all eight participants is presented at the end of this chapter.

4.2 *DIR/Floortime® home-based intervention program*

The study involved three phases: pre-intervention phase, intervention phase, and post-intervention phase involving several quantitative data measurements. Each parent participant completed three self-report scales once during each phase of the study – Malay translated version of Parental Sense of Competence (PSOC) and Quality of Life in Autism (QoLA), and the Bahasa Malaysia Depression Anxiety Stress Scale-21 (BM DASS-21). Parent-child dyads free play sessions (15 minutes in length) were recorded on seven occasions during the study. A total of seven recorded sessions were completed by all ten participants with two recorded sessions taken during the pre-intervention phase, four recorded sessions completed during the intervention phase, and one recorded session during the post-intervention phase.

The intervention phase was divided into two stages. The first stage was the parents' training session about the DIR model and Floortime® approach. The parent/s participants attended two three-hour training sessions at the occupational therapy clinic. During the second stage of the intervention phase, parents were asked to engage in the DIR/Floortime® sessions with their children with Autism Spectrum Disorder (ASD) at home for a minimum of ten hours per week, which was completed at times convenient to parents and their children's willingness to take part in the activities.

Parent participants were provided with reflective journals that were to be completed during the eight weeks they engaged in the home-based intervention. Parents were asked to report their DIR/Floortime® sessions and any issues they encounter when implementing the intervention by themselves at home with their children with ASD. The reflective journals were collected during participants' follow-up sessions every two weeks at the clinic and discussion sessions were conducted with parents to address the issues they mentioned in their journals. Information provided in the journals was used to calculate the total hours of

DIR/Floortime[®] sessions implemented by the parents at home, as well as acting as one of the sources for the triangulation process used in the qualitative analyses.

4.3 Study participants

Fourteen parent(s)-child participants were initially recruited and gave consent to participate in the study. All fourteen of them completed the first pre-intervention session however, two of the parent-child dyads withdrew from the study due to personal issues and aggressive behaviours exhibited by the child participant. Twelve dyads continued to complete the second pre-intervention session. However, one of the parent participants withdrew from the study due to health issues that impacted on her ability to attend the training and follow-up sessions. Eleven dyads completed the parents training and started implementing the DIR/Floortime[®] intervention program at home with their child with ASD.

During week five of the intervention phase, one of the participant dyads missed the follow-up session. The participant also did not attend his appointment with the occupational therapist currently working with his case without any notice. Despite multiple attempts to contact the parent participant made by the student researcher, no response was received. Hence, it was considered that the participant decided to withdraw from the study and was excluded from the analysis. Ten parent(s)-child dyads completed the 14-week program, attended all the sessions, completed the parents' self-report scales and the child-parent/s dyads free-play video recordings. All fifteen parent participants (five dyads involved both parents and the child with ASD which equated to ten individual parent participants while another five dyads involved only the mother and child with ASD) were interviewed after the post-intervention session.

4.3.1 Cases included in data analysis

Ten parent(s)-child dyad participants completed the whole program including the collection of all quantitative and qualitative data. However, two of the participants failed to

provide their reflective journals during the follow-up sessions and their last meeting with student researcher - the interview session. To obtain the information of how many sessions and total hours of the DIR/Floortime[®] intervention both parent participants engaged at home with their child with ASD during the home-intervention period, parents were asked during the interview to estimate the total hours. For further validation of whether these participants engaged in the DIR/Floortime[®] sessions as they claimed, they were asked to describe how they usually engaged in the DIR/Floortime[®] intervention program at home.

One set of parent participants provided a vague and imprecise description of the activities and how they usually engaged in the DIR/Floortime[®] intervention program at home. Their description of the DIR/Floortime[®] approach's recommended techniques used during their engagement in the DIR/Floortime[®] intervention at home was inconsistent and ambiguous throughout their interviews. The participants claimed the total hours of engagement in the DIR/Floortime[®] intervention was in excess of what they were asked to, which was ten hours per week, but failed to describe the activities that were completed using the DIR/Floortime[®] approach's recommended techniques. Therefore, the participant's data was excluded from the analysis.

Another participant's data was also excluded from the analysis due to the inconsistencies of the DIR/Floortime[®] intervention program's engagement at home with their child with ASD. The parent participant failed to mention their current marital status in the beginning of the study and the child's living arrangement. Furthermore, the parent participant also failed to provide a reliable description of the activities done while engaging in the DIR/Floortime[®] sessions and the total hours of engagement in DIR/Floortime[®] program with their child with ASD at home. Both parents did not fill out the journal when they engaged in the DIR/Floortime[®] with their child each time the child was living with

them. Table 4.1 below reports the participants of this study and their status for the data analysis.

Table 4.1
List of participants

Case	Participants	Details of participants	Status for data analysis
1	Both parents and child with ASD	Mrs. A, Mr. A, Child A (boy, 6 years old)	Included
2	Mother and child with ASD	Mrs. B, Child B (boy, 5 years old)	Included
3	Both parents and child with ASD	Mrs. C, Mr. C, Child C (boy, 6 years old)	Included
4	Mother and child with ASD	Mrs. D, Child D (boy, 9 years old)	Included
5	Both parents and child with ASD	Mrs. E, Mr. E, Child E (boy, 6 years old)	Included
6	Both parents and child with ASD	Mrs. F, Mr. F, Child F (boy, 4 years old)	Included
7	Mother and child with ASD	Mrs. G, Child G (boy, 7 years old)	Included
8	Mother and child with ASD	Mrs. H, Child H (boy, 4 years old)	Included
9	Mother and child with ASD	Mrs. I, Child I (boy, 5 years old)	Excluded
10	Both parents and child with ASD	Mrs. J, Mr. J, Child J (boy, 5 years old)	Excluded

Note. ASD = Autism Spectrum Disorder.

Parent participants were asked to engage in the DIR/Floortime[®] intervention with the child participants (child with ASD) at home for at least ten hours per week. The information was obtained from the parents' journal provided. Only three out of the eight participants who were included in the analysis fulfilled the requirement of ten hours or more per week for eight weeks of the home-based intervention phase. Although the other five participants did not fulfil the ten hours per week requirement, their data were included in the analysis

because they handed in all the reflective journals. Furthermore, parents were able to provide a reliable description of the activities and how they engaged in the DIR/Floortime[®]-based activities with their child at home. The total hours of engagement in the DIR/Floortime[®] intervention were clearly stated in their submitted journals and were taken into account when analysing and discussing the cases.

4.4 Data analysis

The frequencies of the CoCs were analysed using both visual and statistical analyses. Both types of analyses were conducted using *R software* (R Core Team, 2013) which is specialised for analysing single-subject study data (Bulté & Onghena, 2013; Kelley, 2007). The data points for the baseline and intervention phases were plotted on graphs so as to be visually analysed to determine whether there were changes in level, data variability, trend and slope (Lane & Gast, 2014; Zhan & Ottenbacher, 2001). When there is an abrupt rise or fall in the data points, it indicates that there is a change in level, and a large degree of fluctuation in data points demonstrates a change in data variability (Ottenbacher, 1986). The changes in trend were determined by the changes in direction of data patterns between the baseline and intervention phases, while the slope changes were examined through the steepness of the data paths across the study phases (Zhan & Ottenbacher, 2001).

Standard deviation bands analysis was also conducted; the significant changes of the interaction between the baseline and intervention phases was determined by the number of successive intervention data points that fell outside of the upper or lower standard deviation band – at least two successive data points (Janosky et al., 2009). The data points should fall either above or below the bands depending on the aim of the intervention. If the aim of intervention is to increase the frequencies of the behaviour, the intervention data points should fall above the upper standard deviation band. Meanwhile, for behaviour that is aimed to decrease with implementation of intervention, intervention data points should fall below

the lower standard deviation band (Janosky et al., 2009; Manolov, Moeyart, & Evans, 2016).

Statistical analysis was also conducted to evaluate the statistical value and effect size of the changes between the parent-child interactions observed during baseline and intervention phases. Two statistical analyses were conducted: the percentage of nonoverlapping data (PND), and piecewise regression. For PND, values above 90% indicate very effective intervention impact, 70%-90% indicate moderate effective intervention impact, and values of 50%-70% indicate that any impact is considered questionable (Scruggs, Mastropieri, & Casto, 1987; Scruggs & Mastropieri, 2013). For the piecewise regression, the results obtained are the changes in level and slope (in numerical form) between the baseline and intervention data points. The changes in level indicative of the treatment effect of whether with introduction of intervention, the number of behaviours is increase or decrease. Meanwhile, the slope of data points in intervention phase indicative of the changes of number behaviour throughout the five sessions of intervention phase.

The scores for both parent participants' self-report scales and child participants pretend play assessment scores were analysed descriptively and presented for each participant. No statistical analysis of difference was conducted due to the small sample size.

4.5 Results

In this section, the results of the quantitative data analysis will be divided into several subsections starting with the presentation of the inter-rater agreement analysis of the frequencies of CoCs, descriptive statistics of demographic characteristics, and time spent engaging in the DIR/Floortime[®] sessions by parent(s) and child participants at home. This will then be followed by a case-by-case detailed report of the results of three child-parent dyads.

4.5.1 Inter-rater reliability analysis of the frequencies of CoCs

The frequency of CoCs were rated by two independent raters and the average of the frequencies was used for analysis. Prior to data analysis, the inter-rater reliability (IRR) between the two independent raters was determined using the Intra-Class Correlation (ICC) analysis (Hallgren, 2012; McGraw & Wong, 1996). A two-way mixed effects model with absolute-measures unit ICC (McGraw & Wong, 1996) was completed. This variant of ICC was used because of all videos were rated by the same two independent raters (i.e., two-way model) with the purpose of IRR was to assess the degree of similarity of ratings value between the two coders (i.e., absolute-measures), without generalising the ratings beyond the study's population (i.e., mixed effects model) (Hallgren, 2012; McGraw & Wong, 1996). The results of the analysis are reported in Table 4.2.

Table 4.2
Inter-rater agreement analysis

Circle of Communication (CoC)	Intra-class correlation (ICC)		95% CI	
	Mother ^a	Father ^{b,c}	Mother ^a	Father ^{b,c}
Parent initiated directive (PI-D)	0.82*	0.86*	0.69, 0.89	0.75, 0.91
Parent initiated non-directive (PI-ND)	0.94*	0.97*	0.89, 0.97	0.95, 0.98
Child initiated directive (CI-D)	-0.05	0.47*	-0.81, 0.39	0.10, 0.69
Child initiated non-directive (CI-ND)	0.66*	0.95*	0.00, 0.85	0.91, 0.97

Note. ^a*n* = 8. ^b*n* = 3. ^cOne father participant did not involve in CoC observations.

**p* < 0.05

Based on the Cicchetti (1994) cutoffs for inter-rater agreement based on ICC values, the value below 0.40 indicates poor IRR, the value between 0.40 and 0.59 is fair, the value from 0.60 to 0.74 is showing good IRR and an excellent IRR is when the value is between 0.75 to 1.0. The results showed that the IRR for the ratings of PI-D, PI-ND and CI-ND

(between father and child) were excellent. Meanwhile, the IRR for CI-ND between the mother and child was good. The value of ICC for the CI-D ratings between father and child only demonstrated a fair IRR and a poor disagreement in the mother-child ratings as this type of interaction was only present in four of the total 56 videos, each video with only one to three instances. The ICC value for three types of interactions was in the good to excellent ranges suggesting that the coders had high agreement and the videos were rated similarly between the coders.

4.5.2 Demographic characteristics

The demographic characteristics of children with ASD and parent participants that were included in the data analysis are presented in the following Table 4.3

Table 4.3

Demographic characteristics of parent (left) and child with ASD (right) participants

Characteristics	n (%)		Characteristics	n (%)
	Mother ^a	Father ^b		Child with ASD ^c
Race			Race	
Malay	8 (100.0)	4 (100.0)	Malay	8 (100.0)
Age group (years)			Age (years)	
31-36	5 (62.5)	3 (75.0)	4	2 (25.0)
37-42	2 (25.0)	1 (25.0)	5	1 (12.5)
43-48	1 (12.5)		6	3 (37.5)
Occupation ^d			8	1 (12.5)
Professionals	4 (50.0)	2 (50.0)	9	1 (12.5)
Housewife	4 (50.0)		Gender	
Self-employed		2 (50.0)	Boy	8 (100.0)
			Number of siblings	
			0	1 (12.5)
			1	3 (37.5)
			2	3 (37.5)
			3 and more	1 (12.5)

Note. ^an = 8. ^bn = 4. ^cn = 8. ^dOccupation classification is based on Australian and New Zealand Standard Classification of Occupations, 2013, Version 1.2 (ANZSCO) that is equivalent to Malaysia Standard Classification of Occupation, 2008, 3rd edition.

4.5.3 Hours of DIR/Floortime[®] engagement at home for all cases

The time participants spent engaging in the DIR/Floortime[®] intervention at home for each week were totalled from the parents' reflective journals that they completed during the home-based intervention period and collected during the follow-up sessions. In Table 4.4, the descriptive statistics of the time spent engaging in the DIR/Floortime[®] intervention program at home each week are presented.

Table 4.4

Time spent engaging in DIR/Floortime[®] at home per week (minutes)

Week	<i>M</i>	<i>Mdn</i>	<i>SD</i>	Min	Max	25 th IQR	75 th IQR
1	453.75	522.50	215.63	155.00	715.00	205.00	608.75
2	473.75	545.00	214.19	80.00	710.00	293.75	623.75
3	495.63	610.00	243.68	70.00	790.00	272.50	641.25
4	501.25	517.50	286.44	100.00	1030.00	288.75	640.00
5	500.00	600.00	223.13	145.00	750.00	251.25	647.50
6	510.63	600.00	256.88	155.00	915.00	225.00	628.75
7	564.29	600.00	243.23	210.00	920.00	320.00	660.00
8	579.29	600.00	254.66	165.00	1020.00	440.00	630.00

Note. Min = minimum; Max = maximum; IQR = Interquartile range.

4.5.4 Case 1

a. Profile of Child A

Demographic and daily life activities. Child A is a six-year-old boy. He is the middle child of two other siblings. He attended a full-day program offered at a special school for children with dyslexia (at the time of the study) with his older brother.

Interaction skills. Child A is a bit shy when meeting new people. He is close to his mother, Mrs. A and likes to stay close to her. Earlier in the program, Child A always followed what his mother told him to do. Albeit he could verbally communicate and engage

in pretend play, he did not demonstrate much initiative to communicate with other people, play or perform activities. He showed interest in other people and was aware of what other people were doing, but had some problems in initiating and asking others to play with him. Child A started to show some changes towards the end of the intervention program. His initiation to engage in activities improved although he still liked to play the same activity in the same way (playing with a pencil and retelling the same story of sharks attacking people). Child A enjoyed playing together with his parents and was able to continue playing persistently (when engaged in his preferred play or activities) even when his parents suggested he or insisted he play or do other activities.

Communication skills. Child A can verbally communicate with others including requesting and describing what he was doing with his parents, but only using limited expressive language. Most of the time he just made a growling sound when he got irritated with people or frustrated with the activity being performed, or when he was excited during the play activity. Sometimes, he would hit his mother's body when he could not say something he wanted to or express something to her. His verbal communication improved a bit although he still quoted lines from his favourite cartoon show when he talked to other people while playing or performing activities.

Play. When Child A played on his own without the parents instructing him to do something or structured the play, most of the time he pretended or imagined a situation from his favourite TV shows he watched at home. Child A liked to play with his pencil and did not like to write or draw. He liked to play with his pencil and pretend the pencil was another object. He also liked to pretend play in the middle of an activity he was engaged in (for example, when his mother asked him to collect some toys in the ball pool, he would walk on a balance beam located near the ball pool, pretended to fall down and be injured, and then laid down in the ball pool). Towards the end of the program, he played for longer periods of

time with his parents in a more active and engaging manner instead of always relying on their instructions.

Behaviour. Child A had some problems focusing and completing any task or activity without his parents' providing instructions, prompts and assistance. Despite having this problem, he easily got fixated on a concept, theme or way of playing with an object especially when playing with his favourite object or activity. Once fixated on an object, concept or theme, it was difficult for Child A to change or transition to a new activity. Child A threw temper tantrums when he did not want to do what he was told or when he was interrupted while playing or doing his preferred activity. He showed some improvement after the implementation of the DIR/Floortime[®] intervention program whereby he could maintain his attention and complete his preferred activity. The frequency of Child A's tantrums also decreased towards the end of the program. This could be partially due to the fact that Child A started doing things he liked more often rather than just following his parents' instructions.

b. Profile of Mrs. A (mother)

Demographic and daily life activities. Mrs. A is a full-time working mother who is employed in the Information Technology (IT) field. She takes care of her family without assistance from a domestic helper. She and her husband take turns driving and picking up Child A from school. Mrs. A was involved in the DIR/Floortime[®] intervention program from the start. She took turns to attend the follow-up sessions with Mr. A after he actively participated in the program during the parents training phase.

Interaction and communication skills. Mrs. A was able to communicate and maintain two-way communication with Child A. However, she usually communicated with Child A in the form of instructing him to do something. Occasionally, she gave him chances to initiate or options to choose what he wanted to do. She always instructed him to do

something when they engaged in academic-based activities or play. Towards the end of the program, Mrs. A demonstrated some improvements in her way of interacting with Child A. She started to listen and follow Child A's lead more than she had done in the past.

Play. Mrs. A lacked creativity and playfulness when interacting and playing with Child A. She preferred to engage in academic-based activities with Child A instead of free play or pretend play which her son actually preferred. Most of the time, when Child A started to engage in pretend play or imagine a situation from one of his favourite TV shows, she would either ignore or try to bring him back to doing the original activity without referring it to the TV shows. Towards the end of the program, Mrs. A improved her willingness to engage in Child A's pretend play and imaginary situations. She played along when her son and started to incorporate characters from his favourite TV shows during their play activities.

c. Profile of Mr. A (father)

Demographic and daily life activities. Mr. A worked full-time in the IT field. He took turns driving and picking up Child A from school every day with Mrs. A. He only started actively being involved after attending the training program with Mrs. A. He took turns taking Child A to the follow-up sessions at the clinic.

Interaction and communication skills. Mr. A was able to communicate with Child A and maintained two-way communication with him. Just like Mrs. A, he usually communicated with Child A in the form of verbal instructions, but occasionally gave him the opportunity to make his own decisions. Mr. A also changed his way of communicating with his son with ASD. For example, he actively listened to his son and followed what his son wanted to do more often instead of instructing him what to do.

Play. Mr. A was creative, but lacked playfulness when interacting and playing with Child A. He was able to be more expressive and playful with encouragement from the

student researcher. Mr. A showed some improvements towards the end of the program. He started to use his son's likes to create learning opportunities via play. For example, Child A likes to play with his pencil and Mr. A used his interest in playing with the pencil to create the opportunity to engage in a purposeful activity. When Child A was twirling the pencil, Mr. A showed a picture of his favourite cartoon character and asked him to copy and draw it on a paper.

d. Hours of engagement in DIR/Floortime[®] intervention at home with Child A

The information about the amount of time spent engaging in the DIR/Floortime[®] intervention at home was extracted from the parents' reflective journal provided. Parents were provided individual eight reflective journals and used one per week to report information during the home-intervention phase. Only six of the eight reflective journals were handed back by the parents. Parents reported that they did not fill in the journals for Week 7 and Week 8. However, Mr. and Mrs. A did not complete the ten hours per week time requirement for engagement in the DIR/Floortime[®] intervention with Child A. Table 4.5 reports the hours of engagement in the DIR/Floortime[®] intervention per week based on the information extracted from the journals Mr. and Mrs. A completed.

Table 4.5
Hours of engagement in the DIR/Floortime[®] intervention per week for Case 1

Week	Hours of engagement in DIR/Floortime [®] (hr, min)
1	2 hr 35 min
2	1 hr 20 min
3	1 hr 10 min
4	1 hr 40 min
5	2 hr 25 min
6	2 hr 35 min
7	No time reported
8	No time reported

Note. DIR = Developmental, Individual-difference, Relationship-based;
hr = hours, min = minutes

e. Parent-child interactions via the Circle of Communication (CoC) frequencies

In total, Child A attended two pre-intervention, two intervention and the post-intervention sessions with Mrs. A. Meanwhile, he attended two intervention sessions with Mr. A. The average frequency of the CoCs for each session are presented in Figure 4.1 below with the indication of which parent was rated during each session with Child A.

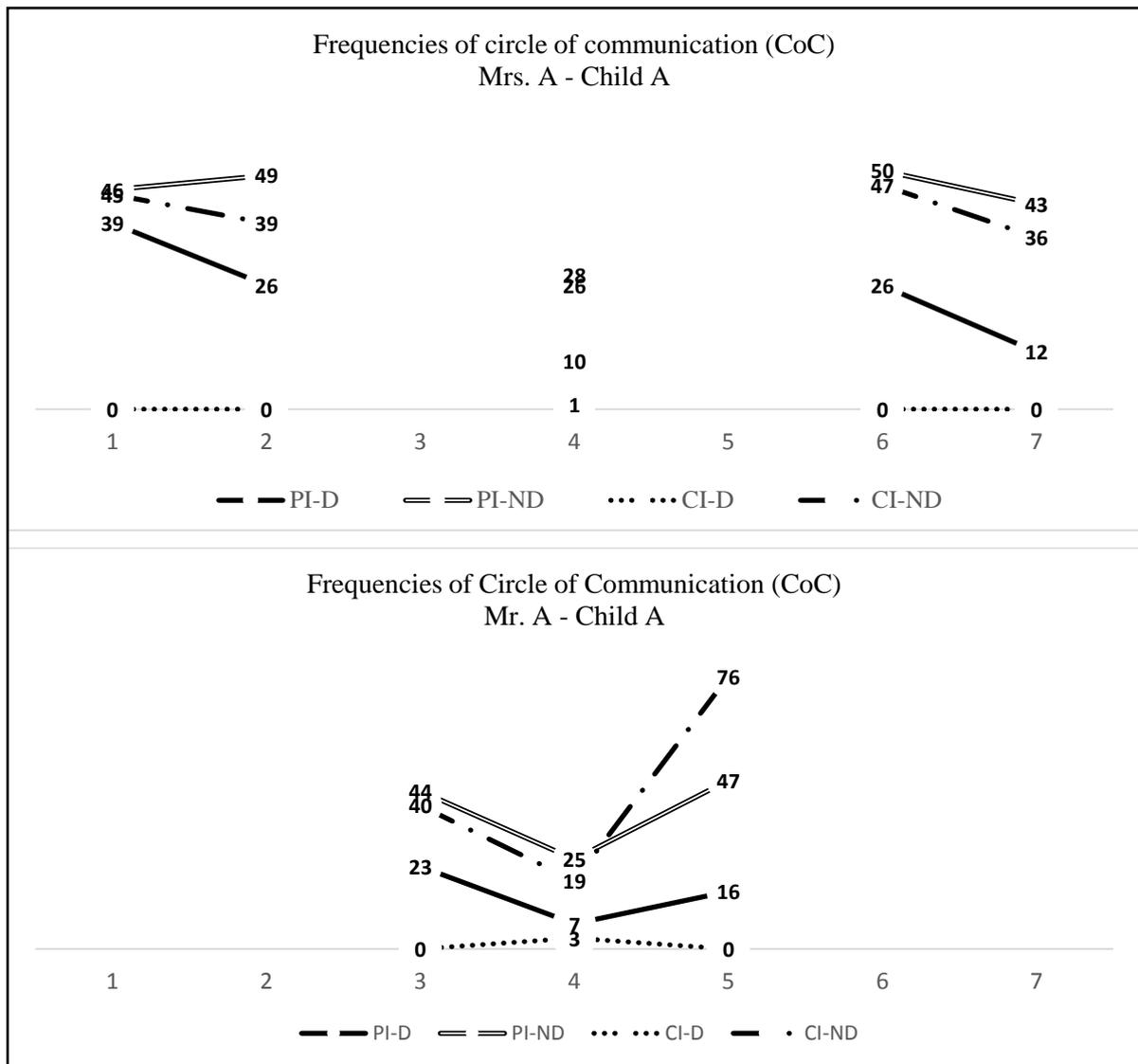


Figure 4.1. Average Circle of Communication (CoC) frequencies for both Mrs. A and Mr. A with Child A across seven sessions. CI-D = child-initiated directive; CI-ND = child-initiated non-directive; CoC = circle of communication; PI-D = parent-initiated directive; PI-ND = parent-initiated non-directive.

f. *Visual analysis of the Circles of Communication (CoC) frequencies*

The graphed data of the frequency of CoCs for both Mrs. A and Mr. A with Child A throughout the study phases were visually analysed.

i. Parent-initiated directive communication (PI-D)

The average frequencies of Mrs. A and Mr. A initiated directive communication with Child A are plotted on the graphs in Figures 4.2 and 4.3 below. Each parent participants' frequencies of parent-initiated directive communication were plotted on three graphs from left to right showing the changes in level, variability, trend, and slope respectively.

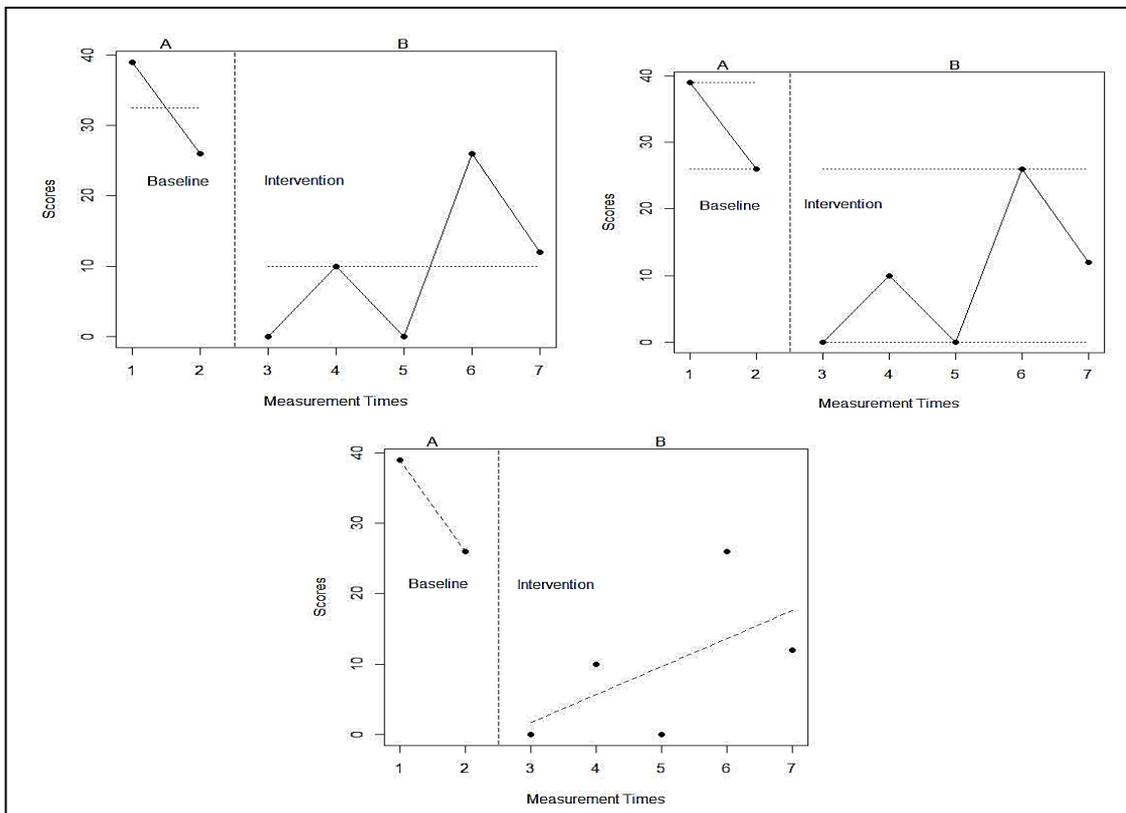


Figure 4.2. Parent-initiated directive communication between Mrs. A and Child A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

From the graphs, there are changes noted in both Mrs. A and Mr. A's initiated directive communication between them and their child with ASD. From Figure 4.2,

the level of data points in the intervention phase decreased from the baseline phase. The data variability for the intervention points also changed to a larger degree compared to the baseline phase. The trend line also changed direction from decreasing during the baseline phase to increasing during the intervention phase. Meanwhile, the steepness of the trend line also changed between the phases.

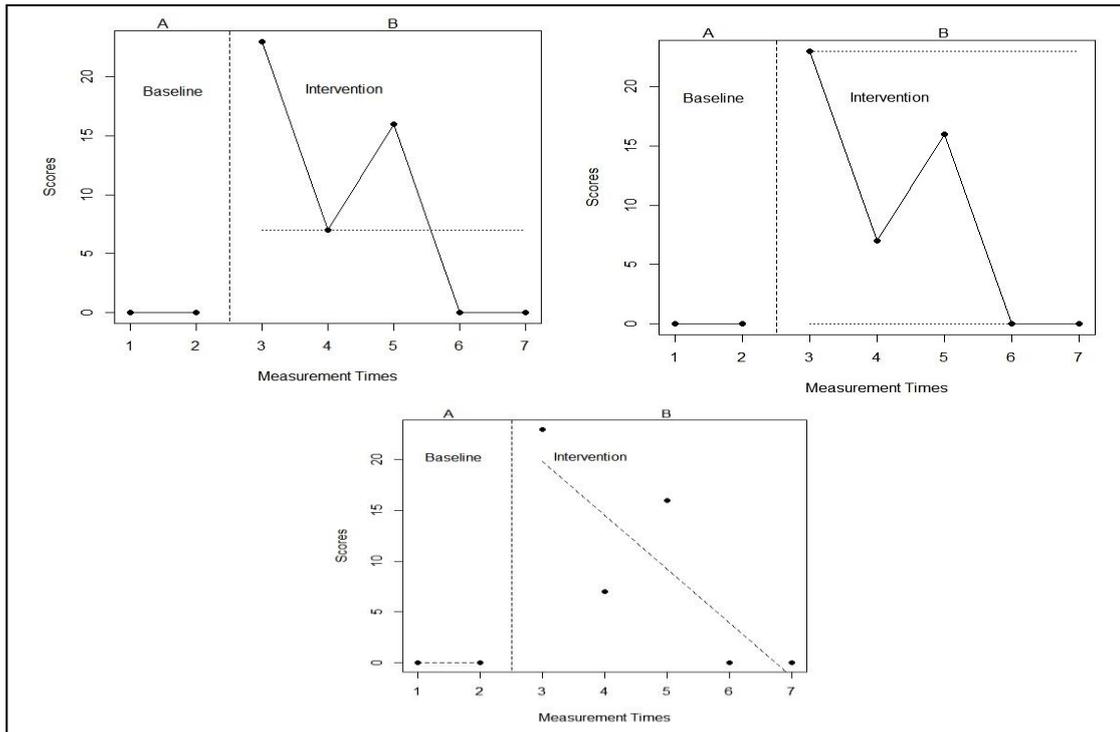


Figure 4.3. Parent-initiated directive communication between Mr. A and Child A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Mr. A did not attend the pre-intervention phase, hence no comparison between baseline and intervention phase could be made. However, the data points in the intervention phase fluctuated with the last data point being lower than the first data point.

The results of the standard deviation band analysis for both Mrs. A and Mr. A's initiated directive communication is shown in Figure 4.4.

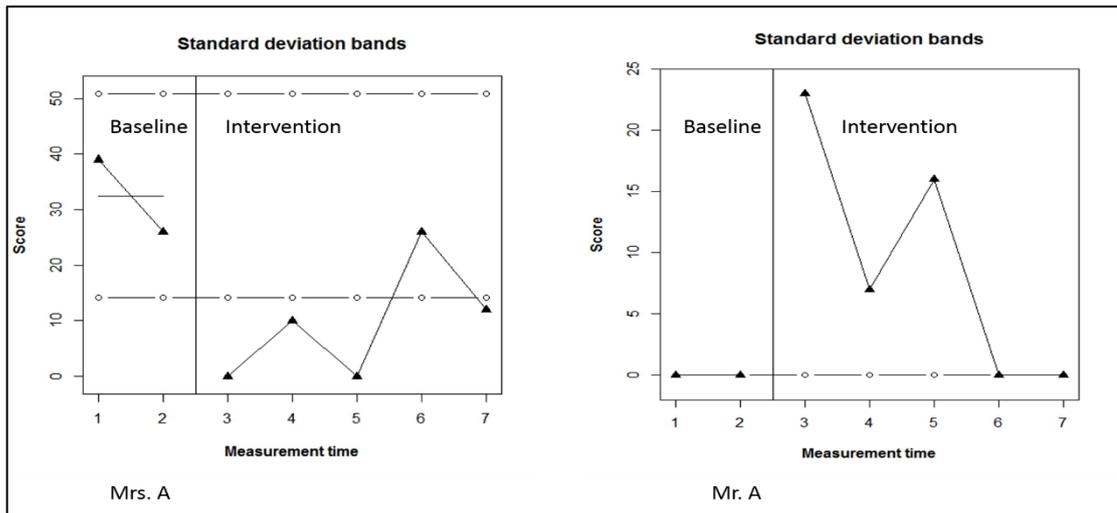


Figure 4.4. Standard deviation bands analysis results for parent-initiated directive communication for Case 1. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

From the graph on the left representing the parent-initiated directive communication between Mrs. A and Child A, there are three consecutive intervention points that fall below the lower standard deviation band. This indicated that there was a significant difference in the interaction observed during the baseline and intervention phases. In this instance, only three data points were available for the directive communication for Mr. A, and all of them fell above the upper standard deviation band. Although this indicates a significant difference, there was no baseline data point to be compared with, therefore the interpretation may not be valid.

ii. Parent-initiated non-directive communication (PI-ND)

Three graphs in Figure 4.5 and Figure 4.6 showed the parent-initiated non-directive communication data points between Mrs. A and Mr. A with Child A. The graphs from left to right were analysed to determine if there were any notable changes in level, variability, trend and slope.

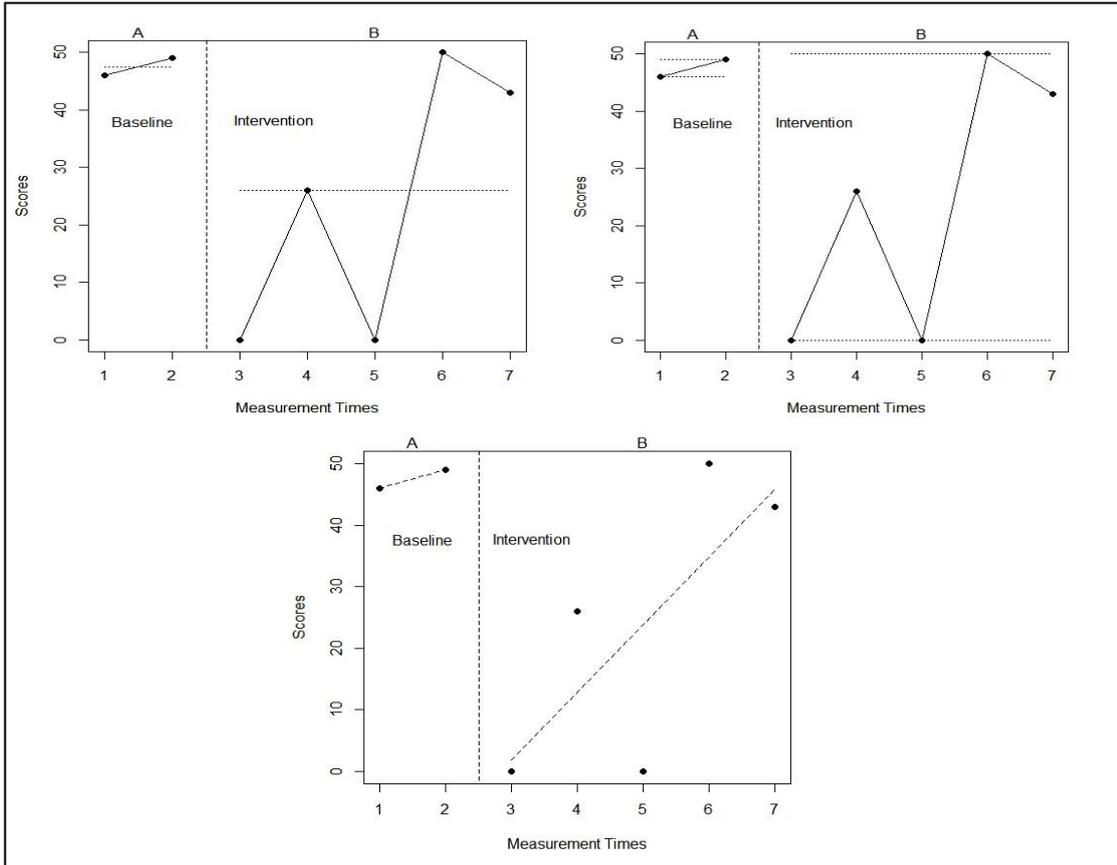


Figure 4.5. Parent-initiated non-directive between Mrs. A and Child A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

From the graph on the left in Figure 4.5, the level decreased in the intervention phase. The data variability also showed a large degree of dispersion of data points in the intervention phase compared to the baseline's data points. Although the trend lines in both study phases were in the same increasing pattern, the steepness of the intervention data points' slope changed from the baseline phase.

Since no baseline data points were available for Mr. A's interaction with Child A (refer Figure 4.6), no comparison between these study phases could be made. However, the last data point observed in the intervention phase (Time 5) was higher than the first observation (Time 3).

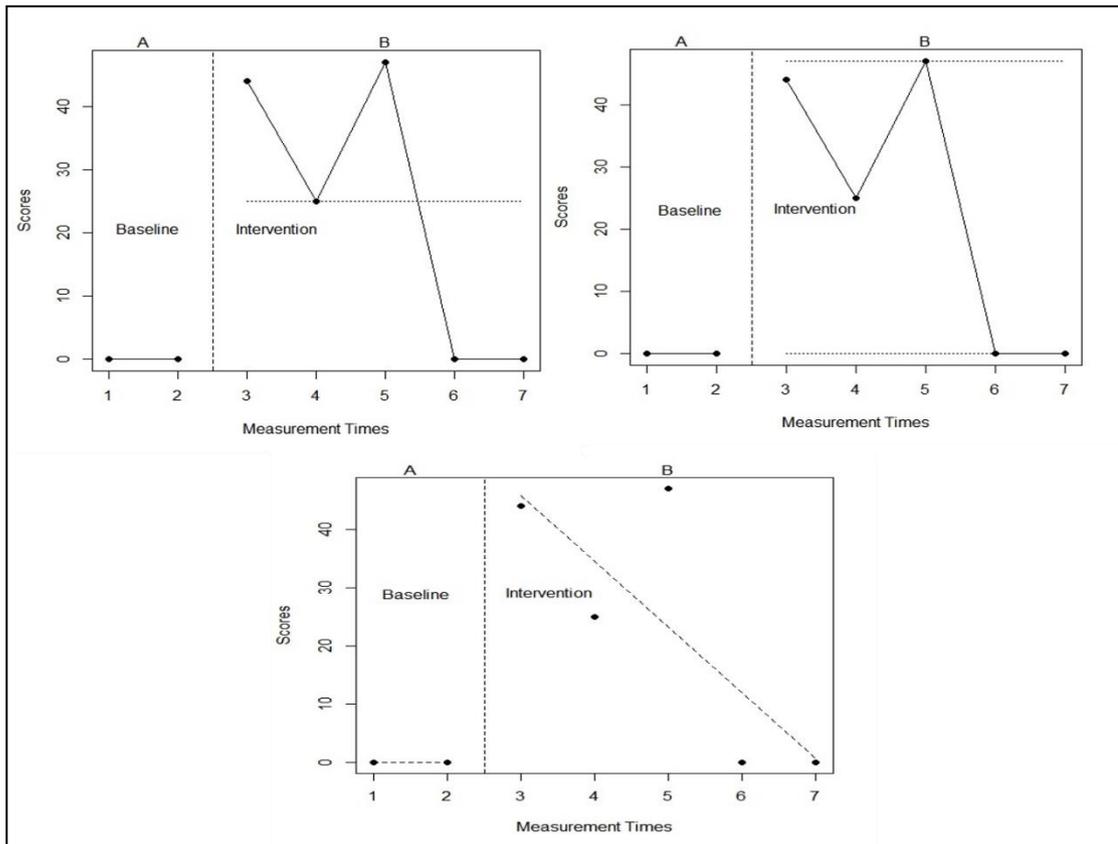


Figure 4.6. Parent-initiated non-directive communication between Mr. A and Child A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

The standard deviation bands analysis was also conducted for both Mrs. A and Mr. A's initiated non-directive communication with Child A. The results are shown in Figure 4.7.

Based on the graph, three consecutive intervention data points fell below the lower bands for the interaction between Mrs. A and Child A. This indicated that the difference of the interaction observed during the baseline and intervention phase was not significant. Although the graph plotted with Mr. A-Child A's interactions showed three consecutive intervention data points fell above the upper band, since no observations were made during pre-intervention phase, the interpretation of this result is viewed as invalid.

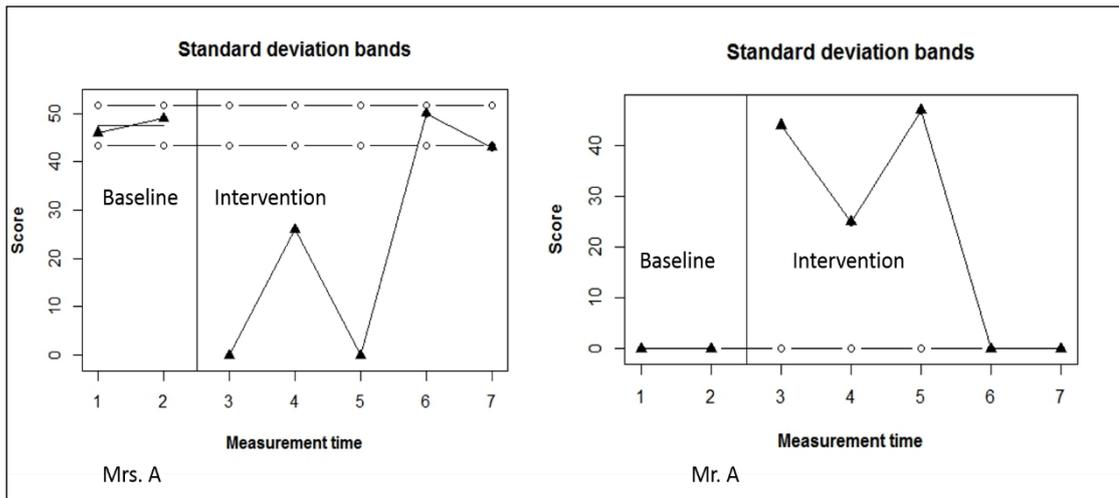


Figure 4.7. Standard deviation bands analysis results for parent-initiated non-directive communication for Case 1. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

iii. Child-initiated directive communication (CI-D)

The three graphs in Figure 4.8 below from left to right show the changes in level, variability, trend and slope for Child A's initiated directive communication with his mother, Mrs. A. In Figure 4.9, three graphs from left to right below show the changes in level, trend, variability and slope for Child A's initiated directive communication with his father, Mr. A. Although there were changes observed, they were not stable and prominent enough to make an inference that there were changes in the interaction between the parents and the child. It was only observed once at Time 4 for both parents and, it might have been a coincidence.

Standard deviation bands analysis was conducted and there was only one observation during Time 4 for the interaction between both parents and Child A, therefore no significant differences were noted (criteria to be deemed significant is at least two successive points).

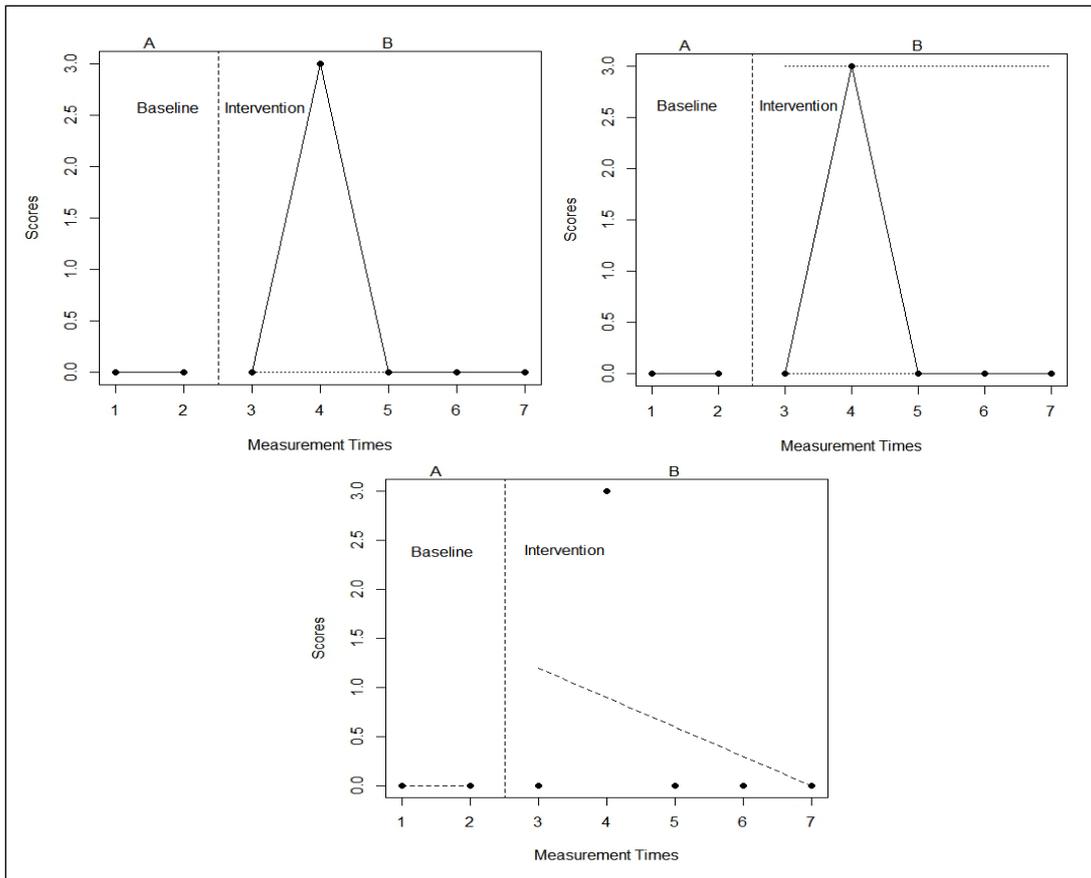


Figure 4.8. Child-initiated directive communication between Child A and Mrs. A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

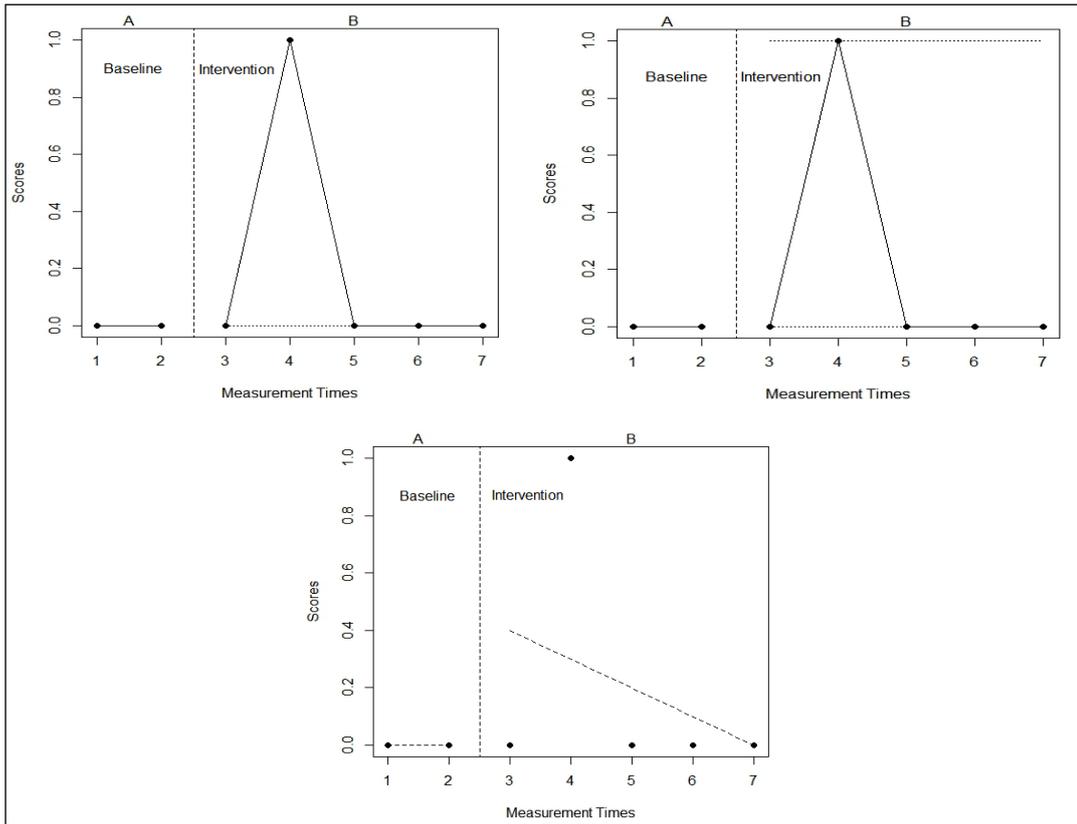


Figure 4.9. Child-initiated directive communication between Child A and Mr. A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

iv. Child-initiated non-directive communication (CI-ND)

Three graphs in Figure 4.10 below show the changes in level, variability, trend and slope for Child A communicating with Mrs. A, meanwhile Figure 4.11 shows the changes for Child A with Mr. A.

From the graphs in Figure 4.10, the level of the data points in the intervention phase decreased from those in the baseline. The intervention data points were dispersed wider compared to the data points in the baseline phase. Meanwhile, the trend line changed direction from a decreasing to increasing pattern during the intervention phase. The steepness of the trend line also changed between the study's phases.

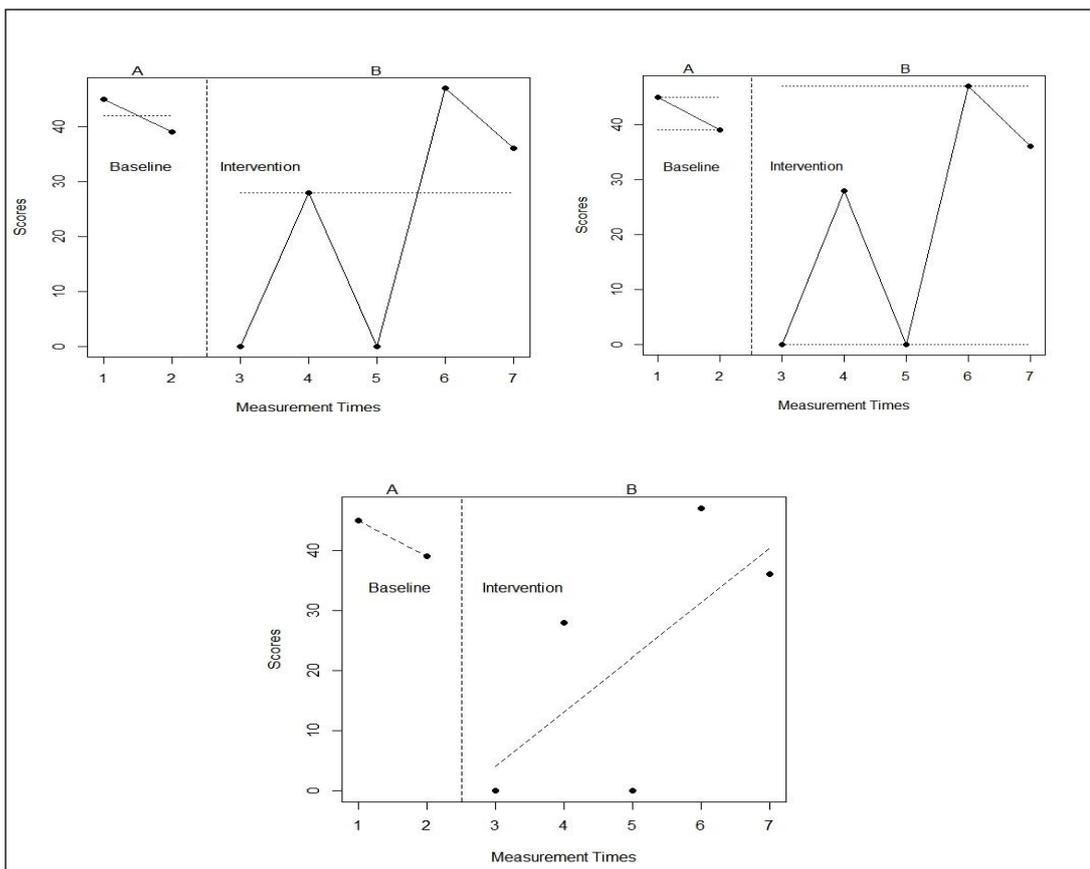


Figure 4.10. Child-initiated non-directive communication between Child A and Mrs. A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Child A's interaction with Mr. A was only observed three times during the intervention phase, and the last data point (Time 5) was higher than the first observation (Time 3).

Another visual analysis was done using the standard deviation bands analysis. The results of the child-initiated non-directive communication between Child A and both his parents are shown in Figure 4.12 below.

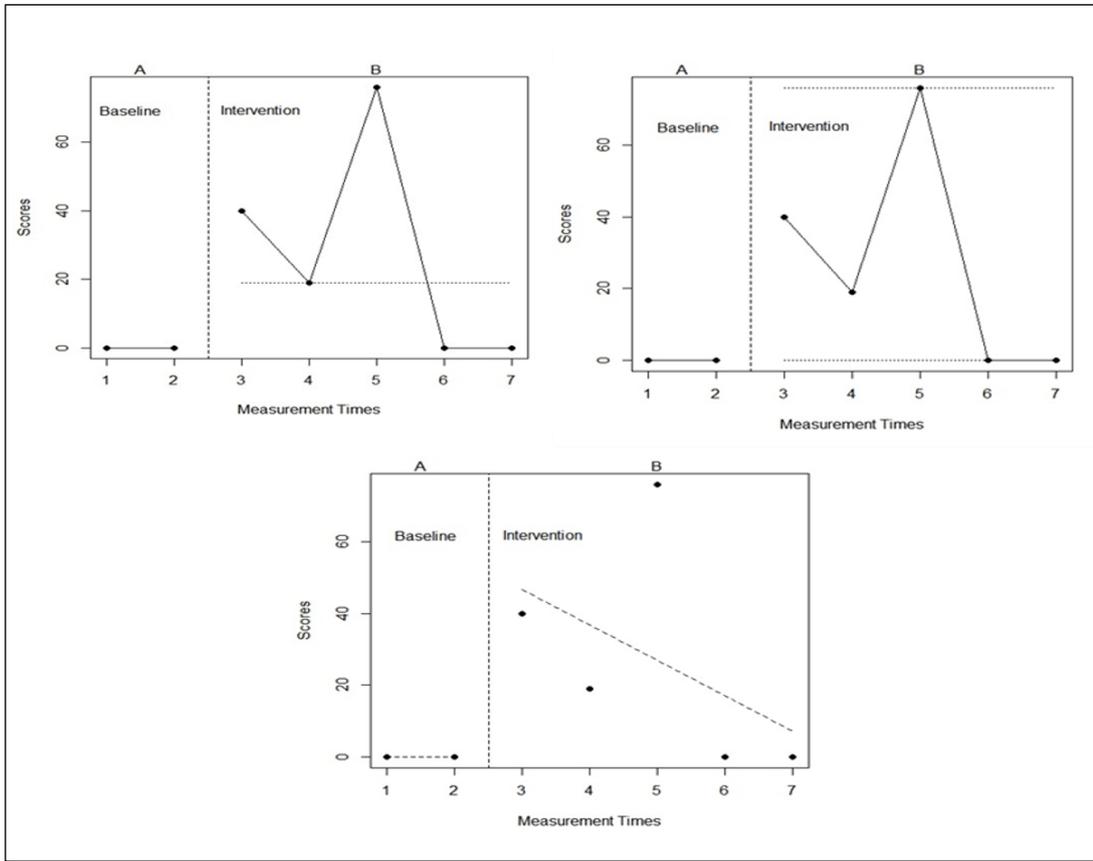


Figure 4.11. Child-initiated non-directive communication between Child A and Mr. A. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

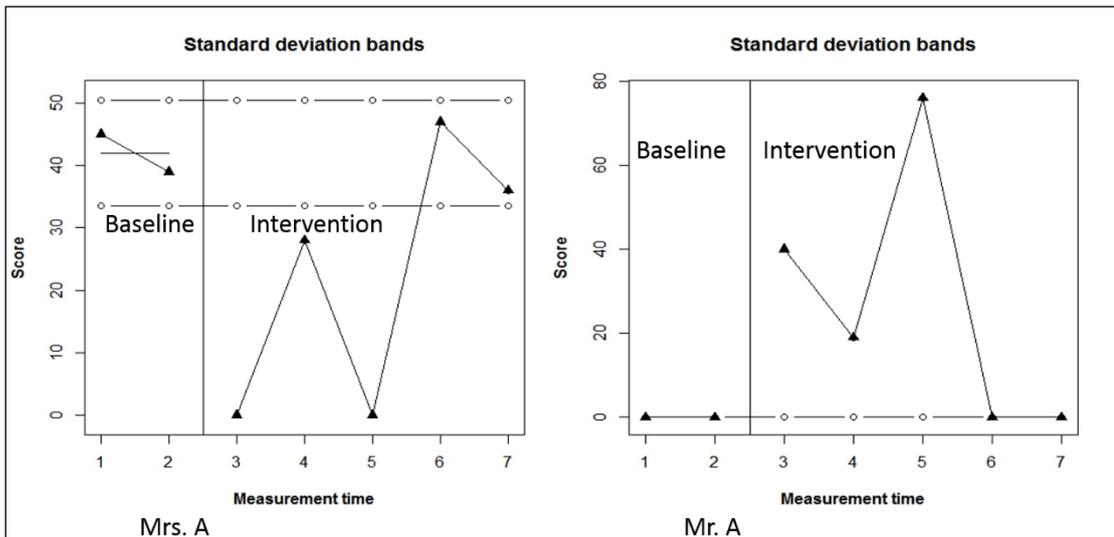


Figure 4.12. Standard deviation bands analysis results for child-initiated non-directive communication for Case 1. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Three consecutive intervention points fell below the lower bands for the interaction between Child A and his mother, while the same number of consecutive points fell above the upper bands for the interaction with his father. This indicated that there was no significant difference for Child A's initiated non-directive communication with Mrs. A. Meanwhile, the interaction between Child A and Mr. A was not significant since no interaction was observed before the intervention phase.

g. Statistical analysis of the Circle of Communication (CoC) frequencies

Statistical analysis of the CoC frequencies for all four communication types/styles between both Mrs. A and Mr. A with Child A throughout the study's phases were completed.

i. Parent-initiated directive communication (PI-ND)

The results and the interpretation of the statistical analyses for the parent-initiated directive communication between both Mrs. A and Mr. A with Child A are shown in Tables 4.6 and 4.7 below.

Table 4.6
Statistical analyses of parent-initiated directive communication between Mrs. A and Child A

Analysis	Results	Interpretation
Percentage of nonoverlapping data (PND): expected decrease	80	Four treatment scores (80%) are lower than the lowest baseline score. Treatment is effective to decrease directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = -11.4 Piecewise unstandardised change in slope = 17	Introduction of treatment induced a decrease in the number of interactions. Number of interactions increases across time during the intervention phase.

Table 4.7

Statistical analyses of parent-initiated directive communication between Mr. A and Child A

Analysis	Results	Interpretation
Percentage of nonoverlapping data (PND): expected decrease	0	No treatment score (0%) is lower than the lowest baseline score. Treatment is not effective to decrease directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 19.8 Piecewise unstandardised change in slope = -5.3	Introduction of treatment induced an increase in the number of interactions. Number of interactions gradually decreases across time during the intervention phase.

ii. Parent-initiated non-directive communication (PI-ND)

Three statistical analyses were conducted and the results of each analysis are presented in Tables 4.8 and 4.9 for the interaction for Mrs. A and Mr. A with Child A, respectively.

iii. Child-initiated directive communication

Statistical analyses were conducted to evaluate the statistical value of changes in Child A's initiated directive communication with both his parents. The results are shown in Tables 4.10 and 4.11 below.

Table 4.8

Statistical analyses of parent-initiated non-directive communication between Mrs. A and Child A

Analysis	Results	Interpretation
Percentage of nonoverlapping data (PND): expected increase	20	One treatment score (20%) is higher than the highest baseline score. Treatment is not effective to increase non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = -50.2 Piecewise unstandardised change in slope = 8	Introduction of treatment induced a decrease in the number of interactions. Number of interactions gradually increase across time during the intervention phase.

Table 4.9

Statistical analyses of parent-initiated non-directive communication between Mr. A and Child A

Analysis	Results	Interpretation
Percentage of nonoverlapping data (PND): expected increase	60	Three treatment scores (60%) are higher than the highest baseline score. Treatment is questionably effective to increase non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 45.8 Piecewise unstandardised change in slope = -11.3	Introduction of treatment induced an increase in the number of interactions. Number of interactions decreases across time during the intervention phase.

Table 4.10

Statistical analyses of child-initiated directive communication between Child A and Mrs. A

Analysis	Result	Interpretation
Percentage of nonoverlapping data (PND): expected decrease	0	No treatment scores (0%) are lower than the lowest baseline score. Treatment is not effective to decrease directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 0.4 Piecewise unstandardised change in slope = -0.1	Introduction of treatment induced an increase in the number of interactions. Number of interactions gradually decrease across time during the intervention phase.

Table 4.11

Statistical analyses of child-initiated directive communication between Child A and Mr. A

Analysis	Result	Interpretation
Percentage of nonoverlapping data (PND): expected decrease	0	No treatment scores (0%) are lower than the lowest baseline score. Treatment is not effective to decrease directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 1.2 Piecewise unstandardised change in slope = -0.3	Introduction of treatment induced an increase in the number of interactions. Number of interactions gradually decreases across time during the intervention phase.

iv. Child-initiated non-directive communication

Three statistical analyses were conducted to determine the value and direction of the child-initiated non-directive communication changes between baseline and intervention phases. The results of the analyses are shown in Tables 4.12 and 4.13.

Table 4.12

Statistical analyses of child-initiated non-directive communication between Child A and Mrs. A

Analysis	Results	Interpretation
Percentage of nonoverlapping data (PND): expected increase	20	One treatment score (20%) is higher than the highest baseline score. Treatment is not effective to increase non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = -29 Piecewise unstandardised change in slope = 15.1	Introduction of treatment induced a decrease in the number of interactions. Number of interactions increases across time during the intervention phase.

h. Parent's assessment: Quality of Life in Autism (QoLA)

Mrs. A completed the QoLA at three different time points, once during the pre-intervention phase, once during the intervention phase, and once during the post-intervention phase. Since Mr. A was only actively involved in the intervention and post-intervention phases of the program; he was only able to complete the QoLA on two occasions. Figure 4.13 shows the QoLA scores at the different time points for both Mrs. A and Mr. A.

Table 4.13

Statistical analyses of child-initiated non-directive communication between Child A and Mr. A

Analysis	Results	Interpretation
Percentage of nonoverlapping data (PND): expected increase	60	Three treatment score (60%) is lower than the lowest baseline score. Treatment is not effective to increase non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 46.8 Piecewise unstandardised change in slope = -9.9	Introduction of treatment induced an increase in the number of interactions. Number of interactions decreases across time during the intervention phase.

Mrs. A's pre-intervention score of QoLA Part A was 108, and then decreased to 83 during intervention period. Then, her post-intervention score increased to 107. However, it was slightly lower than her pre-intervention score. Meanwhile, Mr. A's scores were similar to his wife's scores pattern. Initially, his score during the intervention phase was 100 and then increased to 110.

For Part B, Mrs. A's scores were quite low (minimum score possible is 20 and highest is 100) and fluctuated throughout the three phases. In the beginning of the program, her score was 44, then increased slightly to 45 during the intervention phase, but decreased to 38 during the post-intervention phase. Mr. A's scores were higher than Mrs. A's scores, but decreased from 76 (intervention phase) to 70 at the end of the program. From the scores, it shows that Mrs. A was impacted by her child with ASD's difficulties to a greater degree than Mr. A.

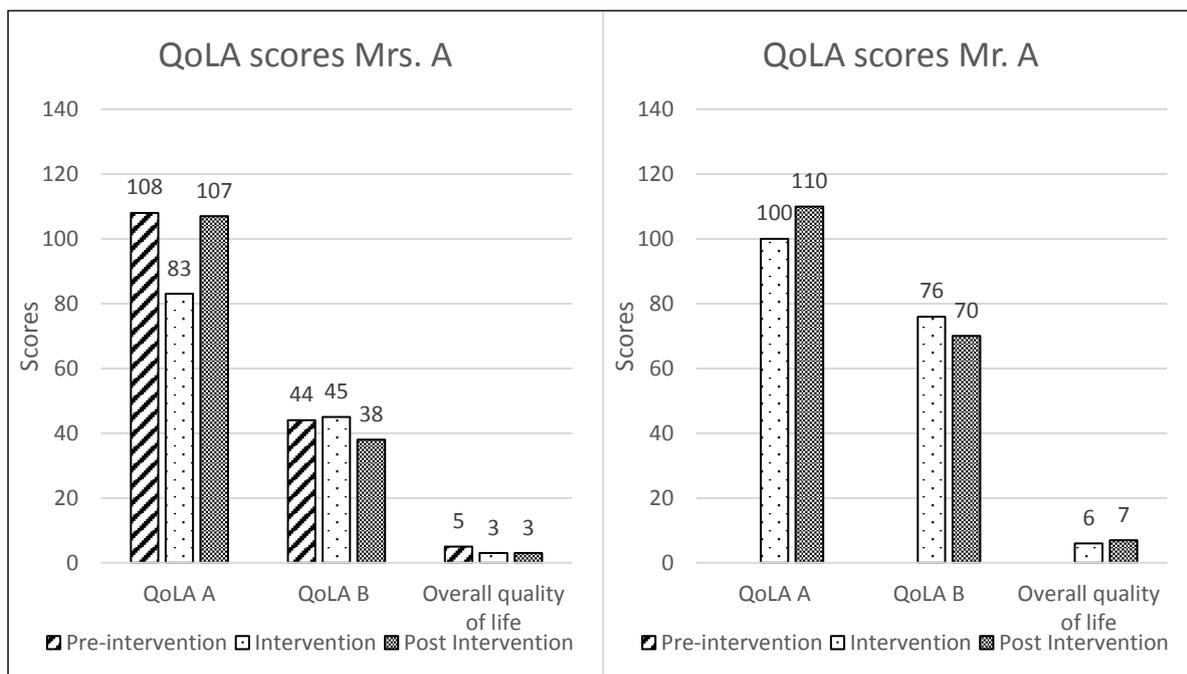


Figure 4.13. QoLA scores for Mrs. A and Mr. A. QoLA = Quality of Life in Autism. QoLA A = Quality of Life in Autism Part A. QoLA B = Quality of Life Part B.

In the last part of the assessment, parents were asked to rate their overall quality of life (QoL), higher scores indicated a greater satisfaction of parents with their QoL at that time. Mrs. A rated her overall QoL at the ‘*somewhat satisfied*’ level (score = 5) during the pre-intervention phase. Her rating decreased to three during the intervention phase, and stayed at the same level at the end of the program. However, Mr. A rated his overall QoL as ‘*high*’ indicating he was very satisfied with it, with a score of six at the intervention phase which increased to seven during the post-intervention phase.

i. *Parent’s assessment: Bahasa Malaysia Depression Anxiety Stress Scale 21-item (BM DASS-21)*

Mrs. A completed the BM DASS-21 during all three phases, meanwhile Mr. A only completed the BM DASS-21 during the intervention and post-intervention phases. In Figure 4.14, the results of the BM DASS-21 subscales for both Mrs. and Mr. A are presented.

Mrs. A’s depression subscale scores fluctuated from the initial assessment to the last assessment. In the pre-intervention phase, her score was 12, but it increased almost one-fold

to 22 and lastly decreased to a score lower than the initial score, 4. This showed that before Mrs. A engaged in the DIR/Floortime[®] intervention at home with Child A, she did experience a mild level of depression and this increased to a severe level of depression when she engaged in the DIR/Floortime[®] intervention at home. At the end of the program, she experienced normal depression level and it was lower than the initial score. This indicates that her involvement in the DIR/Floortime[®] program may have decreased her self-reported level of depression overall.

Mr. A's depression subscale scores remained the same during the intervention phase and during the post-intervention phase. His score was six indicating that he experienced a normal level of depression when he engaged in the DIR/Floortime[®] intervention program at home with Child A and termination of the intervention program did not impact his score.

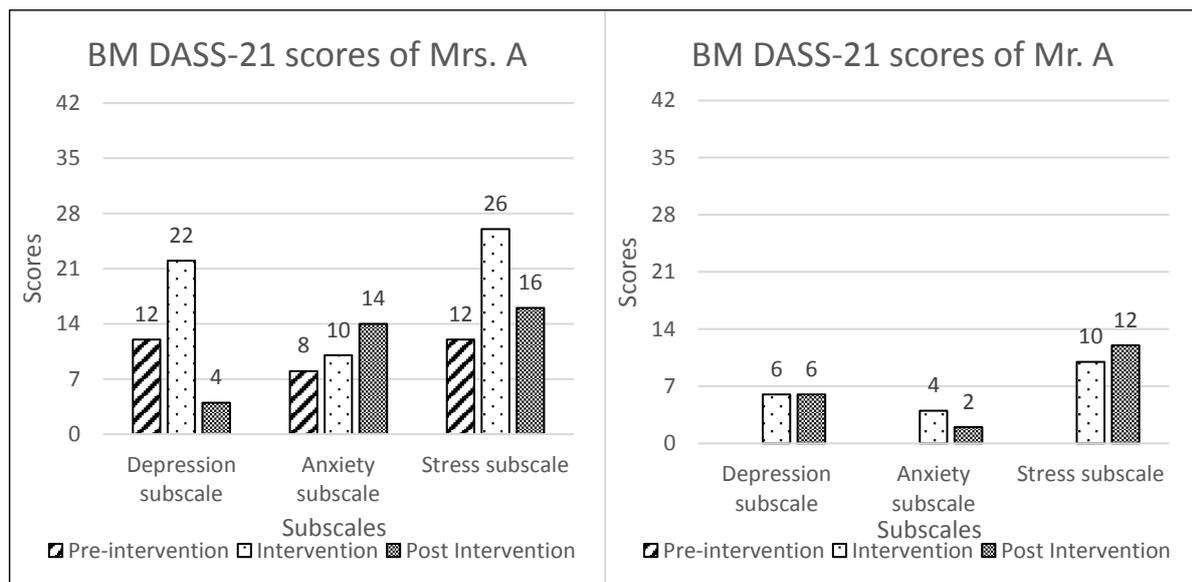


Figure 4.14. BM DASS-21 subscale scores for Mrs. A and Mr. A. BM DASS-21 = Bahasa Malaysia Depression Anxiety Stress Scale 21 items.

For the BM DASS-21 anxiety subscale, Mrs. A's scores were low, but increased during the three phases of the study. Her score during the pre-intervention phase was 8, increased to 10 during the intervention period and eventually 14 at the end of the program. This indicated that Mrs. A experienced a mild level of anxiety and it appeared that engaging

in the DIR/Floortime® intervention program at home with Child A impacted her by making her feel more anxious. Contrary to Mrs. A, Mr. A's scores decreased from the intervention to the post-intervention phase. Mr A's score was low, initially 4 and decreased to 2. The results implied that the intervention affected him in a positive way where he experienced less anxiety at the end of the program.

Mrs. A's stress subscale score initially was 12, but then increased to 26 when she engaged in the DIR/Floortime® program at home with Child A and then dropped to 3 in the post-intervention phase. The results indicated that Mrs. A appeared to experience stress when implementing the intervention at home and became less stressed at the end of the program since her score changed from normal to severe then back to normal levels of stress, with a lower score than her initial score in pre-intervention phase.

Unlike his wife, Mr. A's results for the stress subscale increased from 10 in the intervention phase to 12 in the post-intervention phase. It can be interpreted that Mr. A was impacted by the intervention at home in a negative way, making him more stressed even after the intervention phase although his score was still within the normal range of stress. However, the interpretation of Mr. A's results should be made with caution as it is not clear whether or not he was affected negatively by the implementation of the home-based intervention since his BM DASS-21 scores from the in-pre-intervention phase were not available.

j. Parent's assessment: Malay translated version of Parenting Sense of Competence Scale (PSOC)

Mrs. A completed the PSOC during all the study's phases while Mr. A only completed the PSOC at two different times, the intervention and post-intervention phase. In Figure 4.15, the results of the PSOC efficacy and satisfaction subscales for both Mrs. A and Mr. A are reported. Mrs. A's efficacy subscale scores remained relatively the same throughout the

three study phases. Initially, her score was 21, decreased to 18 and increased slightly to 19 at the end of the program. Meanwhile, her satisfaction subscale score initially was 27, dropped to 16 during the intervention phase and increased back to 28 in the post-intervention phase. For the efficacy subscale, the highest score possible is 42, Mrs. A's scores indicate that the degree of self-efficacy in her parenting role was at the 'moderate' level. The maximum score for the satisfaction subscale is 54, Mrs. A's scores were slightly higher than the efficacy scale. It showed that Mrs. A was 'moderately satisfied' with her parenting.

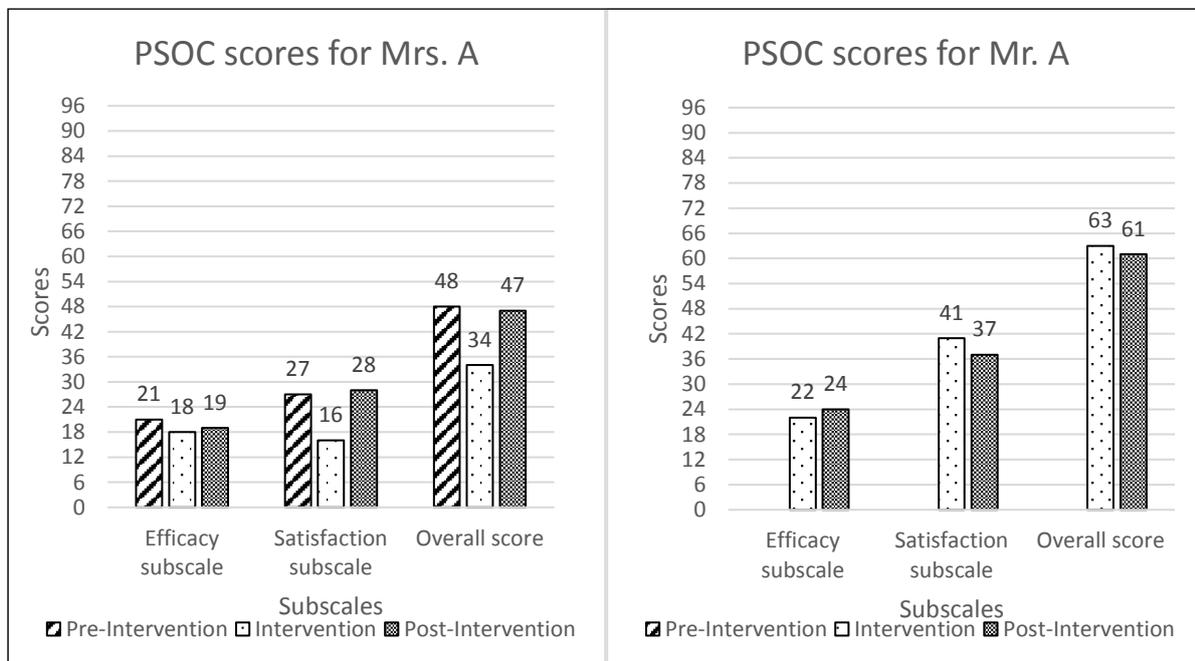


Figure 4.15. PSOC subscale scores for Mr. A and Mrs. A. PSOC = Parental Sense of Competence Scale.

Mr. A's efficacy subscale scores were quite similar to Mrs. A. In the intervention phase, his score was 22 and increased slightly to 24 after intervention ended. Meanwhile, his satisfaction subscale scores were higher than Mrs. A's scores (score = 41) when he was implementing the intervention at home which dropped at the end of the program (score = 37). From the scores obtained, it can be interpreted that Mr. A perceived his degree of efficacy in parenting role was at a 'moderate' level during the home-based intervention

phase and after the intervention phase. From the PSOC scores Mr. A reported for the satisfaction subscale, it showed that he was ‘*very satisfied*’ with his parenting.

Overall, Mrs. A’s level of sense of competence was at a ‘*moderate*’ level and decreased during the intervention period but increased back to a slightly lower level than the initial point of assessment. Mr. A’s sense of competence overall also decreased slightly from the intervention phase (score = 63) to the post-intervention phase (score = 61).

k. Child with ASD assessment: The Test of Pretend Play (ToPP)

Child A’s pretend play was assessed on three occasions once during each phase. Scores for each section including the total raw scores, the age equivalent for the total raw scores obtained (from the Manual of the ToPP), and the indication of the play situation during the test are reported in Table 4.14. Child A was assessed in both structured and unstructured play situations. During the pre-intervention session, he was tested in a structured play situation.

Table 4.14
ToPP scores of Child A

Section	Pre-Intervention	Intervention	Post-Intervention
Play situation	Structured	Unstructured	Unstructured
Section I	2	0	2
Section II	8	8	3
Section III	12	4	6
Section IV	4	2	6
Total raw scores	26	14	17
Age equivalent (months)	70.7 ^a	44.9 ^b	51.3 ^b

Note: ToPP = Test of Pretend Play.

^aAge equivalent by reference to the age norms based on best fitting linear relationship for structured play conditions as reported in the ToPP’s manual. ^bAge equivalent by reference to the age norms based on best fitting linear for unstructured or free play situations as reported in the TOPP’s manual

For Section I, II and III he was able to perform pretend play and scored the highest score possible for each section. However, he was only able to perform two items for Section IV, where he was able to refer to an absent object and attribute a property to himself when he played without the toys presented to him. The age equivalent for his pretend play based on the age norms published in the ToPP's manual (Lewis & Boucher, 1997) was 70.7 months or equivalent to approximately 5 years 9 months. Child A was approximately 6 years old when he was tested.

The second-time Child A was assessed using the ToPP, he was able to pretend play better in an unstructured play situation compared to a structured play situation. Hence, Child A was scored during the unstructured play situation. No score was obtained for Section I, a score of 8 for Section II, a score of 4 for Section III, and a score of 2 for Section IV. The total raw score was 14, with the age equivalent to 44.9 months or approximately 3 years 7 months.

During the post-intervention phase, Child A was also assessed in an unstructured play situation due to the same reason mentioned previously. He obtained the maximum score possible for Section I (score = 2) and only obtained a score of 3 for Section II, a score of 6 for both Sections III and IV. A total score of 17 was achieved with an age equivalent of 51.3 months or approximately 4 years 3 months.

All age equivalents of the pretend play performed by Child A were lower than his chronological age whether he was assessed in a structured or unstructured play. He was tested in a structured play during the pre-intervention session as he responded well with the tester (i.e., student researcher) and his mother during the test. During the session, when student researcher presented the toys and other materials, Child A just sat and waited for the student researcher to play, modelled or instructed him to do before started to play with the toys.

During the intervention phase's session, the student researcher attempted to assess Child A's pretend play in a structured play situation, like the first time he was assessed. However, when the toys and materials of the first test item were presented to him, he just picked them up and spontaneously engaged in pretend play. Despite several attempts to assess him in a structured way (to enable comparison of score of same play situation), he just kept playing and did not respond to student researcher. The same situation was encountered during the post-intervention session. Hence, the pretend play was assessed and scored in the unstructured play situation for both intervention and post-intervention sessions.

Although Child A could spontaneously pretend play during both times, several items of the test were not observed due to his limited imagination and rigidity in playing. Although the student researcher tried to encourage him to perform some of the items by modelling and verbally prompting him, Child A did not respond.

The scores and age equivalent scores in the structured play situation were higher (approximately five years old) and close to Child A's chronological age (six years old) compared to the scores of the unstructured play situation where the age equivalent scores were about half of his chronological age. The scores of different play situations were not compared due to the nature of the assessment. However, in comparing the same play situation (unstructured in intervention and post-intervention phase) there was an improvement in Child A's pretend play which can be seen through the increase of the scores and age equivalent scores.

It can be postulated that since parents implemented the intervention with Child A, his initiative increased and that resulted in him becoming more comfortable to play spontaneously with what he preferred rather than to follow his mother or student researcher's instructions. Although the score was higher during the structured play situation, compared to the unstructured situation, there was still a notable increase in the score from

the intervention to the post-intervention session indicating the implementation of intervention had a positive impact on his pretend play as well as his initiative to play.

4.5.5 Case 2

a. Profile of Child B

Demographic and daily life activities. Child B is a five-year old boy and the youngest of three siblings. He attended a government sponsored special pre-school for children with ASD once a week from 8 a.m. to 3 p.m. For the rest of the week, he stayed at home with his mother and engaged in other educational and leisure activities with her. He also attended therapy sessions with his mother at the occupational therapy clinic once every two weeks.

Interaction skills. Child B was not able to verbally communicate with others, so he usually grunts to express his displeasure and pointed to request things he wanted. Most of the time, he would hit his mother when he did not get what he wanted or when he wanted his mother to stop what they were doing. He could follow his mother's instructions when engaged in activities. Child B usually avoided his mother when she tried to engage in play activities with him. Towards the end of the program, Child B began to exhibit some improvements in his interaction skills with other people where he seemed to enjoy interacting with others and would initiate interactions with his mother.

He enjoyed being tickled and hugged by his mother and always laughed when she did these actions. When he wanted to be tickled, Child B would go to his mother, place his head under her chin and move his head, or pull her head towards his head. Child B did the same with the student researcher on several occasions during the clinic follow-up visits. The frequency of Child B hitting his mother, as well as his avoidance from her decreased greatly towards the end of the DIR/Floortime[®] intervention program where he just hit her once or twice to gain her attention or asked her to stop doing what she was doing or the activity. He

also started to show affection to Mrs. B as he would kiss her to try and entice her to continue to tickle him or when she appeared to feel unpleasant with his behaviour. He showed some improvement in his understanding of his mother's feelings of displeasure through her actions.

Communication skills. Child B could not verbally communicate with other people. He did not know how to communicate his needs or wants (e.g., could not gesture yes or no, pointed to objects when he wanted them), so he ended up crying or tantrums when he did not get what he wanted. Towards the end of the DIR/Floortime[®] intervention program, his communication skills improved. Although Child B still could not verbally communicate with his mother, he tried to communicate with her by touching her (or hitting her once or twice) while looking at her, and did the same movement repetitively until she responded back. Child B always clapped his hands (one of his self-stimulatory behaviours), it is difficult to determine whether he was happy and enjoying an activity or not. Most of the time, when he clapped his hands and he was smiling, therefore indicating that he was happy and enjoying the activity.

Play. Most of the time Child B was involved in sensory play activities. For example, he jumped and ran around the therapy room while clapping his hands. Sometimes, he wandered around the therapy room, jumped on to the trampoline for a short period, got into the ball pool, then quickly crawled into the tunnel and picked up a toy and examined it for a while and then continued to wander around the therapy room. Sometimes he would put a toy (a plastic fruit toy, or a toy that looked like food) in his mouth and licked it. He was not able to pace himself and was unable to focus when engaging in activities other than table top activities that he typically does at school, such as sorting objects by their colour and shape. He did not demonstrate any interest in pretend play even with Mrs. B's prompting, demonstration or instruction.

Child B began to exhibit some improvement towards the middle of the home-based intervention period. He started to initiate a two-way play activity with his mother. For example, he ran away from his mother, and then turned around to look at her as a way of asking her to chase after him. Sometimes, he purposefully stopped running and waited for Mrs. B to start moving towards him before he started to run again.

Behaviour. Child B's behaviours can be considered slightly aggressive. He sometimes cries and throws tantrums including hitting and biting his mother as well as the student researcher when he came for his therapy sessions. He clapped his hands repetitively most of the time or when he tried to express feelings of pleasure or displeasure when he was engaging in activities. Most of the time, he appeared to be in his own world as he would wander around the room aimlessly by himself. Occasionally, he would sit for a while and complete an activity such as table-top activities which required several prompts from Mrs. B. He got frustrated easily when he faced challenges in completing the activity he was doing, and would start to grunt, cry and throw tantrums to express his frustration.

Towards the end of the program, he appeared happier than when he first started the DIR/Floortime® intervention program – he was observed smiling and laughing more and enjoyed playing and interacting with her mother. His level of cooperation with Mrs. B and the student researcher also improved towards the end of the DIR/Floortime® intervention program. For example, at the start of the program Child B would hold onto an object and refuse to let go even when the session ended. However, towards the end of the DIR/Floortime® intervention program Child B would only hold onto the object for a little while and then give it to student researcher without having any tantrums or hitting the student researcher like he did previously.

b. Profile of Mrs. B

Demographic and daily life activities. Mrs. B is a housewife and takes care of Child B and his two older siblings. She drives and picks Child B up from school and takes him to his therapy appointments. She takes care of her family without assistance from a domestic helper.

Interaction and communication skills. Mrs. B treated Child B as if he was younger than his chronological age. Mrs. B provided many prompts and assistance to Child B when she engaged in activities with him. Child B got easily frustrated when he tried to complete table-top activities. She would make the sounds of a buzzer and comment “*oh-oh, you are wrong please try again*” and complimented him when he succeeded. Since Child B had difficulties focusing on activities he engaged in, his mother sat closely to him, or put him on her lap when completing the activity and asked him for a high-five when he completed the activity successively. Mrs. B usually simplified activities, minimised the number of objects that he was exposed to so to avoid her son having a melt-down.

Mrs. B had trouble understanding what Child B wanted since he could not verbally communicate his needs to her, and most of the time she would get hit by him. When he hit her, she would not say anything or stop him from hitting her, instead she would let him continue to hit her. She could initiate communication with Child B and maintain a two-way communication with him using verbal instructions. When she instructed him to do something, he would follow her instructions and she complimented him if he did what she asked him to do. Towards the middle of the home-based intervention period, Mrs. B’s interaction and communication skills improved.

Mrs. B reduced the frequency of her prompting and assistance when interacting with Child B (especially when engaging in table top activities) and gave him more opportunities to complete the activities. Child B also had more opportunities to regulate his behaviour

when he faced challenges completing tasks. Mrs. B also demonstrated improvements in addressing her son's tantrums and hitting behaviour by asking him to stop when he hit her and pretending to cry indicating that she was hurt by his actions. This helped him to recognise the consequences of his actions and in turn reduced his inappropriate behaviours.

Mrs. B interacted with her son more actively while playing with him and created more opportunities for him to communicate with her. She played along with him, then paused for a moment and asked him whether he wanted to continue playing. Mrs. B managed to get her son to look at her and communicate his intention via body language (e.g., nod, moving his body up and down indicating he wanted to jump on the trampoline). Since she was aware that Child B liked to be tickled, she also used the '*play and pause*' technique while playing 'tickles' with him. She purposely refused to continue to tickle him and let him indicate his wants. He indicated that he wanted to be tickle by gesturing his hand or head or even moving his body or head towards Mrs B. In this way, Child B was communicating his wants and needs directly to his mother using non-verbal languages and cueing.

Play. Earlier in the program, Mrs. B always tried to get Child B to engage in academic-related activities (e.g., table top activities such as sorting rings, blocks, drawing, cutting) more than play-type activities. Mrs. B also followed what Child B was doing and tried to initiate his play actions with whatever object or toy he was holding or interested in. However, most of the time she failed to engage his interest in playing with her and instead he would sometimes actively avoid her. Mrs. B started to show some improvements in the middle of the home-based intervention period where she tried to get her son's attention by being playful and approaching him slowly to entice him into playing together with her.

Since Child B liked to wander around the room, Mrs. B started to playfully chase him and could maintain this play activity for short periods of time throughout the follow-up sessions with the duration increasing each time. She also managed to play with him on the

trampoline where she moved rhythmically along with her son's jumps on the trampoline and occasionally paused the play by holding his hands, and asking him whether he wanted to continue to jump. She let go of his hands and continued to jump after Child B communicated his intention to her (by moving his body up and down to indicate that he wanted to continue jumping). Instead of trying to interact and play with Child B in the first instance, she began to step back for a while and observed what Child B liked to do and tried to play together with him by using objects he liked (e.g., plastic fruit figurine). For example, she would place different objects all over the room and ask him to get the one he liked.

Emotions. Earlier in the program, Mrs. B was very stressed and appeared overwhelmed with Child B's behaviour and development. Towards the end of the program, Mrs. B was more relaxed, engaged, and happier than she was in the first few sessions of the DIR/Floortime[®] intervention program.

c. Hours of engagement in DIR/Floortime[®] intervention at home with Child B

Table 4.15 below shows the hours of engagement in the DIR/Floortime[®] sessions per week at home that Child B and his mother completed. Mrs. B was only able to complete the ten hours per week requirement for engaging in the DIR/Floortime[®] intervention at home with Child B for several weeks. They started to exceed the minimum ten hours' requirement in Week 3, with exception of Week 4 where they were only five minutes short of the ten hours' weekly time requirement.

d. Parent-child interaction via the Circle of Communication (CoC) frequencies

Child B attended all the sessions with Mrs. B. The average frequency of the CoCs observed during the therapy clinic sessions are presented in Figure 4.16 below.

Table 4.15

Hours of engagement in DIR/Floortime® intervention per week for Case 2

Time (Week)	Hours of engagement in DIR/Floortime® intervention (hr, min)
1	5 hr 40 min
2	7 hrs 05 min
3	10 hr 30min
4	9 hr 55 min
5	12 hr 30 min
6	15 hr 15min
7	15 hr 20 min
8	10 hr 00 min

Note. DIR = Developmental, Individual-differences, Relationship-based; hr = hours; min = minutes.

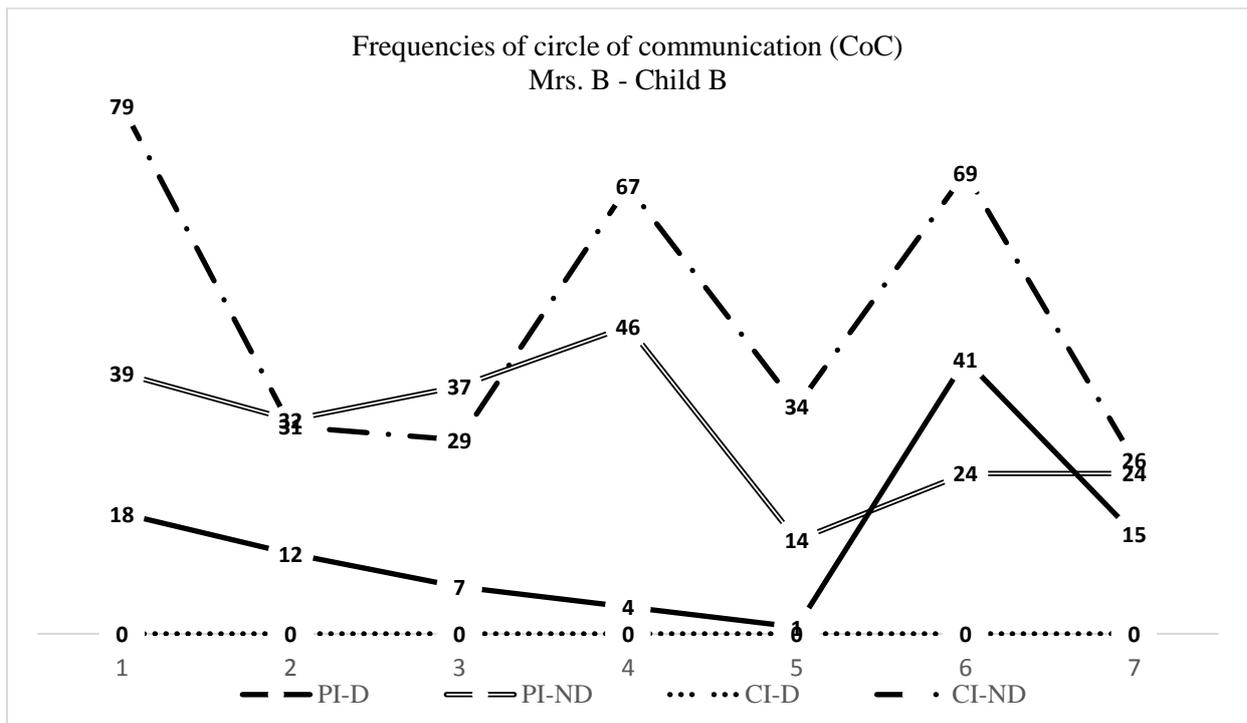


Figure 4.16. Average Circle of Communication (CoC) frequency between Mrs. B and Child B across seven sessions. CI-D = child-initiated directive; CI-ND = child-initiated non-directive; CoC = circle of communication; PI-D = parent-initiated directive; PI-ND = parent-initiated non-directive.

e. Visual analysis of the Circles of Communication (CoC) frequencies

The frequencies of the CoC for all sessions were plotted on graphs and analysed. The results of each the CoC frequencies are shown below.

i. Parent-initiated directive communication (PI-D)

The average frequency of Mrs. B's initiated directive communication with Child B for seven sessions were plotted on graphs in Figure 4.17 and analysed to evaluate the changes in level, variability, trend and slope. The graph on the left side of the figure shows the level line changed from the baseline phase to the intervention phase where it decreased to a lower level in the latter phase. The data variability also changed as shown on the right-hand side of the graph where the data variability of intervention phase was dispersed wider than the baseline data points. In the last graph, the trend line changed direction from a decreasing to an increasing trend in the intervention phase. Although there was not much difference, the steepness of the trend line also changed during intervention phase compared to the baseline phase.

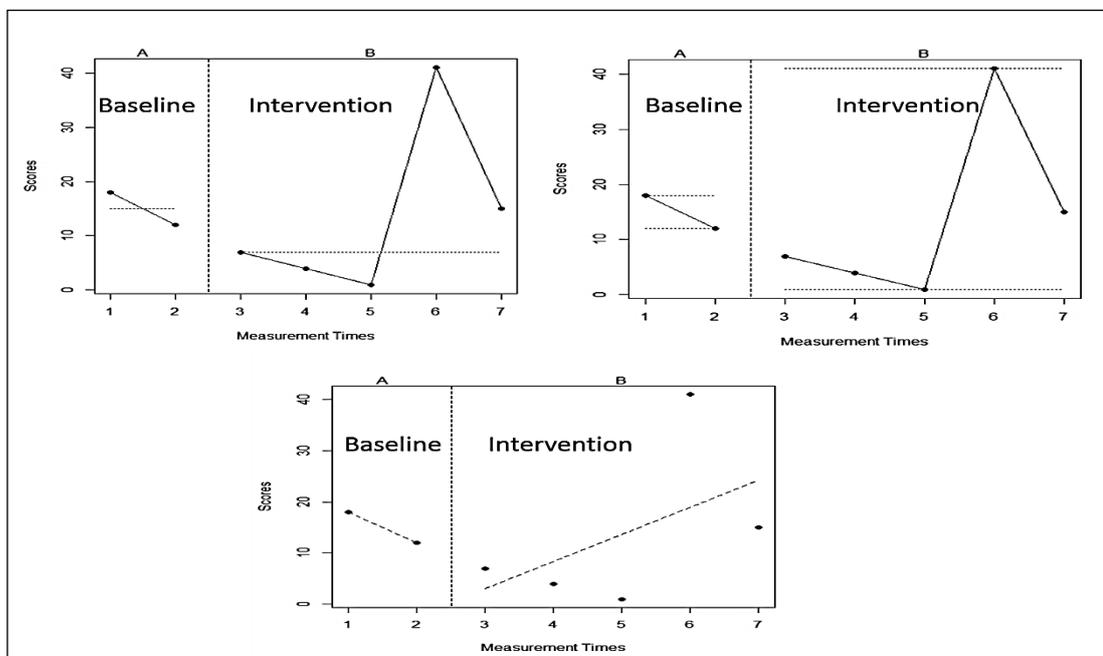


Figure 4.17. Parent-initiated directive communication between Mrs. B and Child B. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

The standard deviation bands analysis was completed to determine any significant differences that existed in parent-initiated directive communication between the study's phases. Result of this analysis is shown in Figure 4.18. From the graph, two consecutive intervention points fell below the lower standard deviation band, indicating that there was a significant difference in the interaction between the study's phases.

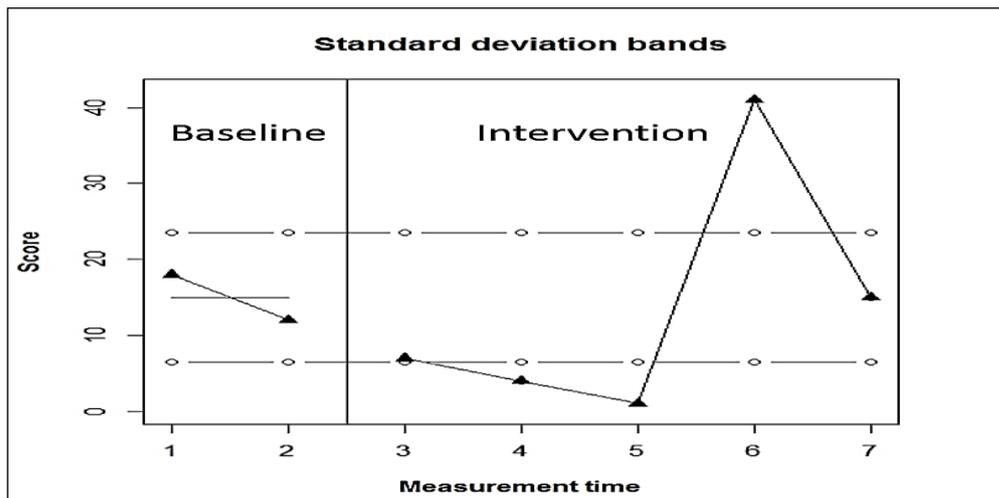


Figure 4.18. Standard deviation bands analysis results for parent-initiated directive communication for Case 2. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

ii. Parent-initiated non-directive communication (PI-ND)

The changes in level, variability, trend and slope of the average frequencies of parent-initiated non-directive communication were evaluated using graphs from left to right as presented in Figure 4.19.

From the graphs, the level of the data points decreased to a lower level during the intervention phase compared to the baseline's level. The data variability also changed, showing a large degree of dispersion in the intervention data points compared to the baseline data points. Meanwhile the trend lines were in the same decreasing direction in both phases with minor changes in the degree of their

steepness. This indicated that the interaction observed changed between the study's phases but in a contra-therapeutic trend.

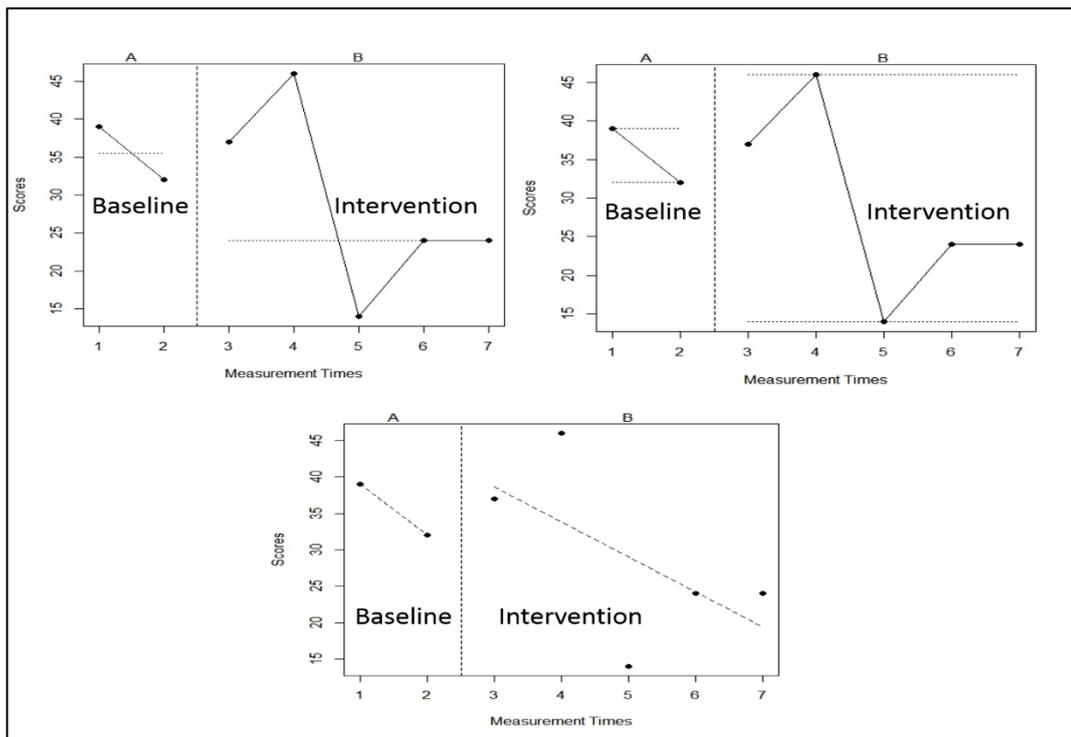


Figure 4.19. Parent-initiated non-directive communication between Mrs. B and Child B. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

To evaluate the significant difference of the interaction, a standard deviation bands analysis was conducted and the result is shown in Figure 4.20. From the graph, three consecutive intervention points fell below the lower band and only one data point fell above the upper band. These results showed that there were no significant differences between the interactions observed during the baseline phase and the intervention phase as the aim of intervention is to increase the number of non-directive interactions.

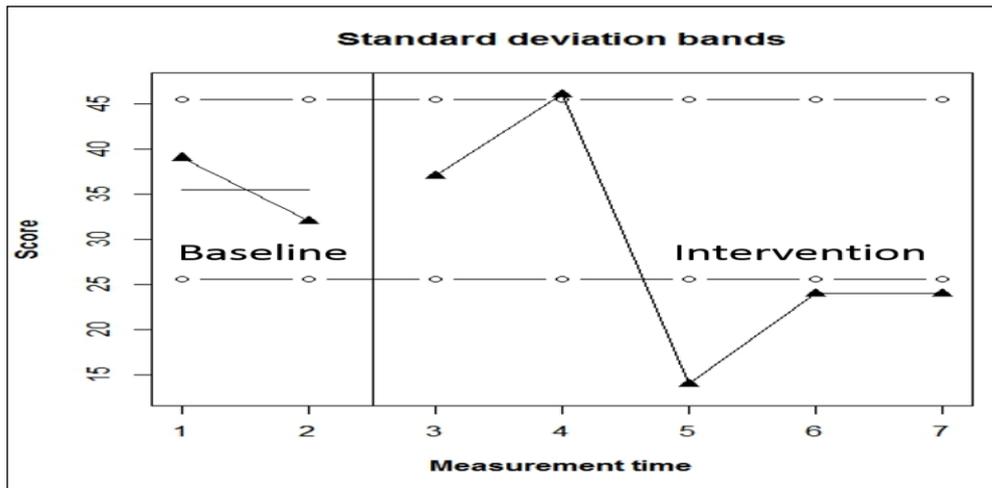


Figure 4.20. Standard deviation bands analysis result for parent-initiated non-directive communication for Case 2. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

iii. Child-initiated directive communication (CI-D)

Child B was not observed initiating directive communication in any of the sessions.

iv. Child-initiated non-directive communication (CI-ND)

The average frequencies of Child B's initiated non-directive communication with his mother were plotted on three graphs to evaluate the changes in level, variability, trend and slope, as shown in Figure 4.21. From the graphs, there were changes in the data point levels where it decreased to a lower level during the intervention phase. The data variability also changed where the data points did not disperse as much as in the intervention phase compared to data points in the baseline phase. The trend line direction was the same during both phases however, the slope became flatter during the intervention phase compared to the trend line in the baseline phase. Although the changes are evident, however, it is in a contra-therapeutic trend.

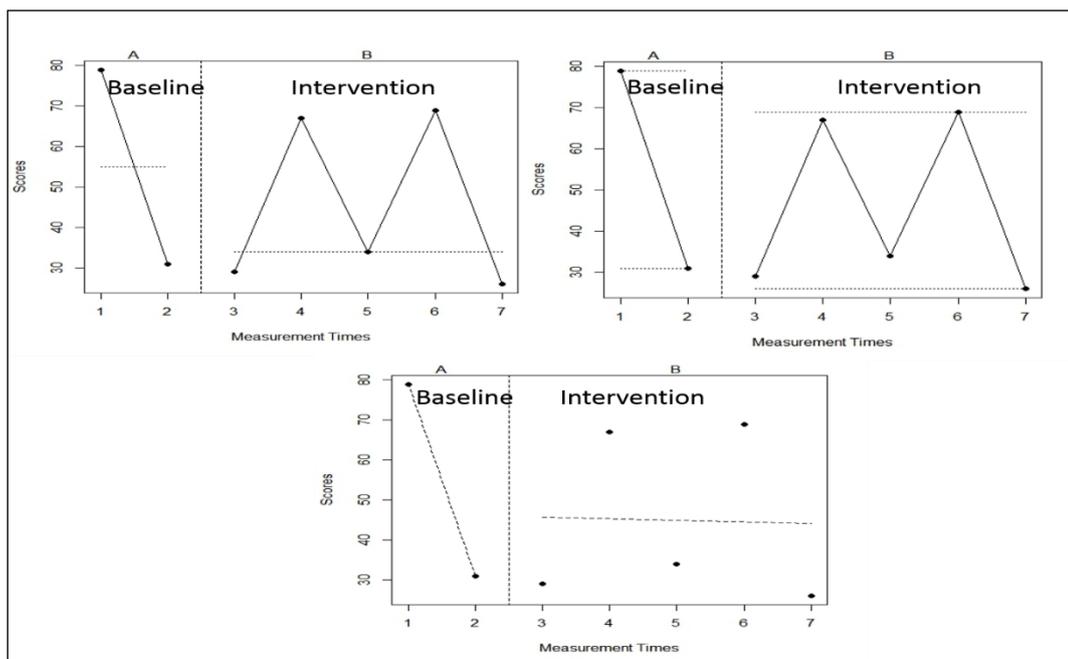


Figure 4.21. Child-initiated non-directive communication between Child B and Mrs. B. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

In addition to the three graphs that were visually analysed, a standard deviation band analysis was also conducted. The result of the analysis is presented in Figure 4.22. From the graph, all intervention points fell within the two standard deviation bands. This indicates that there were no significant differences between the interactions observed during the baseline and intervention phases.

f. *Statistical analysis of the frequencies of Circle of Communication (CoC)*

Two statistical analyses were completed for each of the communication types to determine the statistical value of the intervention effect on the interaction between Mrs. B and Child B.

i. Parent-initiated directive communication

The results of the analyses and its interpretation are presented in Table 4.16 below.

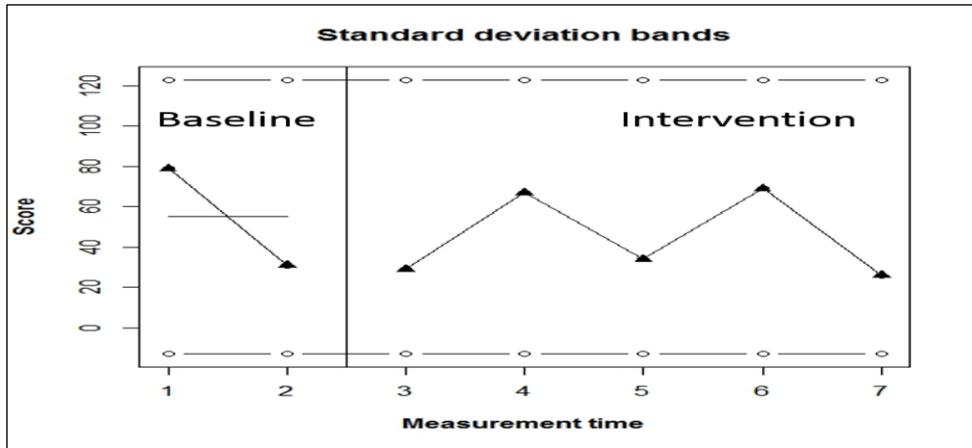


Figure 4.22. Standard deviation bands analysis result of child-initiated non-directive communication for Case 2. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Table 4.16

Statistical analyses of parent-initiated directive communication between Mrs. B and Child B

Analysis	Result	Interpretation
Percentage of nonoverlapping data (PND): expected decrease	60	Three treatment scores (60%) were lower than the lowest baseline score. Treatment effect to decrease directive communication is questionable.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = -3 Piecewise unstandardised change in slope = 11.3	Introduction of treatment induced a decrease in the number of parent-initiated directive communication. Number of parent-initiated directive communication gradually increases across time during the intervention phase.

ii. Parent-initiated non-directive communication

The following Table 4.17 shows the results and interpretations of statistical analyses conducted.

Table 4.17

Statistical analyses of parent-initiated non-directive communication between Mrs. B and Child B

Analysis	Result	Interpretation
Percentage of non-overlapping data (PND): expected increase	20	One treatment score (20%) was higher than the highest baseline score. Treatment is not effective to increase non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 13.6 Piecewise unstandardised change in slope = 2.2	Introduction of treatment induced an increase in the number of parent-initiated non-directive communication. Number of parent-initiated non-directive communication gradually increased across time during the intervention phase.

iii. Child-initiated directive communication

No child-initiated directive communication was observed from all the videos taken in the baseline and intervention phases.

iv. Child-initiated non-directive communication

The results of the statistical analyses conducted including the interpretation of each analysis are reported in Table 4.18.

Table 4.18

Statistical analyses of child-initiated non-directive communication between Child B and Mrs. B

Analysis	Result	Interpretation
Percentage of nonoverlapping data (PND): expected increase	0	No treatment score (0%) was higher than the highest baseline score. Treatment is not effective to increase non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 62.8 Piecewise unstandardised change in slope = 47.6	Introduction of treatment induced an increase in the number of child-initiated non-directive communication. Number of interactions increased across time during the intervention phase.

g. Parent's assessment: Quality of Life in Autism (QoLA)

Mrs. B completed the QoLA scale on three different occasions, once during each of the study's phases. The scores for each part of the QoLA that have been completed during the pre-, intervention and post-intervention phases are presented in Figure 4.23.

Mrs. B's QoLA Part A scores increased steadily throughout the three study phases. When she completed the scale during the pre-intervention phase, her score was 63. The score increased to 73 during the intervention phase and continued to increase to 93 at the end of the program. The results indicate that Mrs. B perceived her level of QoL was at a 'moderate' level when she started the DIR/Floortime[®] intervention program with her son and continued to improve with the implementation of the DIR/Floortime[®] intervention with her son with ASD, Child B.

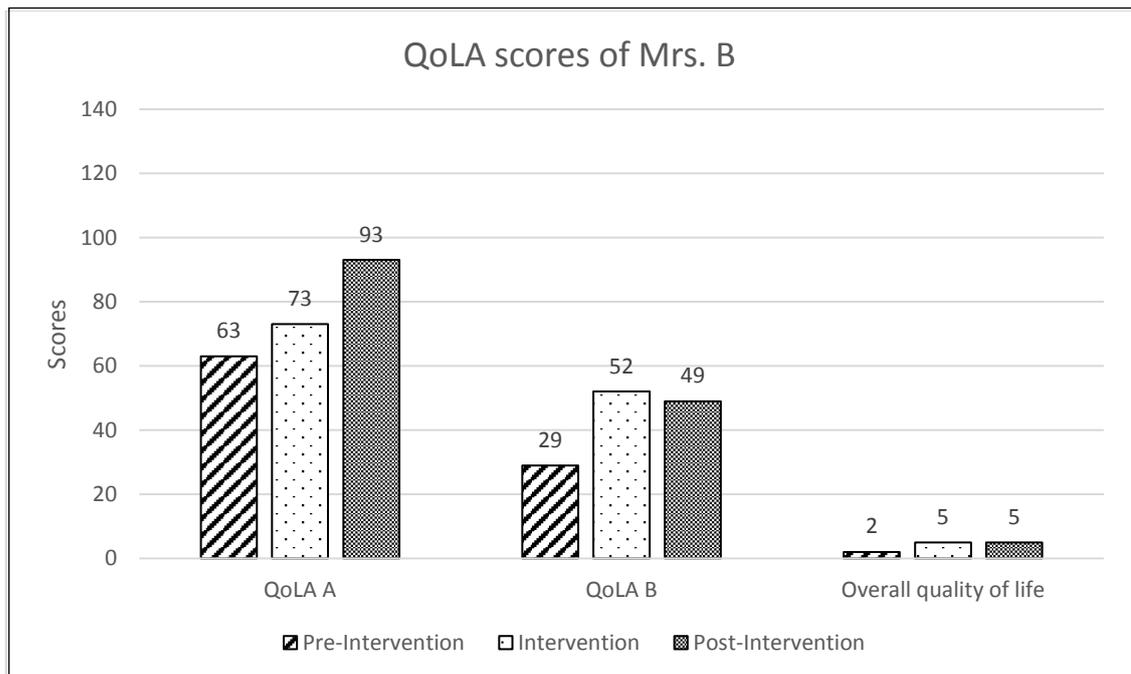


Figure 4.23. QoLA scores for Mrs. B. QoLA = Quality of Life in Autism. QoLA A = Quality of Life in Autism Part A. QoLA B = Quality of Life Part B

The scores for Part B fluctuated throughout the three study phases. The initial score (measured during pre-intervention phase) was 29 and during the intervention phase, her score increased significantly to 52, before decreasing to 49 during the post-intervention phase. This indicates that by participating in the program, Mrs. B perceived that she was greatly impacted by her son with ASD's difficulties and began to improve during the intervention phase. Although the score decreased at the post-intervention phase, it was not as low as the initial score.

In the overall quality of life score, Mrs. B rated her satisfaction level at the 'unsatisfied' level (score = 2) when she started the DIR/Floortime[®] intervention program. This then improved to the 'somewhat satisfied' level (with a score of 5) during the home-based intervention period and maintained the same score level until the end of the program. These scores demonstrate that after engaging in the DIR/Floortime[®] intervention at home with Child B during the home-based intervention period, Mrs. B's overall satisfaction with her quality of life improved.

h. Parent's assessment: Bahasa Malaysia Depression Anxiety Stress Scale 21-item (BM DASS-21)

Mrs. B completed the BM DASS-21 once during each of the study's phases. The scores for the BM DASS-21 depression, anxiety and stress subscales for each phase are reported in Figure 4.24. Mrs. B's scores for the BM DASS-21 depression subscale fluctuated throughout the three phases of the study. During the pre-intervention phase, her score was 12, then increased slightly to 14 during the intervention phase, and decreased to 8 during the post-intervention phase. These depression scores indicate that Mrs. B was experiencing mild depression when she started the DIR/Floortime[®] intervention with her son, but this increased to a moderate level during the home-based intervention period. Eventually her self-reported levels of depression improved during the post-intervention phase of the program, where the BM DASS-21 depression score indicated that she experienced a level of depression in the normal range.

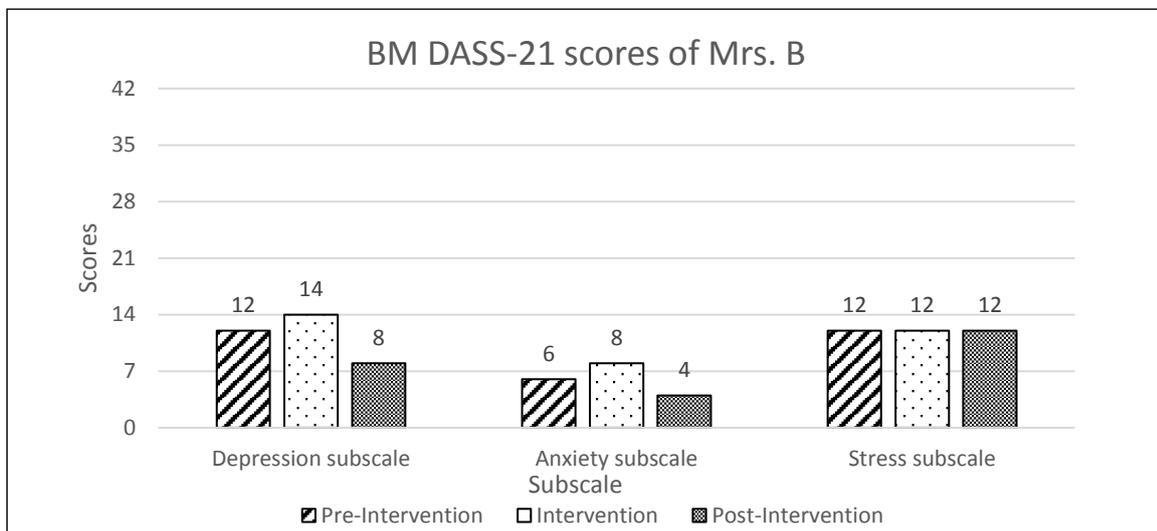


Figure 4.24. BM DASS-21 subscales scores of Mrs. B. BM DASS-21 = Bahasa Malaysia Depression Anxiety Stress Scale 21 item.

For the BM DASS-21 anxiety subscale, the scores also fluctuated throughout the study's phases. It started with a score of six, increased to eight and then decreased to four. The scores can be interpreted as Mrs. B experienced a normal level of anxiety during the

pre-intervention phase then regressed to a mild level of anxiety during the intervention before moving back to the normal level of anxiety post-intervention with a better score than when she first started joining the program.

From the scores showed in the graph, Mrs. B's BM DASS-21 stress subscale scores did not change with time. The score was 12 and remained the same during the intervention and post-intervention phase. Mrs. B reported to have experienced a normal level of stress and it did not change with the implementation of the DIR/Floortime[®] intervention or the discontinuation of the intervention.

i. Parent's assessment: Malay translated version of Parenting Sense of Competence Scale (PSOC)

Mrs. B completed the PSOC once during each of the three phases and the results are shown in Figure 4.25. Mrs. B's PSOC efficacy subscale scores increased throughout the three study phases. Initially, the pre-intervention PSOC score was 21 which continued to increase to 28 during the intervention phase, and 29 during the post-intervention phase. Although the scores were quite low, Mrs. B's perceived self-efficacy in her parenting role increased with the implementation of the DIR/Floortime[®] intervention at home with her son and it continued to improve even with the termination of the intervention.

Meanwhile, Mrs. B's scores for the satisfaction subscale decreased from 26 during the pre-intervention phase to 24 during the intervention phase which was maintained until the end of the program. The score was quite low but it showed that Mrs. B's satisfaction level of her parenting regressed with the implementation of the DIR/Floortime[®] intervention. Overall, Mrs. B's sense of parenting in a competent manner increased throughout the study's phases. Initially it was 47, with the score increasing to 52 and 53 at the end of the program. This indicated that Mrs. B's parental sense of competence improved with the implementation of the DIR/Floortime[®] home-based intervention.

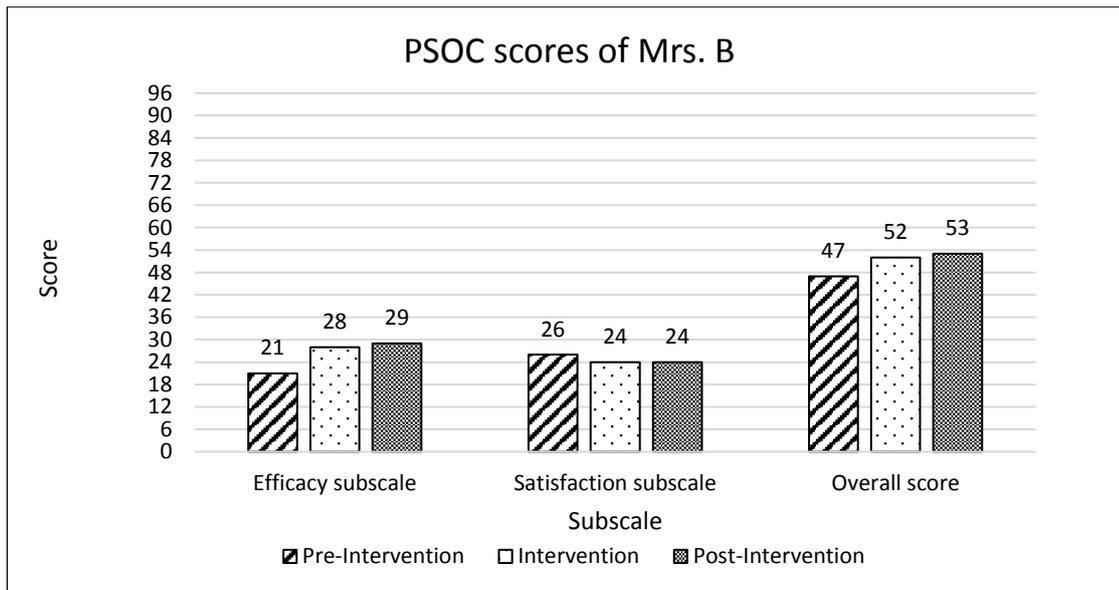


Figure 4.25. PSOC scores of Mrs. B. PSOC = Parental Sense of Competence Scale.

j. Child with ASD's assessment: The Test of Pretend Play (ToPP)

Child B was unable to perform pretend play activities both in structured and unstructured play situations despite several attempts being made to engage with him in a playful manner. As mentioned previously, he liked to engage in sensory play. During every clinic visit, the student researcher, with the assistance of Mrs. B, tried to entice Child B into taking part in pretend play type games with them. Mrs. B tried to initiate the pretend play activity using the same toy as the one Child B was holding, but he did not respond. She also pretended to be the animal toy Child B was holding to gain his attention. For example, she pretended to be a sheep and while making the sound of a sheep, she crawled on both hands and feet, and approached Child B and played beside him. However, Child B did not respond and walked away from her.

On several occasions, Mrs. B used a hand puppet and approached Child B who was holding a plastic fruit figure and asked him to feed the puppet with the fruit. Instead, he dropped the fruit on the floor and walked around the room aimlessly. She also tried using another puppet but ended up with the same results – either he walked away, grunted or dropped the plastic fruit figure and picked up another one before wandering off around the

room. He did not show any interest in playing with Mrs. B except when she engaged in physical play such as jumping on the trampoline, crawling in the tunnel; or table-top activities such as sorting blocks, sorting rings and lacing activities (the activities that he normally engaged in at pre-school). Therefore, Child B's pretend play was unable to be assessed using the ToPP due to his lack of interest in engaging in the play activities in both structured and unstructured play situations. As a result, no scores were given for any of the ToPP's items for all three phases of the study.

4.5.6 Case 3

a. Profile of Child C

Demographic and daily life activities. Child C is a six-year old boy who has one younger sister. For the duration of the study, Child C attended a government sponsored special education pre-school every day for half of the day, then continued with therapy sessions at the clinic and engaged in other educational activities, and leisure activities at home. He attended therapy sessions with both parents and sometimes with his younger sister.

Interaction skills. Child C had no problem interacting with other people including his parents and the student researcher. However, he faced some issues when interacting with his younger sister. He got easily irritated with her especially when they played together because he had a certain way of doing things and was very rigid about it. Whenever his regimented play was challenged or interrupted by his younger sister, he responded by grabbing toys from her hand and scream. He did not try to calmly ask her to change her behaviour or just go along with what she wanted to do. This usually resulted in both of his parents have had to separate Child C from his sister and asked him to let his sister engage in play activities that she wanted to and reminded him to take turns when playing with her.

Communication skills. Child C could verbally communicate with other people including his parents and the student researcher. However, he had limited ability to convey his emotions verbally without prompts and assistance from his parents. He enjoyed talking to other people but tended to talk very fast that sometimes people had trouble understanding him. Child C's parents and student researcher have had to ask him to slow down and pace himself so that others could understand him. Towards the end of the DIR/Floortime[®] intervention program, Child C's speech had improved as he paced himself more consistently when he interacted and communicated with others. Child C now speaks a little bit slower compared to previously and it is easier to understand him.

Play. Child C enjoyed playing and was able to interact with his parents playfully but had some problems engaging in play activities that involved other children including playing with his younger sister. Child C had a certain way of completing a task and approached this in a rigid manner. He liked to be in control and wanted his younger sister to follow 'his way' of playing or doing an activity. When his sister did not play according to 'his way', Child C would scream and have a tantrum. Child C enjoyed pretend play which became more elaborate with time. During several earlier sessions in the program, he usually engaged in pretend play activities by himself. His pretend play improved by the end of the DIR/Floortime[®] intervention program where he was observed playing using pretend play features with both his parents and all of them was enjoying the play.

Behaviour. Child C's behaviour was characterised as being very active. He would move from one activity to another quickly without completing the activity numerous times. Even though sometimes he did complete an activity, usually he rushed to finish it and this resulted in incomplete or unfavourable outcomes. Child C was rigid when he engaged in educational activities where he often wanted to complete tasks according to 'his way'. He had no problem taking turns when engaging in activities with his parents but as previously

mentioned, he had difficulties engaging in activities involving his younger sister. Child C began to show some improvements during the middle of the home-based intervention period. For example, he was able to regulate himself and calm down as well as relax slightly during the follow-up sessions compared to when he started the DIR/Floortime® intervention program. Additionally, he could maintain his attention for longer periods of time when engaging in an activity and completed the activity before proceeding on to the next one with only minimal prompts from his parents. He could also focus for a required amount of time when learning something new or engaging in a new activity.

b. Profile of Mrs. C

Demographic and daily life activities. Mrs. C is a housewife and takes care of Child C and his younger sister without assistance from a domestic helper. She and her husband attended the therapy sessions together but usually she was more actively involved in the therapy activities with Child C compared to Mr. C.

Interaction and communication skills. She was strict and firm when she interacted with Child C. She was able to communicate with her son and maintained two-way communication with him using a directive, authoritative style of communicating. Most of the time, she instructed her son to engage in an activity and guided the way the activity should be carried out. Earlier in the DIR/Floortime® intervention program, Mrs. C usually took the lead when she and her husband were both engaging in activities with Child C. Mrs. C exhibited some improvements in her interactions with her son by the end of the program. For example, even though she still tried to instruct her son (and her husband) to perform the activities based on her preferences, the frequency of this decreased greatly. She demonstrated improvements in the way she interacted with her son by using a more conversation-like and non-directive manner with him.

She encouraged Child C to actively make choices by giving him more options and followed the child's lead when engaging in an activity or playing. She maintained two-way communication with her son for longer durations by pausing more often during their conversations. She also asked lots of questions and gave him more time to think, gather his thoughts, and answer the questions instead of just explaining what they were doing. This helped Child C pace himself when interacting with his parents and also improved his communication skills. Earlier in the program, Mrs. C usually joined Child C instantly when he played or engaged in activities. However, towards the end of the program she made an effort to stand back and observe what her son was going to do first and then slowly joined in with what he was doing and allowed the activity to be child-led by her son.

She also let Mr. C take the lead when engaging in play activities with Child C while she assumed more of a passive role during the session. However, she was still actively engaged with her son when he was completing academic-based activities. Towards the end of the DIR/Floortime[®] intervention program, both Mrs. C and Mr. C were observed engaging in activities with their son more comfortably and collaboratively together where they both exchanged thoughts and ideas.

Play. Child C liked to take part in pretend play and most of the time he engaged in these types of activities in a playful manner. However, with Mrs. C using a stricter parenting style and being a goal-oriented person, she did not appear to recognise when her son was actually demonstrating playful behaviours. She would instruct him to continue the activity in a less playful, more serious way. Occasionally, she also interacted with Child C by giving him options of what activities he could choose and let him select what he wanted to do. Mrs. C always spoke out loud about whatever she or her son were interacting with, in an effort to encourage Child C to talk and as a way of teaching him some new words, concepts or ways of doing things.

Mrs. C liked to approach Child C to try and get him to engage in play activities in the first instance, but usually was not able to maintain her son's connection and engagement in the activity. This was in part due to her way of interacting and communicating with her son where she would instruct him to do what she wanted him to do instead of letting him initiate the play activity. In the middle of the home-based DIR/Floortime[®] intervention period, Mrs. C demonstrated some improvements. She appeared to enjoy engaging in pretend play more compared to when she initially started the DIR/Floortime[®] intervention with her son. When engaging in pretend play with Child C, she would follow her son's lead but still provided some instruction or guidance in relation to his play. She also exhibited a change by allowing her husband to have more opportunities to be an active player when they both engaged in play activities with their son.

c. Profile of Mr. C

Demographic and daily life activities. Mr. C owns his own business, and his working hours are flexible. A few years back, he quitted his previous job and managed his own business when Child C was diagnosed with ASD. He drives him to school, and to the hospital or clinic for his appointments with the doctors, occupational therapists and speech therapists. Earlier in the program, Mr. C was not actively involved in the program although he was always with Child C during the sessions. He became more actively involved after he attended the DIR/Floortime[®] intervention training program with his wife and engaged in the DIR/Floortime[®] activities at home together with Child C and his wife.

Interaction and communication skills. During the first two sessions of the intervention phase, Mr. C's interaction with Child C was usually following Mrs. C's lead. Then, he exhibited some improvements where he appeared to be more confident and played a more active role when interacting with his son during the play activities. Most of the time, he would just follow Child C's lead in the activity and sometimes he played along with what

Mrs. C had asked them to do. He appeared to enjoy the interaction between his son and himself. For example, Mr. C and his son were playing ball tossing game where Child C had to aim and toss the ball to hit a marked target during one of the follow-up sessions. Child C was actively engaged in the play activity with his father, asking for his help and when Child C successfully tossed the ball to the marked target, Mr. C hugged him and cried in joy.

Although Mr. C was able to communicate with Child C, he would occasionally look at Mrs. C or the student researcher if he needed some help from them when he talked to his son. This might be due to Mr. C being a shy person and does not usually engage in activities with his son as often compared to Mrs. C.

Play. Mr. C was playful and he always followed his son's lead especially in pretend play activities. He would follow along when Child C initiated pretend play with him and continued to play with him. Mr. C rarely dictated or asserted what the focus or type of play activity should be. Towards the end of the program, he seemed more comfortable to play with his child compared to earlier in the program where he would often sit back and observe Mrs. C and Child C and only occasionally join them in the play activity.

d. Hours of engagement in DIR/Floortime[®] intervention at home with Child C

The reflective journals were collected at every follow-up session. All eight reflective journals were handed in by the parents. They completed the ten-hours requirement for every week of the home-based intervention period and sometimes spent more than the required amount of time. The hours of engagement in DIR/Floortime[®] intervention per week at home with Child C are presented in Table 4.19 below.

e. Parent-child interaction via the Circle of Communication (CoC) frequencies

Child C attended two pre-intervention sessions with his mother, Mrs. C; and the other five sessions during the intervention phase and post-intervention phase with both Mrs. and

Mr. C. The average CoC frequency between both Mrs. and Mr. C and Child C for each session are shown in Figure 4.26.

Table 4.19

Hours of engagement in DIR/Floortime® intervention per week for Case 3

Time (Week)	Hours of engagement in DIR/Floortime® intervention (hr, min)
1	10 hr 00 min
2	10 hr 30 min
3	13 hr 10 min
4	17 hr 10 min
5	10 hr 25 min
6	10 hr 10 min
7	10 hr 40 min
8	17 hr 00min

Note. DIR = Developmental, Individual-differences, Relationship-based; hr = hours; min = minutes.

f. Visual analysis of the frequencies of the Circle of Communication (CoC)

The average frequencies of parent-initiated directive and non-directive communication and the child-initiated directive and non-directive communication between Mr. C and Mrs. C and their son for all seven sessions (for Mr. C, only five sessions) were calculated and plotted and a visual analysis was conducted. The graphs and results of the analysis are shown below.

i. Parent-initiated directive communication (PI-D)

In Figures 4.27 and 4.28 below, the average frequencies of parent-initiated directive communication between Mrs. C and Mr. C and Child C are presented respectively. Three graphs in each figure from left to right were visually analysed to evaluate the changes in level, data variability, trend and slope.

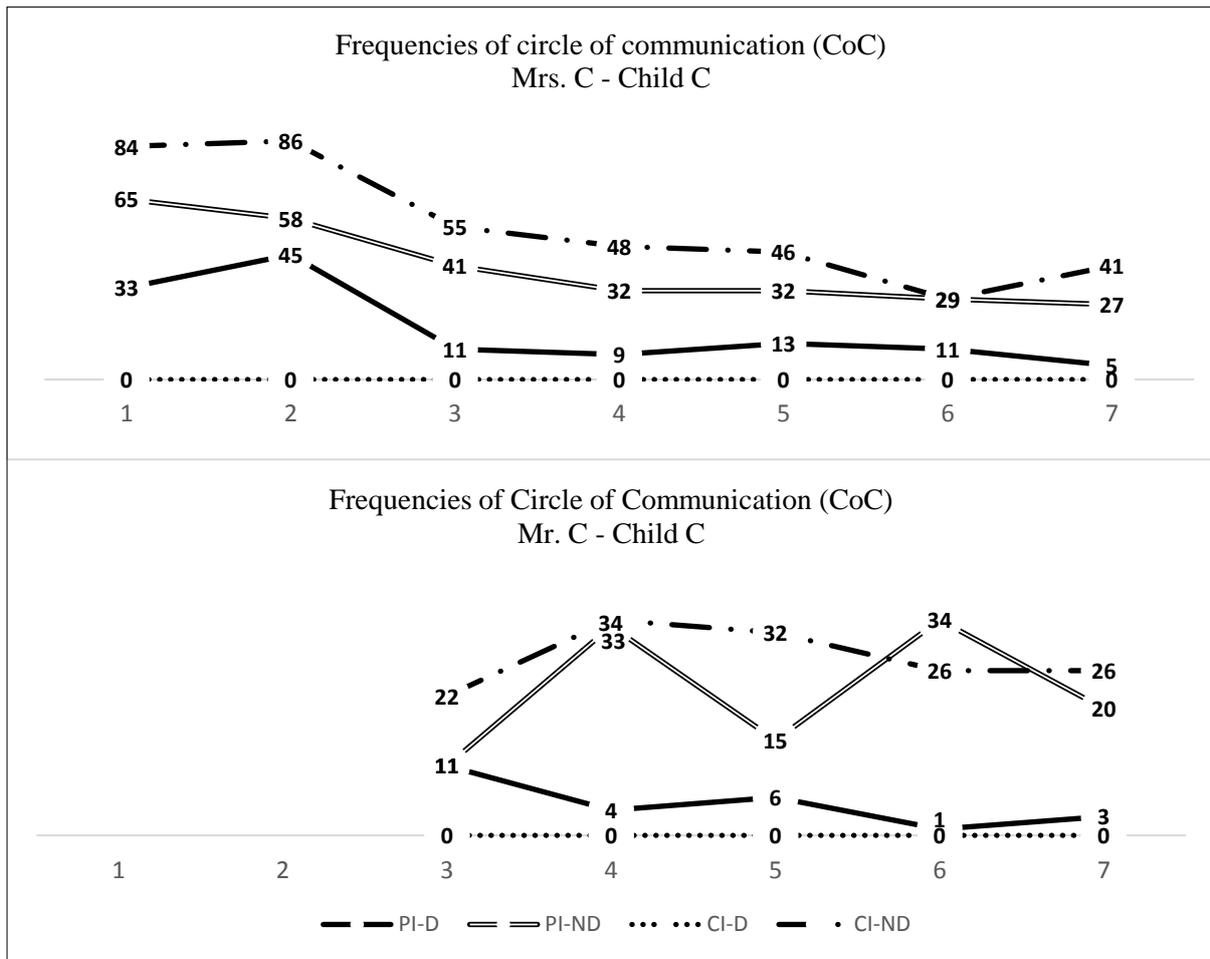


Figure 4.26. Average Circle of Communication (CoC) frequency between Mrs. C and Mr. C and Child C across seven sessions. CI-D = child-initiated directive; CI-ND = child-initiated non-directive; CoC = circle of communication; PI-D = parent-initiated directive; PI-ND = parent-initiated non-directive.

From the graphs in Figure 4.27, the data level in the intervention phase decreased to a lower level compared to the baseline phase. The data variability of the intervention data points also changed and was not as dispersed as it was during the baseline phase. The baseline phase's trend line was in an increasing direction and then changed to a decreasing direction during the intervention phase where the trend line in the latter phase became flatter than the former trend line. The changes in data level and trend is in therapeutic direction as the implementation of intervention aims to decrease the frequency of parents' directive communication with their child.

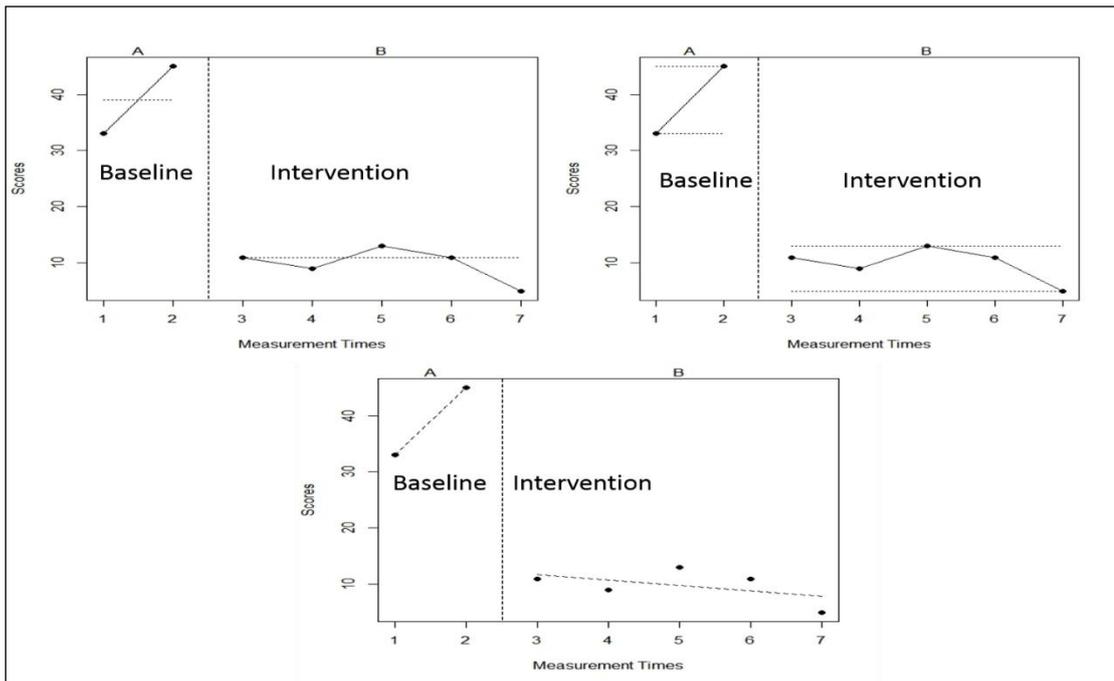


Figure 4.27. Parent-initiated directive communication between Mrs. C and Child C. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

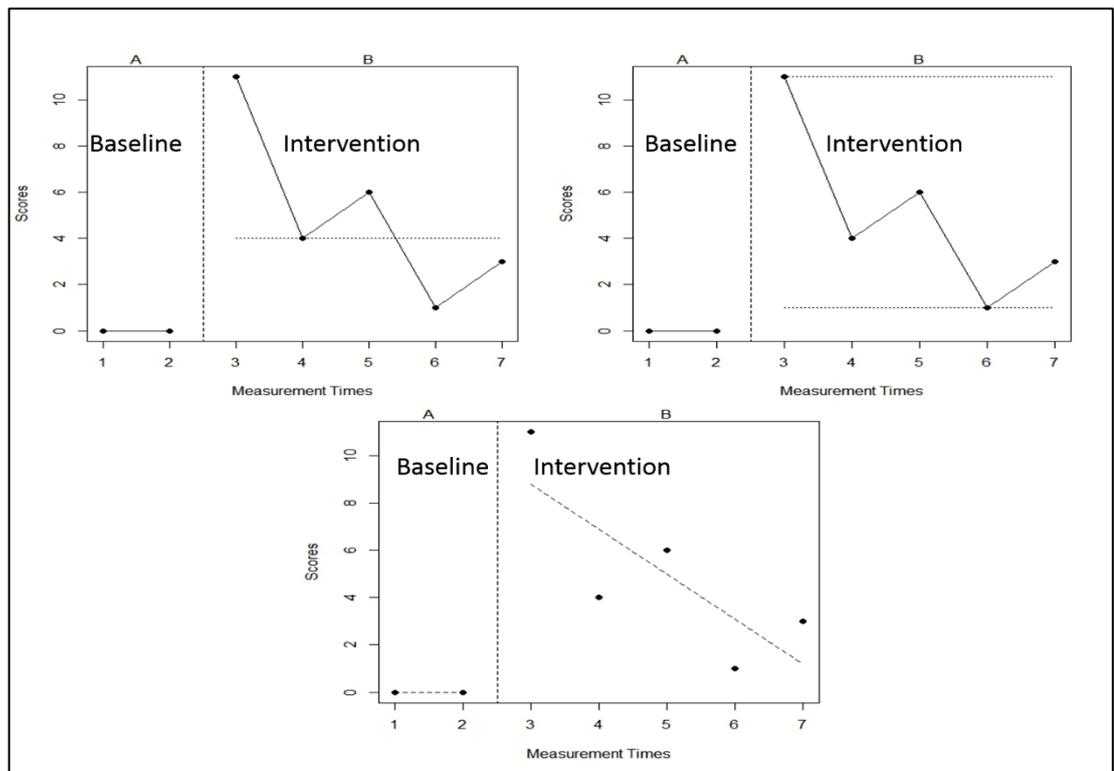


Figure 4.28. Parent-initiated directive communication between Mr. C and Child C. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Mr. C was not actively involved in the program during the pre-intervention phase, hence no data points were plotted in the baseline phase involving him and no comparison between the phases could be made. However, from the last graph in Figure 4.28, it can be observed that the trend line of the intervention data points was in a decreasing direction where the last data point was lower than the first and the majority of the other data points. Hence, the change is in therapeutic trend.

In addition to the four measures, standard deviation bands analysis was also conducted to evaluate the significant changes of the interaction observed during the baseline and intervention phases. The results of the analysis for Mrs. C and Mr. C's initiated directive communication with Child C are presented in Figure 4.29.

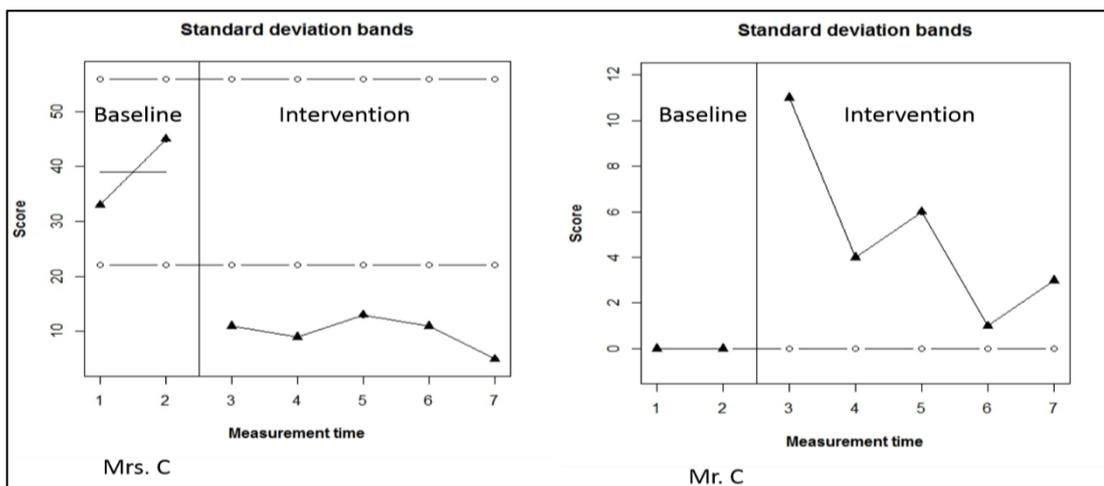


Figure 4.29. Standard deviation bands analysis results for parent-initiated directive communication for Case 3. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Based on the graph, there were five consecutive intervention data points that fell below the lower standard deviation band for the interaction between Mrs. C and Child C. This indicates that there were significant differences between the interactions observed during the baseline and intervention phases. Although five consecutive intervention data points fell above the standard deviation line for the

interaction between Mr. C and Child C, no interpretation could be made since no data was collected for the baseline phase.

ii. Parent-initiated non-directive communication (PI-ND)

Three graphs were plotted using the average frequencies of parent-initiated non-directive communication between Mrs. C and Mr. C with Child C. The graphs from left to right in Figures 4.30 and 4.31 were visually analysed. From the graphs below, the data points' level for the interaction between Mrs. C and her son changed to a lower level in the intervention phase. The intervention points for data variability dispersed to a larger degree compared to the baseline data points. In both phases, the trend line was in a decreasing direction with the trend line in the intervention phase flatter than the baseline phase. The changes shown for Mrs. C are in the contra-therapeutic trend. Meanwhile, For Mr. C's interaction with his son, a comparison between the phases was not analysed but the trend line of intervention data points was in an increasing direction, which is the expected direction of change.

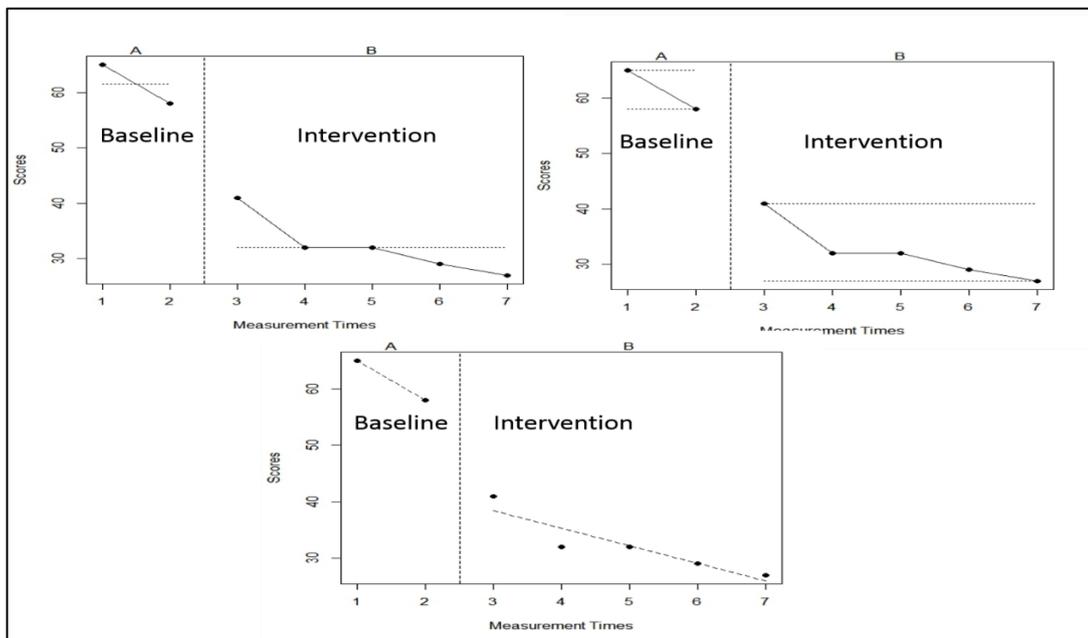


Figure 4.30. Parent-initiated non-directive communication between Mrs. C and Child C. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

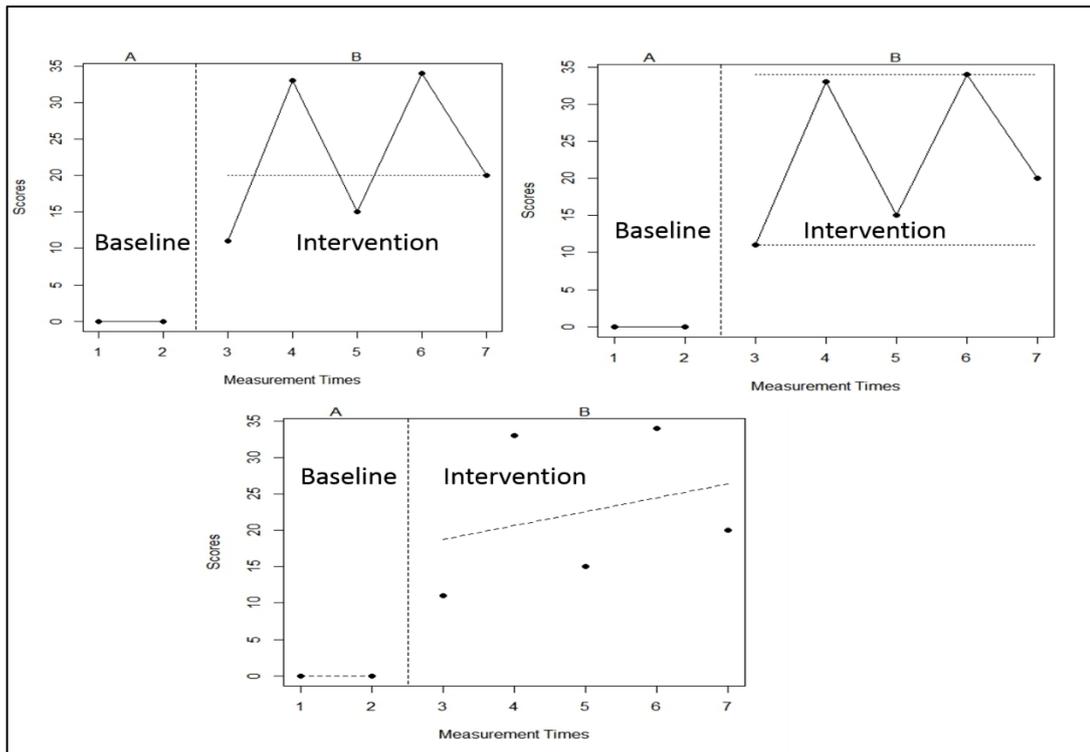


Figure 4.31. Parent-initiated non-directive communication between Mr. C and Child C. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Standard deviation bands analysis was also conducted using the average frequencies of parent-initiated non-directive communication. The results of the analysis are presented in Figure 4.32.

The graph on the left showed that five consecutive intervention points fell below the standard deviation band indicating that the difference between the interaction observed during the baseline and intervention phase was not significant. Since no baseline data points were available for Mr. C's interaction with Child C, no comparison between phases could be made albeit five consecutive intervention data points that fell above the standard deviation band.

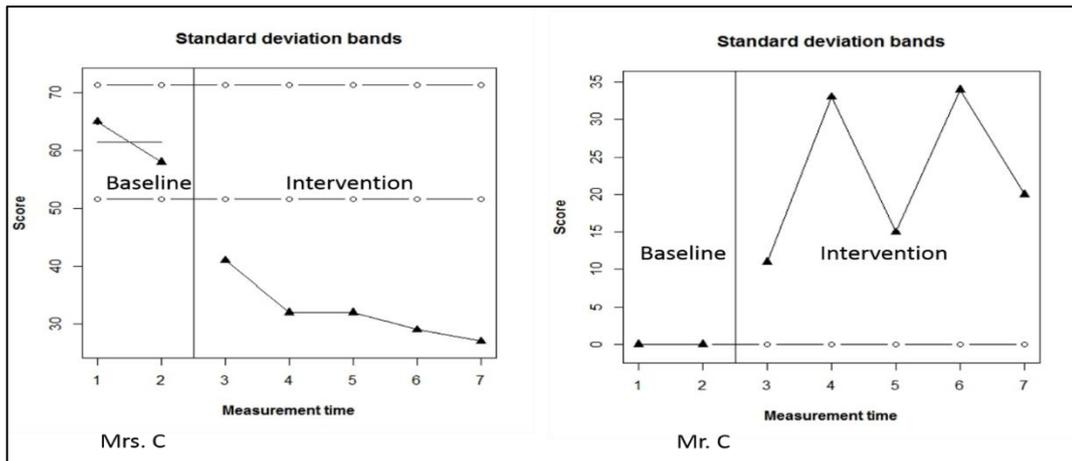


Figure 4.32. Standard deviation bands analysis results for parent-initiated non-directive communication for Case 3. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

iii. Child-initiated directive communication (CI-D)

No child-initiated directive communication was observed in all seven sessions.

iv. Child-initiated non-directive communication (CI-ND)

The changes in level, variability, trend and slope were visually analysed using three graphs shown in Figures 4.33 and 4.34 from left to right for the interaction observed between Mrs. C and Mr. C and their child with ASD respectively.

From the graphs of the interaction between Child C and Mrs. C shown in Figure 4.33, the data level for the intervention phase dropped to a lower level from the baseline phase. The data variability also changed in the intervention points where it was more dispersed. Meanwhile, the trend line in the baseline phase was in an increasing direction that changed to a decreasing pattern during the intervention phase, where the steepness of the slope was greater. This indicates that there were changes in the observed child-initiated non-directive communication between Child C and Mrs. C, but in a contra-therapeutic trend.

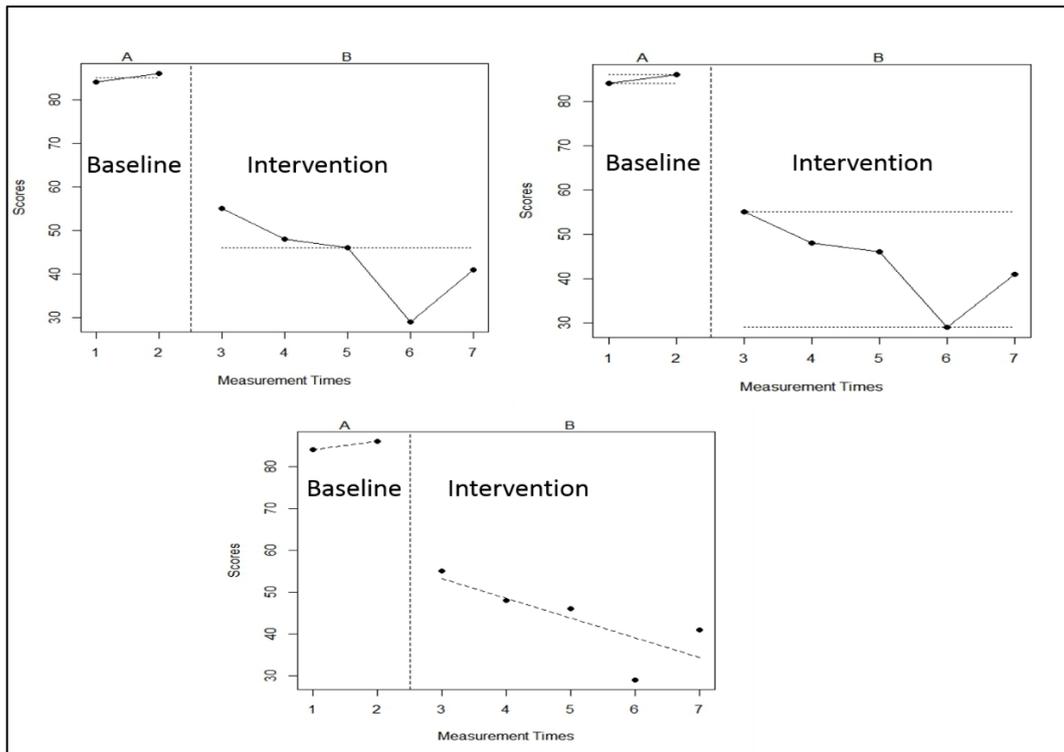


Figure 4.33. Child-initiated non-directive communication between Child C and Mrs. C. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

Although no comparison could be made for the interaction between Child C and his father, it can be observed in Figure 4.34 that the trend line in the intervention phase was in a contra-therapeutic trend, that is in a decreasing direction. However, the frequencies of the CI-ND observed in the last four sessions are higher than the first observation of Child C-Mr. C interactions.

In addition to the changes observed from the graphs in Figures 4.33 and 4.34, a standard deviation bands analysis was conducted to determine whether the difference of the interaction observed between the phases was significant. The results of the analysis for child-initiated non-directive communication between Child C and both his parents are presented in Figure 4.35 below.

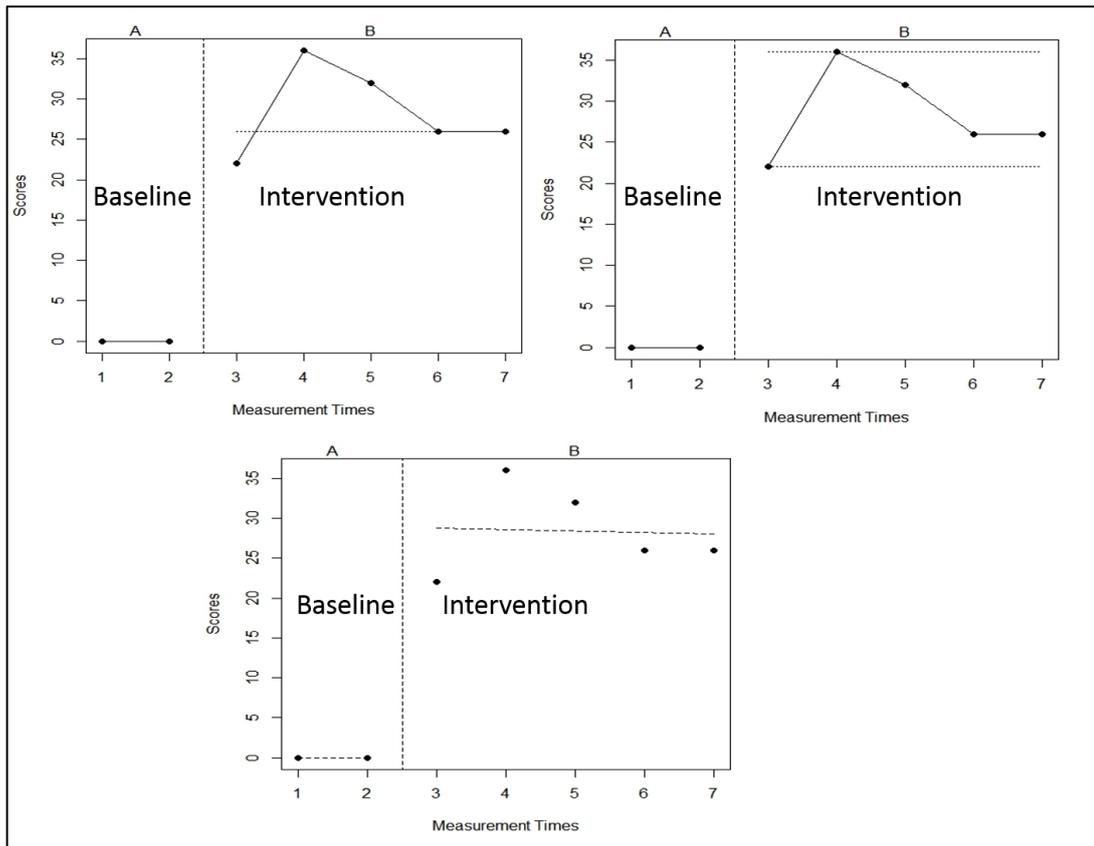


Figure 4.34. Child-initiated non-directive communication between Child C and Mr. C. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

From the graph in the left in Figure 4.35, there were five consecutive intervention data points that fell below the lower standard deviation band for the interaction between Child C and his mother. This indicated that there was no significant difference for the changes in interaction observed during the baseline and intervention phases. Since the data point for the baseline phase was not available, only one standard deviation band could be generated for the interaction between Child C and Mr. C making a meaningful interpretation of the results not feasible.

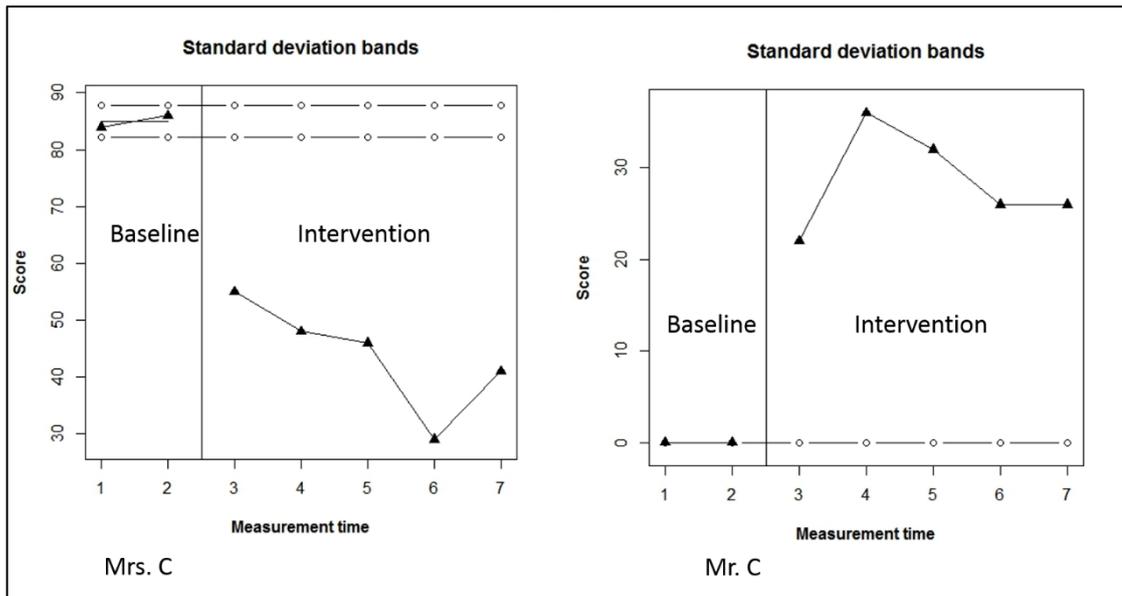


Figure 4.35. Standard deviation bands analysis results for child-initiated non-directive communication for Case 3. The A phase indicates the baseline phase that includes the pre-intervention data points and the B phase is the intervention phase that includes intervention and post-intervention data points.

g. *Statistical analysis of the frequencies of the Circle of Communication (CoC)*

Several statistical analyses were also conducted to evaluate the changes between the average frequencies of the CoCs observed during the baseline and intervention phases.

i. Parent-initiated directive communication

The results and interpretation of the statistical analyses conducted using the frequencies of parent-initiated directive communication that rated from all seven sessions between Mrs. C and Mr. C with their son are reported in Tables 4.20 and 4.21. Since there was no data collected in the pre-intervention phase for Mr. C, only piecewise regression analysis' results are presented.

ii. Parent-initiated non-directive communication

Tables 4.22 and 4.23 below report the results of the two statistical analyses conducted. Both tables also present the interpretation of each of the analysis' results for parent-initiated non-directive communication between Mrs. C and Mr. C with their child with ASD, respectively. Since there was no data collected in the pre-

intervention phase for Mr. C, only piecewise regression analysis' results are presented.

Table 4.20

Statistical analyses of parent-initiated directive communication between Mrs. C and Child C

Analysis	Results	Interpretation
Percentage of nonoverlapping data (PND): expected decrease	100	All treatment scores (100%) were lower than the lowest baseline score. Treatment was very effective to decrease directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = - 45.2 Piecewise unstandardised change in slope = - 13	Introduction of treatment induced a decrease in the number of parent-initiated directive communication. Number of parent-initiated directive communication decreased across time during the intervention phase.

Table 4.21

Statistical analyses of parent-initiated directive communication between Mr. C and Child C

Analysis	Results	Interpretation
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 8.8 Piecewise unstandardised change in slope = - 1.9	Introduction of treatment induced an increase in the number of interactions. Number of interactions decreased across time during intervention phase.

Table 4.22

Statistical analyses of parent-initiated non-directive communication between Mrs. C and Child C

Analysis	Results	Interpretation
Percentage of non-overlapping data (PND): expected increase	0	No treatment score (0%) was higher than the highest baseline score. Treatment is not effective to increase parent-initiated non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = -12.6 Piecewise unstandardised change in slope = 3.9	Treatment induced decrease in the number of parent-initiated non-directive communication. Number of parent-initiated non-directive communication increases across time during intervention phase.

Table 4.23

Statistical analyses of parent-initiated non-directive communication between Mr. C and Child C

Analysis	Results	Interpretation
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 18.8 Piecewise unstandardised change in slope = 1.9	Introduction of treatment induced an increase in the number of parent-initiated non-directive communication. Number of parent-initiated non-directive communication increased across time during intervention phase.

iii. Child initiated directive communication

From all the videos, no child-initiated directive communication was observed and rated.

iv. Child initiated non-directive communication

The results and interpretation of the statistical analyses conducted are presented in Tables 4.24 and 4.25 for Child C's initiated non-directive communication with his mother and father, respectively.

Table 4.24

Statistical analyses of child-initiated non-directive communication between Child C and Mrs. C

Analysis	Results	Interpretation
Percentage of non-overlapping data (PND): expected increase	0	No treatment score (0%) was higher than the highest baseline score. Treatment is not effective to increase child-initiated non-directive communication.
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = -34.8 Piecewise unstandardised change in slope = -6.7	Introduction of treatment induced a decrease in the number of child-initiated non-directive communication. Number of child non-directive communication decreased across time during the intervention phase.

Table 4.25

Statistical analyses of child-initiated non-directive communication between Child and Mr. C

Analysis	Results	Interpretation
Piecewise regression: treatment effect changes in outcome score between the second measurement occasion of treatment phase	Piecewise unstandardised immediate treatment effect = 28.8 Piecewise unstandardised change in slope = -0.2	Introduction of treatment induced an increase in the number of child-initiated non-directive communication. Number of child-initiated non-directive communication gradually decreased across time during the intervention phase.

h. Parent's assessment: Quality of Life in Autism (QoLA)

Mrs. C completed the QoLA scale on three different occasions, once during each of the study's phases (pre-intervention, intervention, and post-intervention). Since Mr. C was only actively involved in the program after he attended the training, he completed the assessment twice, once during the intervention phase and once during the post-intervention phase. The scores for each part and the overall quality of life rating from Mrs. C and Mr. C's self-report assessments are presented in Figure 4.36 below.

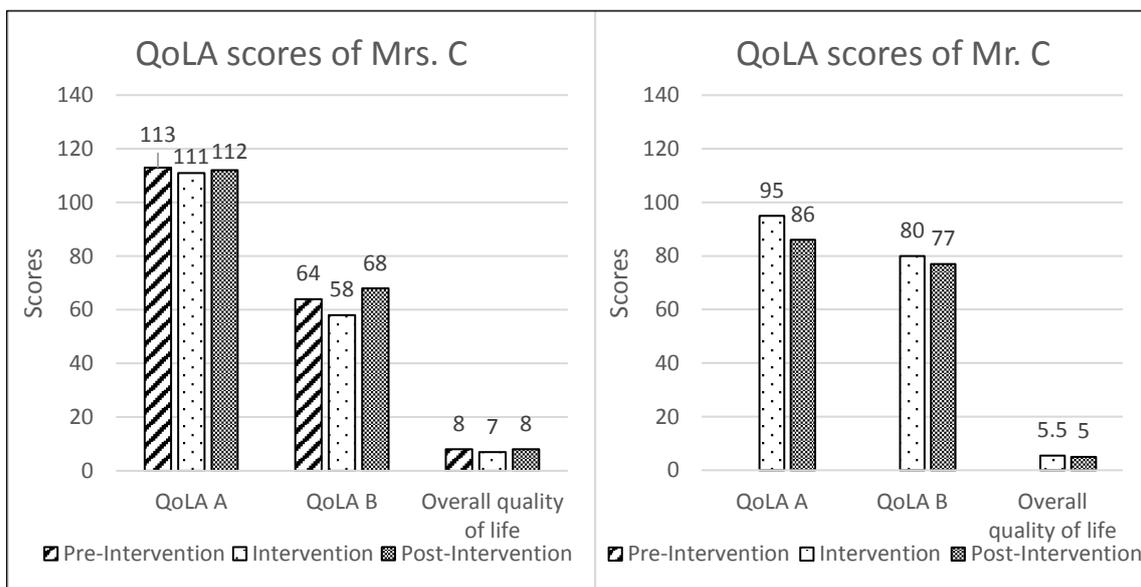


Figure 4.36. QoLA scores for Mrs. C and Mr. C. QoLA = Quality of Life in Autism. QoLA A = Quality of Life in Autism Part A. QoLA B = Quality of Life Part B.

Mrs. C's scores for Part A were high and remained almost the same throughout the study's phases. Initially, the score for the pre-intervention phase was 113 which then decreased slightly to 111 during the intervention phase before increasing back to 112 at the end of the home-based intervention program. Meanwhile, Mr. C's scores were lower than Mrs. C's but are still considered to be high. During the home-based intervention period, Mr. C's score was 95 which decreased to 86 during the post-intervention phase.

From the scores measured, it indicated that Mrs. C perceived her quality of life as being at a 'high' level when she first participated in the study this remained relatively the

same throughout the latter two phases of the study. Meanwhile, Mr. C perceived his quality of life at a slightly lower level compared to Mrs. C, this remained at the same ‘*moderate*’ level in both the intervention and post-intervention phases, although the post-intervention’s score was slightly lower than the intervention phases’ score.

For Part B, Mrs. C’s scores fluctuated throughout all phases of the study. During the pre-intervention phase, her score was 64, this decreased slightly to 58 during the intervention phase and increased back to a higher score of 68. Unlike his wife, Mr. C’s scores decreased with time, the score was 80 when it was first assessed during the intervention period and then moved to a lower score of 77 during the post-intervention phase. From the scores obtained, it showed that Mrs. C’s perceived that the difficulties her child with ASD was facing affected her at a ‘*moderate*’ level, and it did not improve much with the implementation of the DIR/Floortime[®] intervention program. Although, the decrease in Mr. C’s scores indicate that he had fewer perceived problems resulting from Child C’s ASD diagnosis impacted him throughout the study’s phases, it was still at a ‘*high*’ level.

Mrs. C rated her overall satisfaction with her quality of life at a ‘*high*’ level (score = 8) when she started the program, this decreased to 7 during the program and increased back to her initial score level. Meanwhile, Mr. C’s overall scores were at the ‘*moderately satisfied*’ level with his quality of life rated as 5.5 during the intervention phase which decreased to 5 during the post-intervention phase.

i. Parent’s assessment: Bahasa Malaysia Depression Anxiety Stress Scale 21-item (BM DASS-21)

Mrs. C completed the BM DASS-21 on three different occasions while Mr. C only completed it on two occasions (the intervention and post-intervention phases). Figure 4.37

below shows the scores for depression, anxiety and stress subscales for both Mrs. and Mr. C that were measured during the pre-intervention, intervention, and post-intervention phases.

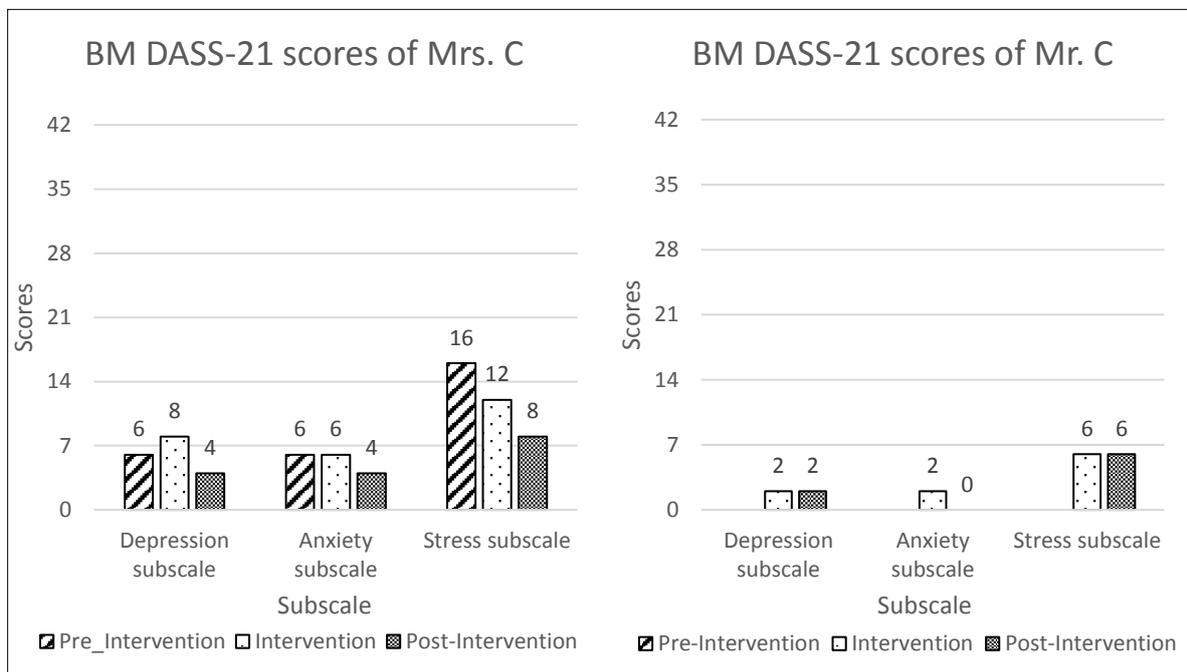


Figure 4.37. BM DASS-21 subscales scores of Mrs. C and Mr. C. BM DASS-21 = Bahasa Malaysia Depression Anxiety Stress Scale 21 item.

Mrs. C's depression subscale scores fluctuated throughout the phases. During the pre-intervention phase, her score was 6 which increased to 8 during the intervention phase, and then decreased to 4 at the end of the program. The scores showed that the self-reported level of Mrs. C's depression was in the non-clinical / normal range when she started the program and remained at the same level by the end of the program. Her score during the post-intervention was the lowest indicating that her feeling of depression had improved. Mr. C's depression subscale scores stayed the same during the intervention and post-intervention phases. His score was 2 and although it was within the non-clinical / normal range of depression, it was very low indicating he only experienced low depression levels compared to his wife.

For the anxiety subscale, Mrs. C's scores decreased at the end of the program. The scores recorded were the same in both the pre-intervention and intervention phases, with a

score of 6 which decreased to 4 during the post-intervention phase. The scores indicated that she experienced a non-clinical / normal level of anxiety at the beginning of the program which remained the same throughout the all phases of the study and improved during the post-intervention phase since the score decreased to 4. Mr. C's scores also decreased with time, with an initial score of 2 during the intervention phase which decreased to 0 during the post-intervention phase. The scores indicated that although the scores were in the non-clinical / normal level of anxiety, it improved after the end of the home-based intervention.

For the stress subscale, Mrs. C's scores were quite high compared to the other two subscales, but exhibited a decreasing trend. Her score initially was 16, which decreased to 12 and continued to decrease to 8 at the end of the program. This indicated that with the implementation of the DIR/Floortime[®] intervention approach at home with Child C, the level of stress she experienced improved from mild to a non-clinical / normal level of stress. Meanwhile, Mr. C's scores remained the same in both the intervention and post-intervention phases (score = 6). This indicates that Mr. C experienced the same levels of stress even after the home-based intervention period ended and it was still within the non-clinical / normal level of stress.

j. Parent's assessment: Malay translated version of Parenting Sense of Competence Scale (PSOC)

Mrs. C completed the PSOC once during all three of the study's phases while Mr. C only completed the assessment during the intervention and post-intervention phases. The scores of the efficacy and satisfaction subscales as well as the overall score for both Mrs. and Mr. C are presented in Figure 4.38.

Mrs. C's efficacy subscale scores increased steadily with time. Her initial score was 29, which increased slightly to 31 during the intervention phase and continued to increase to 33 in post-intervention phase. Although the scores were quite low, this indicates that Mrs.

C's perceived efficacy improved with the implementation of the DIR/Floortime[®] intervention. Mr. C's scores also increased from 31 during the intervention phase to 33 during the post-intervention phase. Similar to his wife, his self-reported efficacy level improved after the home-based intervention period.

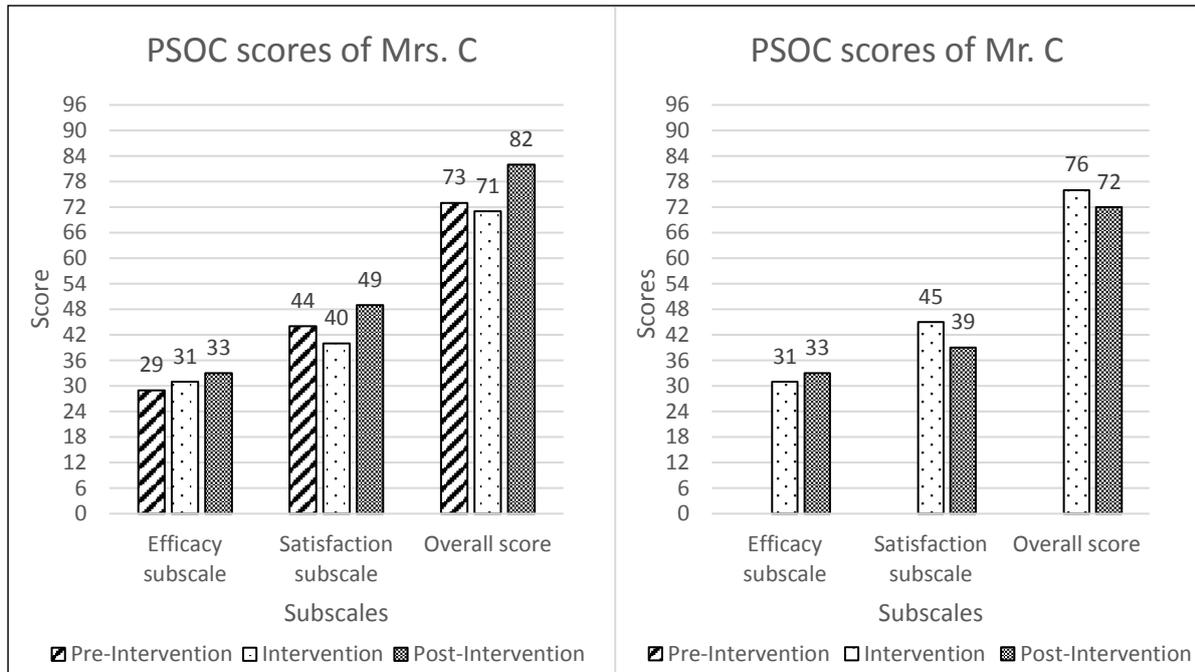


Figure 4.38. PSOC scores of Mrs. C and Mr. C. PSOC = Parental Sense of Competence Scale.

For the satisfaction subscale, Mrs. C's scores were higher than her efficacy subscale's scores. The pre-intervention score phase was 44, which decreased slightly to 40 during the intervention phase before it increased back to 49 during the post-intervention phase. The scores indicated that Mrs. C was satisfied with her parenting when she first participated in the DIR/Floortime[®] intervention program. Her scores then decreased slightly during the implementation period but eventually improved with a higher score than the initial score at the end of the program.

Contrary to Mrs. C's improved scores in the satisfaction subscale, Mr. C's self-reported scores decreased from 45 to 39 during the post-intervention phase. This indicates that he was less satisfied with his parenting after the home-based intervention period.

When the scores for each subscale were totalled, it indicated that Mrs. C perceived that she had a high level of parenting sense of competency which improved after the intervention phase. Similar to Mrs. C, Mr. C's parenting sense of competency was also at a high level although it decreased after the home-based intervention period ended.

k. Child with ASD assessment: The Test of Pretend Play (ToPP)

Child C's pretend play was assessed three times, once during the pre-intervention, intervention and post-intervention phases. The scores for each section including the total raw score, the age equivalent for the total raw scores obtained and the play situation the test was conducted are reported in the Table 4.26 below.

Table 4.26
ToPP scores of Child C

Section/Time	Pre-Intervention	Intervention	Post-Intervention
Play situation	Unstructured	Unstructured	Unstructured
Section I	2	2	2
Section II	8	8	0
Section III	12	0	0
Section IV	4	4	12
Total raw scores	26	14	14
Age equivalent (months) ^a	70.7	44.9	44.9

Note: ToPP = Test of Pretend Play.

^aAge equivalent by reference to the age norms based on best fitting linear for unstructured or free play situations as reported in the TOPP's manual.

Child C's pretend play was assessed in an unstructured play situation every time he was assessed with the assistance of both his parents. During all the phases, initially the tester (student researcher) attempted to conduct the test in a structured play situation as instructed in the manual of the ToPP. However, Child C would always take the toys and begin to pretend play spontaneously when the toys and test materials were presented to him. Despite several attempts to assess him in a structured play situation, Child C did not respond well to

either the assessor or his parents. Since Child C appeared to prefer to engage in pretend play without it being structured, the student researcher decided to assess Child C's pretend play in an unstructured play situation. This was done to allow Child C to play happily because a child's play is supposed to be fun.

The first time Child C was assessed, he was able to perform all the items in Section I, II, and III. For each of the three sections, he achieved the maximum scores possible which were 2, 8 and 12 respectively. However, for Section IV he was only able to perform the substitution and reference to absent objects or property spontaneously subscales (i.e., Item IV.1 and IV.2). His score was only four, this brought his total ToPP raw score to 26. This was equivalent to the pretend play of children aged 70.7 months or 5 years 9 months.

During the intervention phase, Child C's score for Section I was 2, 8 for Section II and 4 for Section IV. Since no item in Section III was performed by Child C, no score was given. The total raw score obtained was 14 which was lower than the pre-intervention phase. The age equivalent for the total raw score was 44.9 months or approximately 3 years 7 months.

Meanwhile, during the final assessment period, Child C scored 2 for Section I, 12 for Section IV and zero for both Sections II and III. Although he did not obtain any score in two sections, the total raw scores and age equivalent scores were the same as the previous phase.

From the scores, the age equivalent of the total raw scores obtained during the pre-intervention phase was slightly lower than Child C's chronological age (six-years old at the time of the study). However, the scores decreased to a lower level where the age equivalent was almost half of his chronological age (3 years 7 months). From the changes of the score, it appeared as if Child C's pretend play regressed with the implementation of the DIR/Floortime[®] intervention.

Since the pretend play was assessed in an unstructured play situation, various toys and materials appropriate to all test items were made available in the therapy room to give the child the opportunity to play and to be scored according to the test items. However, one of the challenges faced assessing a child's pretend play in an unstructured play situation was that the child could play what he/she wanted to play at the time of assessment and it might not involve any toys or various materials. This happened during the intervention and post-intervention phases with Child C.

Although the toys and materials were available, Child C did not play with them that resulted in no observations of the specific pretend play in Section II (pretend play involving doll or action figure and other objects) and Section III (pretend play involving teddy bear or cat soft toy) being completed. It impacted the raw score as well as the age equivalent performance greatly, suggesting that his pretend play regressed with the implementation of the DIR/Floortime[®] intervention. However, Child C obtained a full score for Section IV during the post-intervention phase which had improved from the initial observations. This demonstrated that his pretend play had actually improved, where he was able to perform a scripted play that involved substitution, reference to absent property and attribute a property to himself. A scripted play is the highest and most complex form of pretend play.

As previously described, Child C sometimes was rigid with his style and mode of playing as he often got fixated to a theme when he was playing and repeated the same play situation for the whole session. Although the total raw scores decreased with the implementation of the DIR/Floortime[®] intervention, the increment of score of Section IV indicating that Child C's pretend play had somewhat improved. A careful interpretation of the test's scores should be made and will be discussed in further details in the discussion chapter of the thesis.

4.6 *Summary of quantitative results for all cases*

In the previous section, three of eight participant profiles' and quantitative results were provided in detail. These include the average frequencies of each CoCs, graphs with all data points plotted for visual analysis, the results of statistical analyses conducted, the scores of three parent's assessments, as well as the child's pretend play scores. For the other five participants' graphs and tables of scores are provided in the appendices. In this section, the summary of the visual analysis and statistical analysis of the average frequencies of CoCs, as well as the descriptive statistics of the parents' self-report assessment and child's ToPP's scores of all eight participants are presented.

4.6.1 *Summary of visual analysis of the frequencies of Circle of Communication (CoC)*

The visual analysis was conducted to determine the changes in data level, variability, trend and slope. In addition to the four measures, the standard deviation bands analysis was also conducted to evaluate whether there was a significant difference between the interaction observed during the baseline and the intervention phase. Eight participants' visual analysis results for parent-initiated directive communication (PI-D), parent-initiative non-directive communication (PI-ND), child-initiated directive communication (CI-D) and child-initiated non-directive communication (CI-ND) are presented in the following Table 4.27.

The changes in intervention data level in comparison to baseline data level are described with using a plus sign (“+”) to denote an increase and a minus sign (“-”) to denote a decrease. The changes in data variability is labelled with “>” indicating larger or “<” indicating smaller to describe the degree of intervention data points dispersed compared to the baseline data points.

Meanwhile, the changes in trend describe the changes of the trend line's direction from the baseline phase to the intervention phase with the upward arrow (“↑”) for an

increasing direction and the downward arrow (“↓”) for a decreasing direction. The changes in slope describes the intervention phase’s trend line’s steepness in comparison to the baseline phase’s trend line. Changes are denoted as an increase with the plus sign (“+”) or decrease with the minus sign (“-”).

The standard deviation bands analysis result is labelled significant or not significant. It was determined by at least two consecutive intervention data points that fell out of the two standard deviation bands, depending on the aim. In this study, the directive communication was expected to decrease with implementation of the DIR/Floortime® intervention hence at least two consecutive intervention data points should fall below the lower standard deviation band. Meanwhile, the non-directive communication was expected to increase after the DIR/Floortime® intervention program, hence a minimum of two consecutive intervention data points should fall above the upper standard deviation band (Janosky et al., 2009).

Table 4.27

Summary of visual analysis of average CoC frequencies for all participants

Circle of Communication (CoC)	Case	Parents - rated	Changes in level	Changes in data variability	Changes in trend	Changes in slope	Standard deviation bands analysis
PI-D	1	Mother	-	>	↓ → ↑	-	Significant
		Father	N/A	N/A	N/A	N/A	N/A
	2	Mother	-	>	↓ → ↑	+	Not significant
	3	Mother	-	<	↑ → ↓	-	Significant
		Father	N/A	N/A	N/A	N/A	N/A
	4	Mother	-	>	- → ↑	+	Significant
	5	Mother	+	>	↑ → ↑	+	Not significant

	6	Mother	+	>	→	↑	+	Not significant
		Father	-	<	↑	↑	-	Not significant
	7	Mother	+	>	↓	↓	-	Not significant
	8	Mother	-	>	↑	↓	+	Significant
PI-ND	1	Mother	-	>	↑	↑	+	Not significant
		Father	N/A	N/A	N/A	N/A	N/A	N/A
	2	Mother	-	>	↓	↓	-	Not significant
	3	Mother	-	<	↓	↓	-	Not significant
		Father	N/A	N/A	N/A	N/A	N/A	N/A
	4	Mother	-	>	↓	↓	-	Not significant
	5	Mother	+	>	↑	↑	-	Not significant
	6	Mother	+	>	↓	↓	-	Not significant
		Father	+	<	↑	↓	-	Not significant
	7	Mother	+	>	↓	↑	-	Not significant
	8	Mother	-	No change	↑	↓	-	Not significant
CI-D	1	Mother	No change	>	→	↓	+	Not significant

	Father	No change	>	→↓	+	Not significant
2	Mother	N/A	N/A	N/A	N/A	N/A
3	Mother	N/A	N/A	N/A	N/A	N/A
	Father	N/A	N/A	N/A	N/A	N/A
4	Mother	N/A	N/A	N/A	N/A	N/A
5	Mother	-	<	↓→-	-	Not significant
6	Mother	N/A	N/A	N/A	N/A	N/A
	Father	No change	>	→↑	+	Not significant
7	Mother	No change	>	→↑	+	Not significant
8	Mother	N/A	N/A	N/A	N/A	N/A
CI-ND	1	Mother	-	↓→↑	+	Not significant
		Father	N/A	N/A	N/A	N/A
	2	Mother	-	↓→↓	-	Not significant
	3	Mother	-	↑→↓	+	Not significant
		Father	N/A	N/A	N/A	N/A
	4	Mother	+	↓→↓	-	Not significant
	5	Mother	+	↓→↓	No change	Significant
	6	Mother	+	↓→↓	-	Not significant

	Father	-	<	↑→↑	-	Not significant
7	Mother	+	>	↓→↑	-	Not significant
8	Mother	-	>	↑→↓	+	Not significant

Note. CI-D = child-initiated directive; CI-ND = child-initiated non-directive; NA = not available; PI-D = parent-initiated directive; PI-ND = parent-initiated non-directive; + = increase; - = decrease; > = larger; < = smaller; ↑ = increasing direction; ↓ = decreasing direction.

From the table, majority of the cases' level, variability, trend and slope changed from the baseline to intervention phase. However, the results of visual analysis is inconclusive as it is difficult to interpret the changes of whether it is in the therapeutic or the contra-therapeutic direction based only from the visual analysis of these four changes. This is because the changes in data level and trend are not in agreement for most cases. For example, the data level of the PI-D in one participant indicates that it decreased in intervention phase, however, the trend line was in increasing direction. Although the data level changes in the therapeutic direction, however, the trend line changes showed it is in the contra-therapeutic direction. Therefore, standard deviation bands analysis was conducted to aid the interpretation of the results. However, only parent-initiated directive communication (PI-D) and child-initiated non-directive communication (CI-ND) have cases that were found significant (i.e., in therapeutic direction), each with four cases and one case, respectively.

Fathers in Cases 1 and 3 were only actively involved in the study during the follow-up sessions, hence no data point for the baseline phase was available and no comparison was made. In the table, it was denoted as "N/A" indicating the results were not available. Meanwhile, for the CI-D, the interaction was observed only in four instances and all of them

were not significant, while the other six were denoted as “N/A” because no interaction was observed. To further clarify the interpretation of changes in child-parent interactions, statistical analysis of the frequencies of CoC were conducted.

4.6.2 Summary of statistical analysis of the frequencies of Circle of Communication (CoC)

Additional to visual analysis, two statistical analyses were conducted, the percentage of nonoverlapping data (PND), and piecewise regression. For the PND result, it is denoted with the percentage of data points that does not overlaps with the baseline data point. The nonoverlapping of data is either lower or above the baseline point depending on the aim of the intervention whether to increase or decrease the interaction. In this study, the directive communication was expected to decrease with the implementation of the DIR/Floortime[®] intervention, hence the percentage was describing the intervention data points that were lower than the lowest baseline score. Meanwhile, the non-directive communication was expected to increase with the home-based intervention, so the percentage was describing the number of intervention data points that were higher than the highest baseline score. Therefore, the PND value indicates the effectiveness of the intervention in achieving the aim of intervention, that is to decrease directive communication and to increase non-directive communication.

For the PND values above 90% indicate that the intervention effect was very effective, values of 70% - 90% indicate that the intervention effect is moderately effective, the values of 50% - 70% indicate that effectiveness of the intervention to be questionable and any value less than 50% indicate that the intervention is not effective (Scruggs, Mastropieri, & Casto, 1987; Scruggs & Mastropieri, 2013).

The piecewise regression results showed the immediate treatment effect, the changes of data level between the baseline data points and the second data point in intervention phase. The changes with the plus sign “+” denotes the treatment induced an increase in the

number of interactions and the minus sign “-” denotes the treatment induced a decrease in the number of interactions. In this section, the standardised immediate treatment effect value was used so a valid comparison between cases could be made. In the following Table 4.28, the results of the statistical analyses for all participants is presented.

Table 4.28

Summary of statistical analysis of average CoC frequencies for all participants

Circle of Communication (CoC)	Case	Parents-rated	PND (%)	Piecewise regression (level)	Piecewise regression ^a (slope)	Interpretation ^b
PI-D	1	Mother	80	-1.14	+1.70	Moderate ↓
		Father	N/A	N/A	N/A	N/A
	2	Mother	60	-0.19	+0.71	Questionable ↓
	3	Mother	100	-15.1	-4.35	Very ↓
		Father	N/A	N/A	N/A	N/A
	4	Mother	100	-1.07	+0.02	Very ↓
	5	Mother	40	-0.44	+0.27	Not effective
	6	Mother	0	+0.33	+0.29	Not effective
		Father	0	-26.67	-12.90	Not effective
	7	Mother	0	+3.83	+1.03	Not effective
8	Mother	80	-1.63	-1.32	Moderate ↓	
PI-ND	1	Mother	20	-2.77	+0.44	Not effective
		Father	N/A	N/A	N/A	N/A
	2	Mother	20	+1.18	+0.19	Not effective
	3	Mother	0	-5.05	+1.56	Not effective
		Father	N/A	N/A	N/A	N/A
	4	Mother	0	+6.38	+0.90	Not effective
	5	Mother	40	-2.17	-1.98	Not effective
	6	Mother	20	+3.48	+1.48	Not effective
		Father	0	-3.05	-2.30	Not effective
	7	Mother	60	+2.92	+2.26	Questionable ↑
8	Mother	0	-4.48	-2.36	Not effective	
CI-D	1	Mother	0	+0.83	-0.21	Not effective

		Father	N/A	N/A	N/A	N/A
	2	Mother	N/A	N/A	N/A	N/A
	3	Mother	N/A	N/A	N/A	N/A
		Father	N/A	N/A	N/A	N/A
	4	Mother	N/A	N/A	N/A	N/A
	5	Mother	0	+9.41	+9.41	Not effective
	6	Mother	N/A	N/A	N/A	N/A
		Father	0	-0.55	+0.55	Not effective
	7	Mother	0	-0.55	+0.55	Not effective
	8	Mother	N/A	N/A	N/A	N/A
CI-ND	1	Mother	20	+1.45	-0.31	Not effective
		Father	N/A	N/A	N/A	N/A
	2	Mother	0	+2.57	+1.95	Not effective
	3	Mother	0	-4.86	-0.94	Not effective
		Father	N/A	N/A	N/A	N/A
	4	Mother	20	+1.68	+0.13	Not effective
	5	Mother	80	+8.37	+0.06	Moderate ↑
	6	Mother	20	+3.50	+1.45	Not effective
		Father	0	-6.88	-3.68	Not effective
	7	Mother	80	+3.41	+1.55	Moderate ↑
	8	Mother	0	-3.74	-1.71	Not effective

Note. CI-D = child-initiated directive; CI-ND = child-initiated non-directive; N/A = not available; PI-D = parent-initiated directive; PI-ND = parent-initiated non-directive; PND = Percentage of nonoverlapping data; + = increase; - = decrease; ↓ = decrease; ↑ = increase. ^aThe sign indicates the trend direction with + is increasing direction and - is decreasing direction. ^bInterpretation of the intervention impact based on the PND values proposed by Scruggs, Mastropieri, and Casto (1987) and the results of piecewise regression analysis of whether the treatment induce an increase or decrease in the number of interactions observed.

Similar to visual analysis, in some cases, some of the results of the piecewise regression analysis indicating the data level and slope changes are contradicting one another. Hence, a careful interpretation of the results is to be made.

Meanwhile, for the PND results, some cases showed that the effectiveness of the intervention ranging from very effective to not effective. For the PI-D average frequencies,

the PND results for mothers in Cases 3 and 4 were found to show very effective treatment impact in decreasing the number of directive communication with their children with ASD. Meanwhile, another two mothers (Case 1 and Case 8) scores were found to show moderately effective in decreasing the type of number of parent-directive interaction, and one mother, Case 2's intervention's effect size was questionable in decreasing the interaction with the implementation of the DIR/Floortime[®] intervention at home. The rest were not effective.

For PI-ND, only one mother's (Case 7) result showed that the intervention is in the range of questionable effective in increasing the frequencies of the interaction while the rest were not effective. Meanwhile, only four cases were analysed for CI-D and none of them were found effective in decreasing the number of interactions. For the CI-ND, in two of nine cases, the intervention was found to be moderately effective in increasing the interactions between their child and the mothers (Case 5 and Case 7). The other seven cases were not effective.

Although the results of visual and statistical analyses for some cases are not in agreement with one another. However, collectively the integration of the results of all the analyses suggesting that the implementation of DIR/Floortime[®] intervention induced a positive change in child-parent interactions.

4.6.3 Summary of parent participants' Quality of Life in Autism (QoLA) scores

Parent participants completed the QoLA assessment multiple times throughout the study. All mother participants and two father participants completed the assessments three times, once during each study phases. Meanwhile, the other father participants only completed the assessment twice, during the intervention and post-intervention phases, because they started to become more actively involved in the study after they attended the parents training session. The scores for QoLA Part A, Part B and the overall rate of quality

of life for all mother and father participants are graphically presented in Figures 4.39 and 4.40.

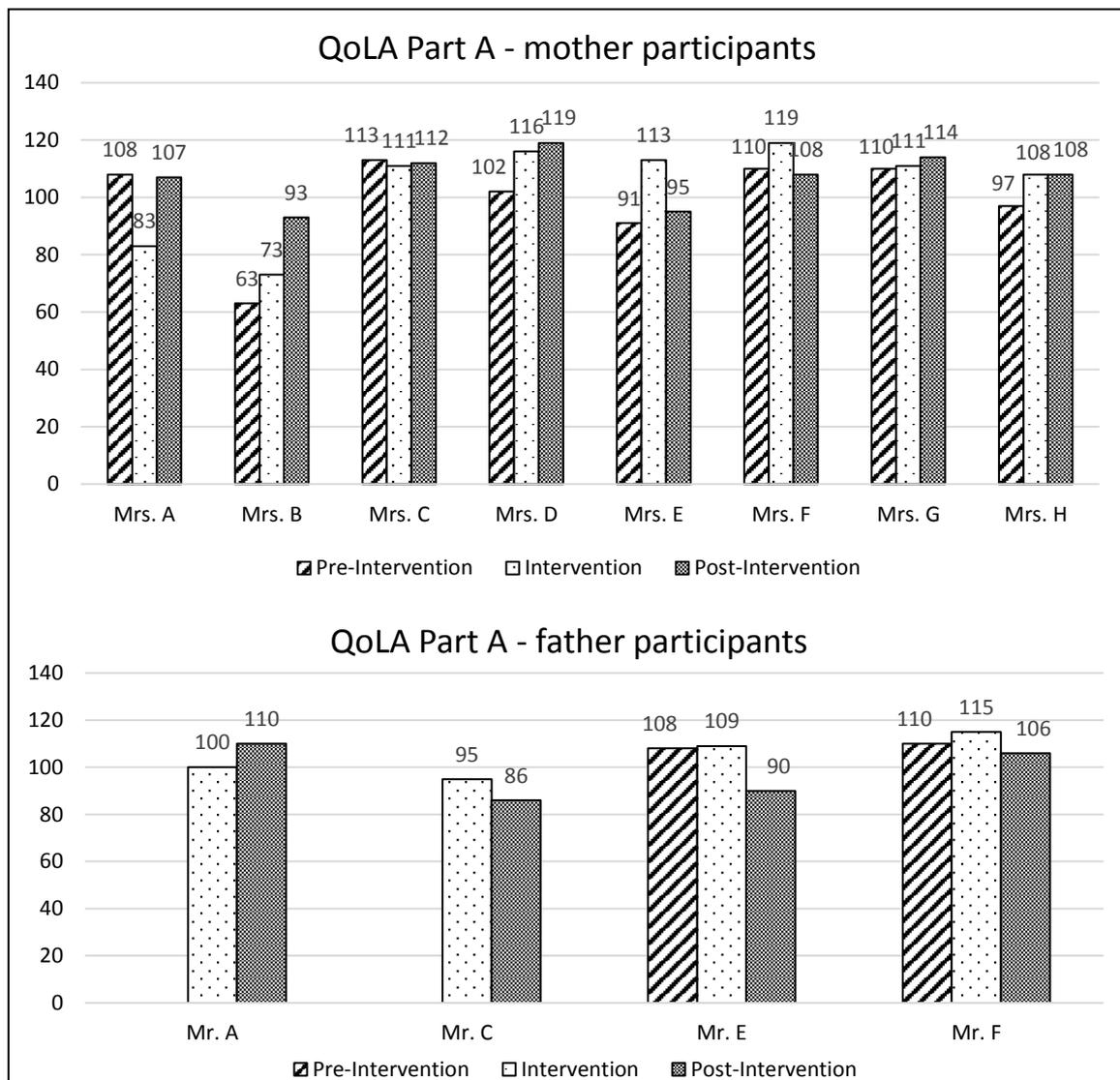


Figure 4.39. QoLA Part A scores of parent participants. QoLA = Quality of Life in Autism.

From the graphs, six of the mother participants' Part A post-intervention scores were higher than their initial scores, indicating that their perceived quality of life improved with the implementation of the DIR/Floortime[®] home-based intervention. While another two mothers' scores showed their perceived quality of life decreased after completing the home-based intervention. However, only one of the four father participants' score indicated that he had experienced an improvement in quality of life at the end of the intervention program with the other three fathers' scores decreased suggesting a deterioration in quality of life.

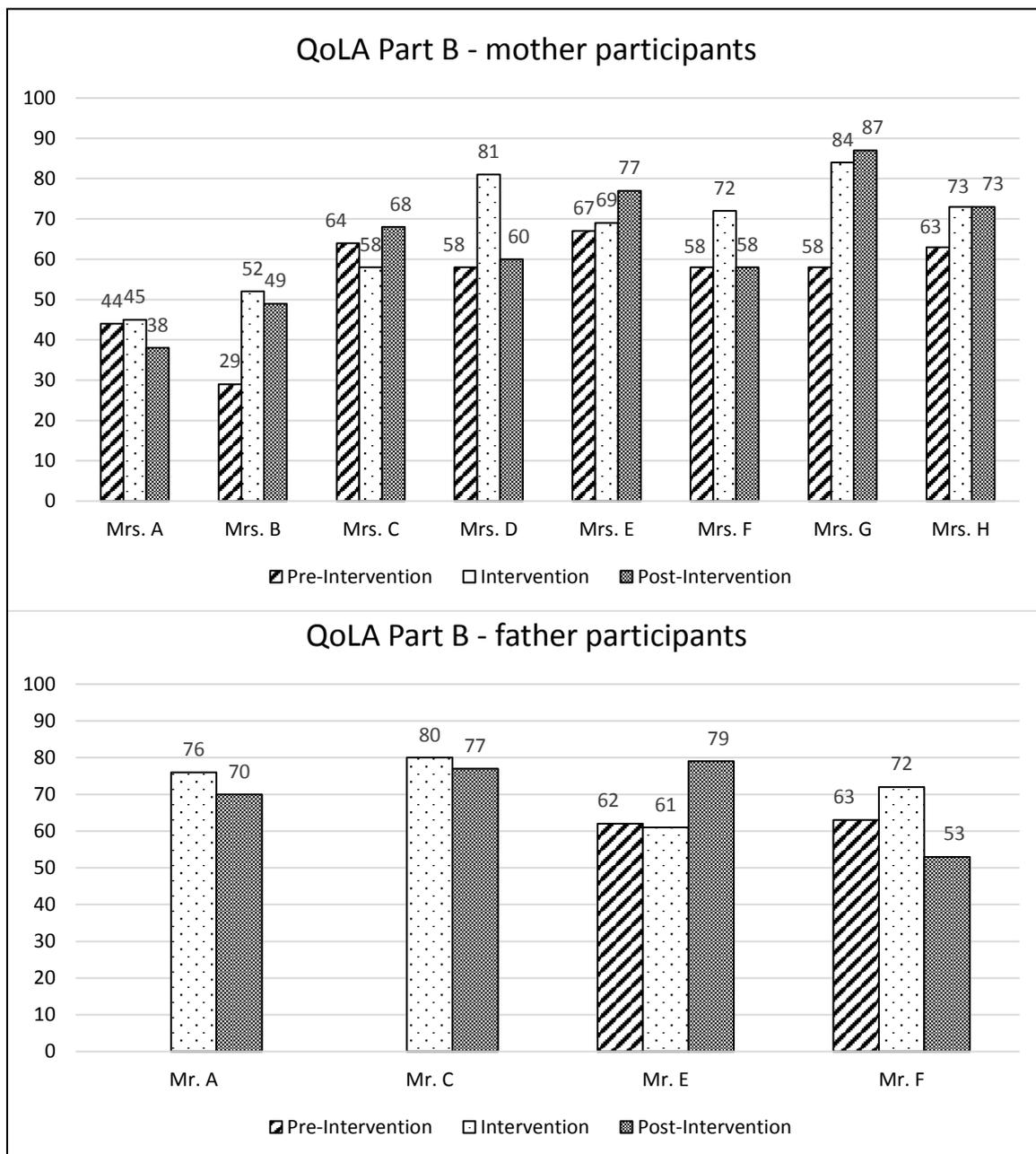


Figure 4.40. QoLA Part B scores of parent participants. QoLA = Quality of Life in Autism.

Six mother participants' scores for Part B showed that they perceived fewer children with ASD's problems are affecting them at the end of the intervention program, one mother's score showed a decline while another one remained the same. Similar to Part A, only one father participant's scores showed an improvement and the others were declining during their post-intervention phase indicating that they were impacted by more of the children with ASD's problems.

4.6.4 Summary of parent participants' Depression Anxiety Stress 21 (DASS-21) scores

The scores of the depression, anxiety and stress subscales and the corresponding severity level for both parent participants are presented in the following Tables 4.29, 4.30 and 4.31, respectively.

Table 4.29
Parents' depression subscale scores and severity level

Participants	Sessions					
	Pre-Intervention		Intervention		Post-intervention	
	Score	Severity	Score	Severity	Score	Severity
<u>Mother</u>						
Mrs. A	12	Mild	22	Severe	4	Normal
Mrs. B	12	Mild	14	Moderate	8	Normal
Mrs. C	6	Normal	8	Normal	4	Normal
Mrs. D	12	Mild	2	Normal	10	Mild
Mrs. E	6	Normal	6	Normal	4	Normal
Mrs. F	0	Normal	0	Normal	0	Normal
Mrs. G	4	Normal	0	Normal	0	Normal
Mrs. H	6	Normal	4	Normal	4	Normal
<u>Father</u>						
Mr. A	N/A	N/A	6	Normal	6	Normal
Mr. C	N/A	N/A	2	Normal	2	Normal
Mr. E	6	Normal	4	Normal	12	Mild
Mr. F	0	Normal	0	Normal	10	Mild

Note. Severity labels are reproduced from Lovibond and Lovibond (1995). Normal = scores of 0-9; Mild = scores of 10-13; Moderate = scores of 14-20; Severe = scores of 21-27; Extremely severe = scores of equal or more than 28; N/A = not available.

From the table, three of the eight mothers' (37.5%) depression subscale scores were in the range of mild depression while the rest of the mothers' scores (62.5%) were in the normal range during the pre-intervention session. Meanwhile the intervention session's scores showed that two mothers experienced an increased depression as the scores increased from mild to the severe and moderate level. One mother's scores decreased from mild to

normal and the other six mothers' scores (75.0%) remained in the normal range of depression. The post-intervention's scores showed that seven of the mothers' level of depression were in normal range including two mothers whose scores had improved from severe and moderate level. Only one mother's post-intervention score was in the mild level of depression.

Overall, the majority of mothers (62.5%) experienced normal level of depression prior to implementing the intervention and remained in the same level throughout the study phases. Two mothers' depression improved greatly as the severity level changed from pre-intervention to post-intervention. Contrary to the mothers' scores, none of the fathers' scores demonstrated improvements. Two of them showed an increased level of depression from normal to mild depression, while the other two remained in the same level – normal level of depression.

The majority of the mothers' (62.5%) pre-intervention score of anxiety subscale were in the normal range, while three other mothers were at the mild, moderate and severe levels respectively. Meanwhile, the number of mothers' scores within the normal range increased to six which included two mothers who reported moderate to severe anxiety levels before started implementing the DIR/Floortime[®] intervention program at home. One mother's level of anxiety increased from mild to moderate and another one increased from normal to mild anxiety over the course of implementing the DIR/Floortime[®] intervention. Similar to the intervention session's scores, six mothers reported normal levels of anxiety. Another two mothers' scores indicated that their anxiety levels were at a moderate level.

Table 4.30
Parents' anxiety subscale scores and severity level

Participants	Sessions					
	Pre-Intervention		Intervention		Post-intervention	
	Score	Severity	Score	Severity	Score	Severity
Mother						
Mrs. A	8	Mild	10	Moderate	14	Moderate
Mrs. B	6	Normal	8	Mild	4	Normal
Mrs. C	6	Normal	6	Normal	4	Normal
Mrs. D	16	Severe	4	Normal	14	Moderate
Mrs. E	10	Moderate	0	Normal	2	Normal
Mrs. F	0	Normal	0	Normal	0	Normal
Mrs. G	6	Normal	0	Normal	0	Normal
Mrs. H	2	Normal	2	Normal	2	Normal
Father						
Mr. A	N/A	N/A	4	Normal	2	Normal
Mr. C	N/A	N/A	2	Normal	0	Normal
Mr. E	22	Extremely severe	8	Mild	6	Normal
Mr. F	0	Normal	0	Normal	4	Normal

Note. Severity labels are reproduced from Lovibond and Lovibond (1995). Normal = scores of 0-7; Mild = scores of 8-9; Moderate = scores of 10-14; Severe = scores of 15-19; Extremely severe = scores of equal or more than 20; N/A = not available.

Of eight mothers, the subscale score of one mother indicated that she was experiencing an increased level of anxiety from a mild level during the pre-intervention to a moderate level at the end of the intervention. One mother was experiencing a severe level of anxiety prior to the DIR/Floortime[®] program intervention period and improved to a moderate level of anxiety post-intervention. Another mother's scores indicated that her initial moderate anxiety level improved to a normal level of anxiety post-intervention.

All fathers' scores were in the range of normal anxiety level except for one participant who reported that he was experiencing a severe level of anxiety prior to starting the DIR/Floortime[®] intervention program. His anxiety began to decrease with time as his score

during intervention period was in the mild level and continued to improve towards the end of the intervention program given that his score was within the normal level of anxiety.

Table 4.31
Parents' stress subscale scores and severity level

Participants	Sessions					
	Pre-Intervention		Intervention		Post-intervention	
	Score	Severity	Score	Severity	Score	Severity
Mother						
Mrs. A	12	Normal	26	Severe	16	Mild
Mrs. B	12	Normal	12	Normal	12	Normal
Mrs. C	16	Mild	12	Normal	8	Normal
Mrs. D	20	Moderate	4	Normal	14	Normal
Mrs. E	4	Normal	8	Normal	4	Normal
Mrs. F	0	Normal	0	Normal	6	Normal
Mrs. G	0	Normal	0	Normal	0	Normal
Mrs. H	2	Normal	4	Normal	4	Normal
Father						
Mr. A	N/A	N/A	10	Normal	12	Normal
Mr. C	N/A	N/A	6	Normal	6	Normal
Mr. E	12	Normal	12	Normal	10	Normal
Mr. F	0	Normal	0	Normal	14	Normal

Note. Severity labels are reproduced from Lovibond and Lovibond (1995). Normal = scores of 0-14; Mild = scores of 15-18; Moderate = scores of 19-25; Severe = scores of 26-33; Extremely severe = scores of equal or more than 34; N/A = not available.

Six of eight mothers' pre-intervention stress subscale scores were in the normal level range and the other two mothers reported mild and moderate stress levels. Meanwhile, during the intervention session's assessment, the scores indicated that majority mothers experienced normal levels of stress except for one mother whose score was in the severe stress range. The post-intervention session stress scores remained at the same levels where seven mothers experienced normal stress levels and one mother reported a mild stress level. Throughout the three study phases, three mothers demonstrated a marked improvement in their stress level as their scores shifted from a high severity level to a lower level at the final

testing session. Meanwhile, all fathers' level of stress was in the normal range during the three study phases.

Although eleven of the twelve parents' final stress subscale score were within the normal stress range, the scores of six of the parents were at the borderline between the normal and mild level of stress. Furthermore, the final stress subscale scores of five of the parents (three mothers and two fathers) increased from the initial data collection phase warrant a careful consideration of the DIR/Floortime[®] intervention's impact on parental stress.

Overall, the implementation of DIR/Floortime[®] intervention improves parents' depression, anxiety and stress level, particularly for mothers.

4.6.5 Summary of parent participants' Parental Sense of Competence (PSOC) scores

The scores of efficacy and satisfaction subscales of PSOC for all eight parent participants are presented in the following Figures 4.41 and 4.42. From the graphs in Figure 4.41, the post-intervention scores of seven mothers were higher than their pre-intervention scores. This indicated that their perceived parental efficacy improved with the implementation of the DIR/Floortime[®] home-based intervention. Another one mother's scores were lower in the post-intervention phase therefore showing a decline in her parental efficacy. Similarly, majority of the father participants' scores increased and showed an improvement with the implementation of the DIR/Floortime[®] program while only one participant showed a decrease parental efficacy at the end of the program.

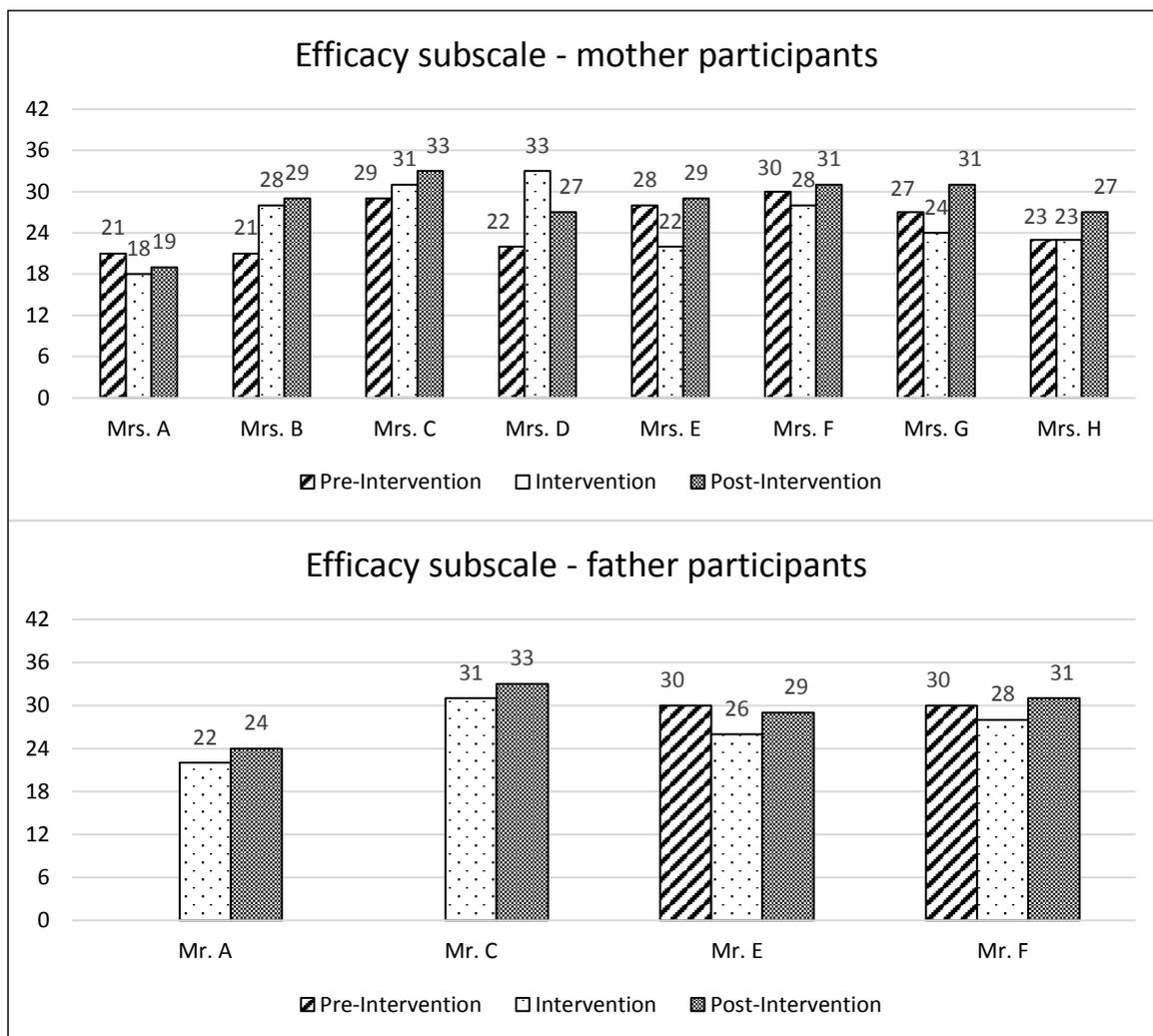


Figure 4.41. Efficacy subscale scores of parent participants.

Similar to efficacy subscale scores, seven mothers’ scores increased from pre-intervention to post-intervention indicating their perceived parental satisfaction improved at the end of the intervention program, while only one mother showed a decreased in her parental satisfaction. Father participants’ scores showed the same pattern with three of them having increased scores and only one having a decrease in their parental satisfaction with the implementation of the DIR/Floortime® intervention.

Overall, majority of parental efficacy and satisfaction improved with the implementation of the DIR/Floortime® intervention.

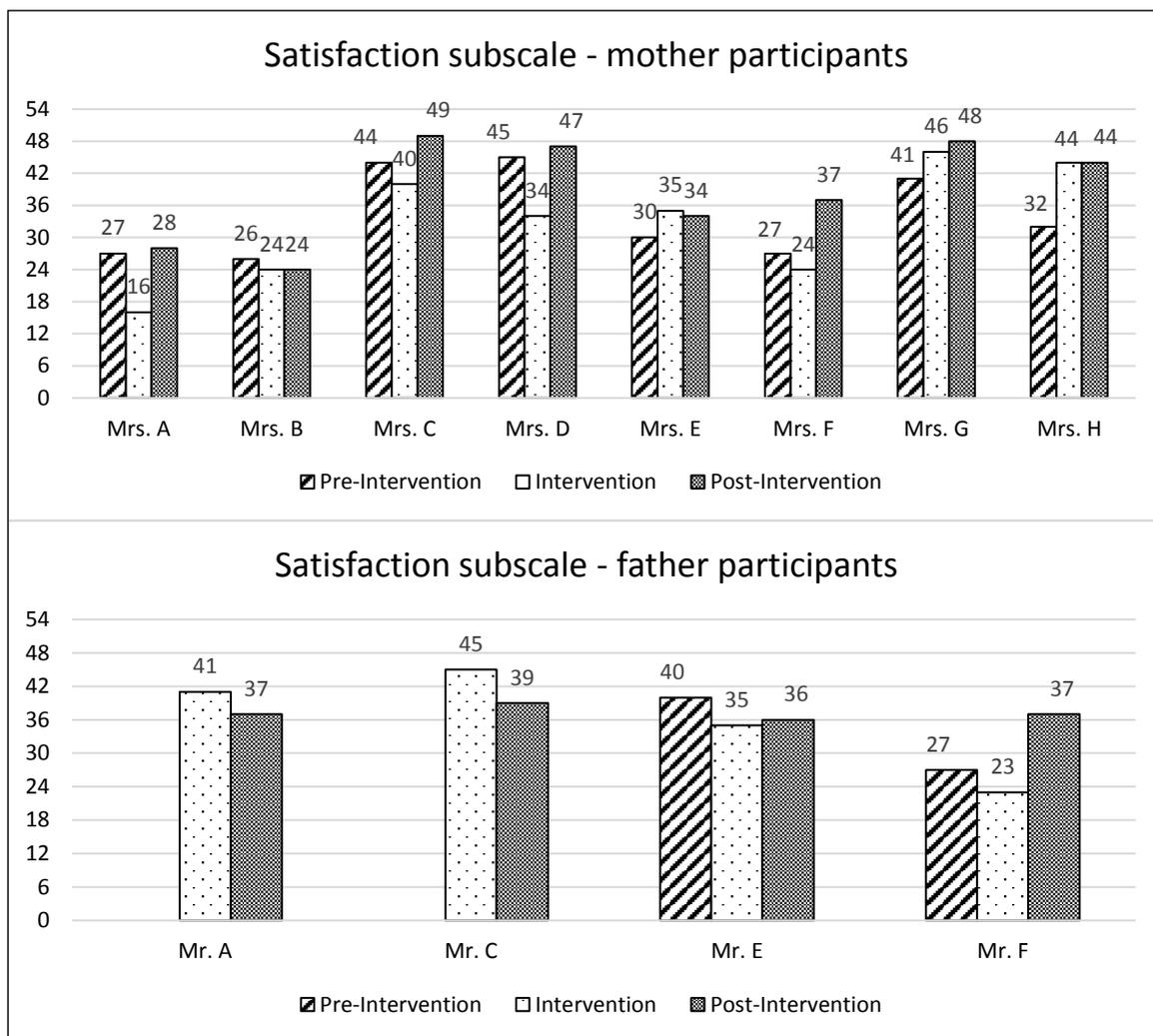


Figure 4.42. Satisfaction subscale scores of parent participants.

4.6.6 Summary of children with ASD participants' Test of Pretend Play (ToPP) scores

The raw scores of the children with ASD participants' pretend play scores are presented in the following Table 4.32.

From the table, scores from the same play situation (i.e., unstructured) of four children with ASD increased from the initial testing to the final testing during the post-intervention session. Meanwhile, three other children with ASD's scores decreased during the post-intervention session. One participant was not tested due to child's lack of interest in play despite several attempts to entice him to play made by his parents and the student researcher. A null was noted when the pretend play was observed but did not meet the score criteria, hence no score was given. Although it showed improvement, all child with ASD

participants' total raw scores indicated that their pretend play was equivalent to children of lower ages compared to their chronological age.

Table 4.32

ToPP scores of child with ASD participants

Participant (Age in months)	Total raw scores (Age equivalent in months) ^{a, b}		
	Pre-Intervention	Intervention	Post-Intervention
Child A (72)	26 (70.7) ^a	14 (44.9) ^b	17 (51.3) ^b
Child B (60)	N/A	N/A	N/A
Child C (72)	26 (70.7) ^b	14 (44.9) ^b	14 (44.9) ^b
Child D (108)	10 (29.3) ^a	6 (27.7) ^b	9 (34.1) ^b
Child E (72)	2 (19.2) ^b	1 (16.9) ^b	Null
Child F (48)	8 (32.0) ^b	9 (34.1) ^b	12 (40.6) ^b
Child G (96)	Null	6 (27.7) ^b	12 (40.6) ^b
Child H (48)	6 (27.7) ^b	6 (27.7) ^b	4 (23.4) ^b

Note: ToPP = Test of Pretend Play (Lewis & Boucher, 1997). N/A = not applicable; Null = no score was given during the testing.

^aAge equivalent by reference to the age norms based on best fitting linear relationship for structured play conditions in ToPP Manual.

^bAge equivalent by reference to the age norms based on best fitting linear for unstructured or free play situations.

Nevertheless, the improvement in pretend play shows a promising impact of the implementation of the DIR/Floortime[®] home-based intervention. The changes of play situation from structured to unstructured was due to the child participants' presentation of spontaneous pretend play during the time of assessment; and it could be related to the changes in parents behaviour or play approach which encourages children to initiate and lead the play.

Following these quantitative results that showed the implementation of the DIR/Floortime[®] intervention positively impacting the changes in child-parent interactions, parents' quality of life, psychological wellbeing and parenting competence as well as child's pretend play; the qualitative results are presented in the next chapter.

Chapter 5

Results – Qualitative data

5.1 *Introduction*

In the previous chapter, the quantitative data analyses results have been presented in detail. This chapter will report the results of the qualitative data analysis. In this chapter, a detailed qualitative content analysis will be reported, displaying the steps taken in the analysis of parents' interviews. Following that, the themes, categories, sub-categories developed from the analysis including sample data extracts from the interviews will be presented in detail.

5.2 *Semi-structured interview with parents of children with Autism Spectrum Disorder (ASD)*

The study's objectives were to investigate the impact of the DIR/Floortime[®] home-based intervention program on child-parent interactions, parents' quality of life, psychological wellbeing and parenting competency as well as children with ASD's pretend play. It was also aimed to explore the applicability of the parent-mediated home-based DIR/Floortime[®] intervention in the Malaysian context. In addition to the quantitative data collected as described in detail in the previous chapter, the qualitative data was also collected through parents' interviews at the end of the intervention program. A semi-structured interview was conducted with each parent participant (cases involved both parents were interviewed together). The interview's content was mostly guided by the objectives of the study with additional questions asked in relation to the parents' responses.

Fifteen parents (refer Table 4.1 for details) were interviewed. Parent who participated in the study with their spouse were interviewed in the same session. All interviews were

conducted by the student researcher in the Malay language. The interviews took place in a vacant intervention room with only the student researcher and parents present in the room. This was done to ensure the privacy of the participants as well as to encourage them to speak freely in a relaxed environment. The interviews were audio-recorded and parents' permission was asked again at the beginning of the session although they have consented to be audio-recorded during the interviews when they signed the informed consent sheet prior to commencement of the study.

Two of the ten interviews (refer Table 4.1) were not included in the qualitative analysis because the parents did not complete or turn in the parents' reflective journals. The interviews were excluded from the analysis since there was no point for cross-referencing their qualitative interview with the journal entries, hence there could be no way to ensure the authenticity and relevance of the information provided (Atchan, Davis, & Foureur, 2016).

5.3 *Qualitative content analysis*

The qualitative data analysis approach used in this study was the Qualitative Content Analysis (QCA) outlined by Schreier (2012). This approach was used to systematically described the meaning of the parents' views on the DIR/Floortime[®] intervention program from their interviews. Eight steps were involved in the qualitative content analysis (Schreier, 2012) – (i) develop research question/s, (ii) select the material, (iii) build a coding frame, (iv) divide material into units of coding, (v) test the coding frame, (vi) evaluate and modify the coding frame, (vii) coding all material using revised coding frame, and (viii) interpret and present findings. A detailed description of each step was presented in Section 3.9.2. Parents' interviews were analysed using the modified coding frame provided in Appendix 15.

5.4 *Establishing rigour in the data analysis process*

Qualitative research is a scientific process and is concerned with the concept of rigour (Morse et al., 2000). Rigour is defined as the demonstration of integrity and competence, and

the legitimacy of the research process (Aroni et al., 1999; Tobin & Begley, 2004). It is also used as a means of certifying that the qualitative findings reflect reality (Slevin & Sines, 2000). Trustworthiness is the concept used in qualitative studies and is demonstrated through credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985). In this section, the steps taken to establish the credibility, transferability, dependability and confirmability are described.

5.4.1 Credibility

Credibility is equivalent to internal validity, it demonstrates the fit between participants' views and researchers' representation of them (Schwandt, 2001). The researchers' explanations should be credible and fit the descriptions provided by the participants (Janesick, 2000). Credibility in the current study was demonstrated through several strategies including member checking (Lincoln, 1995). This was done in the early stages of the analysis, where participants were presented with printed copies of their interview transcripts for them to read through and make any amendments to the transcript they felt did not reflect what they intended (Johnson & Waterfield, 2014; Morse, 2015). The analysis was carried out with the transcripts that had been reviewed by participants.

Another strategy used to ensure credibility of the analysis was triangulation. Triangulation refers to “the use of two or more sets of data or methods to answer a question” (Morse, 2015, p. 1216) and data collected from different sources (Johnson & Waterfield, 2014). During the analysis, an ongoing triangulation process was done including triangulating the participants' interviews with their reflective journal entries. Parent participants were asked to fill out a weekly reflective journal that included information about the DIR/Floortime[®] sessions, issues or reflective comments when they implemented the DIR/Floortime[®] intervention at home with their child with ASD.

To determine whether the information provided by the participants during the interview were credible, they were cross-checked with the information in the reflective journals to provide evidence to either corroborate or refute the information reported (Mays & Pope, 2000). For example, if the parent participants reported that they were both working and hence too exhausted to spend time engaging in DIR/Floortime[®]-based activities with their child with ASD during the weekdays but tried to do it during the weekends, that information was cross-checked with the information they reported in the parent's reflective journals. Once it was confirmed, the information then was used in the analysis.

Another source of triangulation was the video of parent-child free play session. There were videos recorded of the parent-child free play during the sessions in the pre-intervention, intervention and post-intervention phases of the study. Parents provided information about their child with ASD during the interview, for example, improvements of their child with ASD's play skills. The information was then triangulated with the behaviours observed in the videos to find if there was any evidence on the said improvements. However, the duration of the recorded video was only 15 minutes and sometimes the changes indicated by parents were not exhibited or shown in the video. In this case, another source of information was sought out.

The occupational therapist working with the child with ASD's opinion on the topics were gathered. Additional to the information provided by the therapist, the student researcher's field and case notes were also referred to. Multiple data sources help contribute to develop credible findings. The triangulation process is shown in Figure 5.1 below and a representation of the triangulation process from the analysis is shown in Figure 5.2.

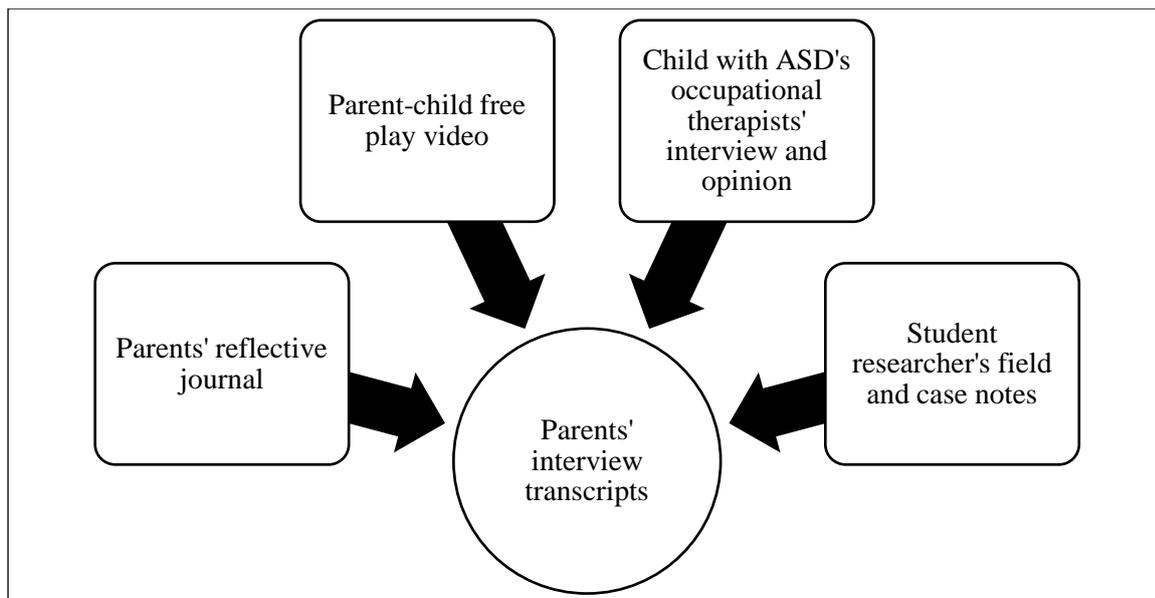


Figure 5.1. Triangulation process of qualitative data analysis.

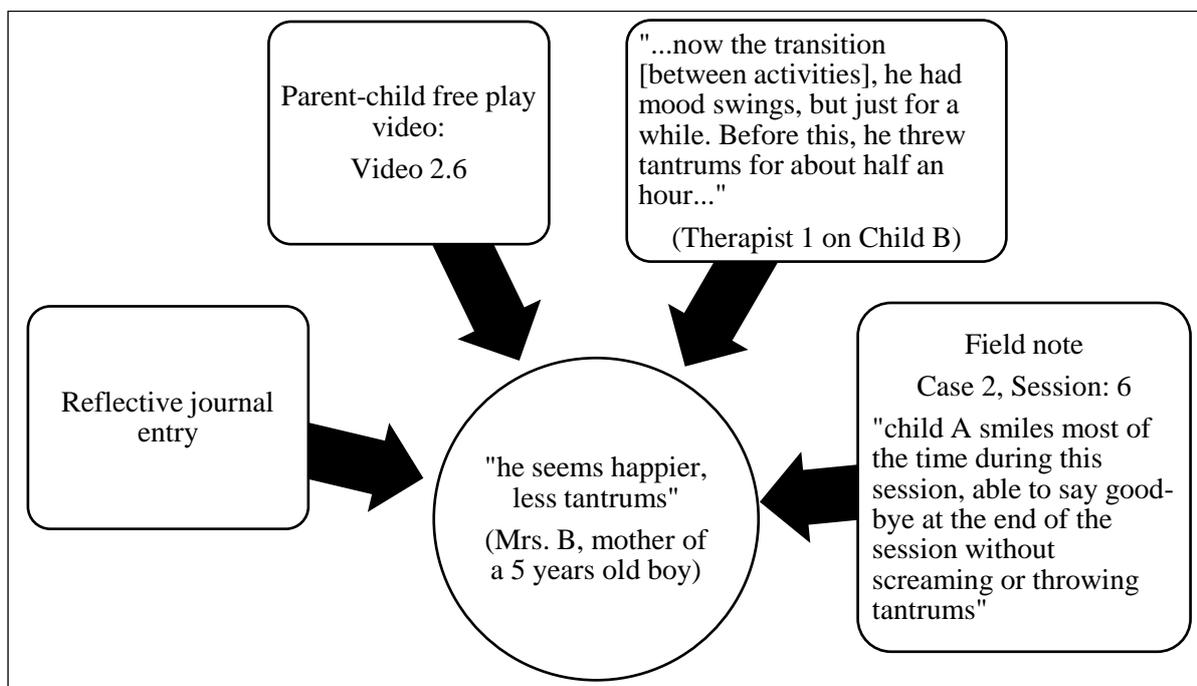


Figure 5.2. Example of the triangulation process.

Peer review was also used as a strategy to ensure credibility, it was commenced after the potential themes, categories and sub-categories including data extracts for each of the themes were developed and labelled. The themes, categories, sub-categories and data extracts were translated from the Malay language into English. They were then presented to two non-native Malay language speakers who were qualified occupational therapists and academicians

for them to read through and review the developed themes, categories and sub-categories and examine whether they were clearly identifiable and had emerged from the data (Sandelowski, 1998). A discussion that involved the two occupational therapists and academicians, and the student researcher reviewing the themes, categories and sub-categories was completed and the comments gathered from the peer review session resulted in the student researcher further revising several of the themes, categories and sub-categories to better represent the data.

Another strategy used to ensure the credibility of the analysis was an audit trail. A native Malay language speaker who is a qualified occupational therapist and also an academician (hereafter will be addresses as auditor) was asked to examine the student researcher's documentation, data collection approach, methods of analysis, themes, categories, sub-categories, and data extracts developed (Morse, 2015; Tobin & Begley, 2004). The auditor explored and examined both the analysis process and the end products and subsequently provided comments to the student researcher. The feedback provided was taken into account when reviewing the potential themes, categories and sub-categories.

5.4.2 Dependability and confirmability

Dependability refers to auditing the research process to ensure it is reasonable, traceable and clearly documented (Schwandt, 2001). Confirmability provides evidence of the objectivity and accuracy of the data analysis (Tobin & Begley, 2004). Both dependability and confirmability were established through an audit trail process conducted with a native Malay language speaker, the auditor. The interviews were conducted in the Malay language; hence a native Malay language speaker auditor was selected. An audit trail was conducted as described in the credibility section above since the strategy can be used to ensure both credibility and dependability.

In addition to the audit trail process with external auditor, the internal audit process was also done by the student researcher throughout the data collection and analysis process. The

student researcher engaged in an on-going reflecting process throughout the data collection and data analysis process by keeping a student researcher's reflective journal. Any issues encountered during data collection and data analysis were documented in the journal as well as the considerations and decisions made in achieving the end product. Confirmability was also demonstrated through the triangulation process completed as described in the previous section (Morse, 2015).

5.5 Themes

The developed themes are (a) parental perceptions on DIR/Floortime[®] intervention approach, (b) challenges in implementation of and engagement in DIR/Floortime[®] intervention, (c) parents' perceptions on their child's play: benefits and limitations, (d) improvements and changes in children and parents' abilities and skills, and (e) parental views and suggestions about the DIR/Floortime[®] home-based intervention program. In this section, each of the five themes and their related categories and sub-categories are described. Excerpts from the interviews are included to provide clear interpretations of the themes, categories and sub-categories. The source of the quote for each of the excerpts will be provided in a bracket indicating which parent participants reported that in their interviews.

5.5.1 Theme one – Parental perceptions on DIR/Floortime[®] intervention approach

Theme one describes parents' overall perception about the intervention approach, the DIR/Floortime[®]. The theme features several categories and sub-categories that further explained parents' perception about the DIR/Floortime[®] intervention approach. Eight categories were developed: (a) "I like to do DIR/Floortime[®]", (b) "I like to do DIR/Floortime[®] at home", (c) DIR/Floortime[®] at the clinic, (d) DIR/Floortime[®] outside of house and clinic, (e) "I like training session at the clinic", (f) how parents do DIR/Floortime[®] intervention at home and the clinic, (g) parents perspectives on the limitations of DIR/Floortime[®] intervention approach, and (h) parents perspective on the benefits of

DIR/Floortime[®] intervention approach. All categories and its related sub-categories are described in detail below.

a. *Category 1 – “I like to do DIR/Floortime[®]”*

This category is comprised of parents’ overall perception on why they like to engage in the DIR/Floortime[®] intervention sessions with their children with ASD. Parents have reported that they like to do the DIR/Floortime[®] intervention with their children because of the naturalistic-based approach of the intervention helped them connect with their children in a more intimate way. A mother of a six-year-old ASD boy, Mrs. E said *“the one I like the most, the interesting [part] is because the approach is natural...our child feel closer to us, it is fun to join him in his world.”*

In this study, parents were asked to engage in the DIR/Floortime[®] intervention with their children with ASD at home for at least ten hours every week. However, parents are still enjoying taking part in the DIR/Floortime[®] intervention despite being a little overwhelmed with the time requirement. A father of a six-year old boy, Mr. C, said he and her wife like to do the DIR/Floortime[®] intervention because during the time they spend together, they got to communicate more with their child with ASD. He added that it was fun when their child communicates with them. They feel like they connected with their child with ASD even more when they engaged in the DIR/Floortime[®]-based activities with him. Mr. C said this, *“the more we practice it [the DIR/Floortime[®]], there are funny parts, it was very fun...we can see that... we connected with him [child with ASD] more.”*

b. *Category 2 – “I like to do DIR/Floortime[®] intervention at home”*

Parents also mentioned during their interviews that they like to be involved in the DIR/Floortime[®] intervention at home due to various reasons including the home environment, as well as children and parents’ behaviour at home. This category comprises of three sub-categories: (1) home environmental factor facilitating engagement in the

DIR/Floortime[®], (2) child's positive and appropriate behaviour at home facilitating engagement in the DIR/Floortime[®], and (3) home environments influencing parent's interaction style with their children.

- i. Sub-category 1 – home environmental factor facilitating engagement in the DIR/Floortime[®]

The DIR/Floortime[®] approach is flexible and can be done in any environment where a parent and child can interact together. Parents were encouraged to engage in the DIR/Floortime[®] intervention any time they can in any environment, especially at home. While parents have expressed that they faced some challenges during their interviews when taking part in the DIR/Floortime[®] session with their children with ASD, they reported that their home environment makes it easier and promotes their engagement in the DIR/Floortime[®]-based activities.

The relaxed and controlled home environment promote parental engagement in the DIR/Floortime[®] intervention. Parents perceived their children with ASD's familiarity with the environment plays a key factor. Mrs. D, Mrs. E and Mrs. G said the same thing. They said that their children with ASD are easily distracted and to engage in activities in a familiar environment is easier for both parents and their children. Mrs. G shared this during her interview, *“at home, he is easier to control. Because he is already familiar with the home environment. He knows where and what he is supposed to do, what he wanted to play...”*

Although parents mostly think being able to be in control of the environment and activities are one of the factor that makes them enjoy engaging in the DIR/Floortime[®] intervention, it is not exactly following the primary concept of the DIR/Floortime[®] approach - following the child's lead.

A mother of a nine-year-old boy, Mrs. D also reported that the vast resources of toys available at home was also one of the factor facilitating engagement in the DIR/Floortime[®] intervention at home which was agreed by another mother. However, it is still mainly because of the environmental familiarity to the child that played the key factor. The mother, Mrs. F said, “*it is okay at home because there are no new toys, everything is the same.*”

In additional, some parents reported that having siblings present at home when engaging in the DIR/Floortime[®]-related activities was helpful. Mrs. A stated that her six-year-old son with ASD is more relaxed when he is in a familiar and in a controlled environment (home) and enjoys engaging in activities more when his older brother is also involved in it too. She said, “*...at home, it is more relaxing. His older brother was there. It is easier, his siblings can all join the activities [when doing DIR/Floortime[®]].*”

ii. Sub-category 2 – child’s good and appropriate behaviour at home facilitating engagement in DIR/Floortime[®]

Parents also stated that they liked engaging in the DIR/Floortime[®] intervention at home because the child’s behaviour at home is appropriate and at its best. Mrs. A said that her seven-year-old son with ASD’s behaviour at home was less problematic and more positive which made it easier for her and her husband to engage in the DIR/Floortime[®] intervention with him. She said, “*at home, he did not have tantrums, unlike when we were at other places outside of the house*”. One mother, Mrs. B also said her son’s behaviour is better at home since he knew the environment and that makes him calmer. Hence, facilitating their engagement in the DIR/Floortime[®] intervention at home.

iii. Sub-category 3 – home environments influencing parent’s interaction style with their children

The familiarity, controlled environment did not only influence the child with ASD’s behaviour but also the parents’ way of interacting with their child. Mrs. B reported that she liked being involved in the DIR/Floortime[®] intervention at home because it made it easier for her to accommodate and adapt to her son’s behaviour (e.g., problematic behaviours such as tantrums, inflexible routine or way of doing an activity), compared to when they were in environments outside of their home. She added that when she was interacting with him in public places, she thinks she had to act in a way that fulfils social expectation. For example, she mentioned that “*at home, I can... compromise [with him], here [in the clinic], I have to follow... the therapist’s way...*”. The mother also said that another reason she liked to be involved in the DIR/Floortime[®]-based activities at home was because she could explore what her child liked and disliked at home more freely which she believed helped her interact with him and implement the DIR/Floortime[®] intervention program more effectively.

c. *Category 3 – DIR/Floortime[®] at the clinic*

During the study, participants attended the pre-intervention, follow-up and post-intervention sessions at the clinic. Some of the parents expressed their enjoyment with their engagement in the DIR/Floortime[®] intervention at the clinic especially the time when the student researcher provided her comments and suggestions during the coaching session. Parents said it was a learning opportunity for them when they received the ongoing comments while interacting with their children. They also thought that the session at the clinic and the comments provided served as a way for them to evaluate their performance at home. One of

the mothers said, “*we do...then teacher [student researcher] corrected us. So, we know what is our weaknesses, what should we improve on...*” (Mrs. C).

Some of the parents expressed their lack of fondness with engaging in the DIR/Floortime[®] intervention program at the clinic particularly because of their perceived social expectation on them. The occupational therapy clinic where the study was conducted is part of the occupational therapy department of a public university. It is not unusual for the clients to see or have their sessions attended by lecturers and students for teaching purposes (with client’s permission). Although at the time of the sessions conducted, only participants and the student researcher were present in the intervention room which was set-up to encourage free play (not classroom-liked set-up), still, parents felt like they were expected to be in their formal conduct whenever they were in the clinic. Parents often think that they should adhere to the therapist’s method of interacting with their children and this makes it more challenging for the parents as described by Mrs. B, “*here [occupational therapy clinic], we have to...we have to follow the therapist’s [student researcher] way*”. This may be due to parent’s views of therapist as a person who is more knowledgeable than them although they were always encouraged to act naturally, do what they normally do with their children at home. For example, Mrs. D said that the clinic environment is “*too official*” for her, and it usually impacting her engagement with her son during the sessions as she described some of the session as “*not working*”.

The intervention room where the sessions took place had a lot of toys to encourage children and parents to play. The DIR/Floortime[®] intervention approach strongly recommended play as the medium of interacting and engaging with children. However, the extensive number of toys available in the clinic was perceived as inhibiting parents’ engagement in the DIR/Floortime[®] intervention with their children. This was particularly difficult for parents because their children would get easily distracted with all the toys. Mrs. F

shared this during the interview about her and her four-year-old boy's session at the clinic, *"here [occupational therapy clinic], he is distracted looking at the toys he wants to play, he picks one up then leave it. He picks up this other toy, he leaves it, he then goes and plays with another toy"*.

Children exploring behaviour is therapeutically valuable for children's skills and behaviours development. However, some of the parents did not share the same view and perceived their children's exploring behaviour at the clinic as an inhibitor for their engagement with the child. Despite the primary goal of the DIR/Floortime[®] intervention approach of following the child's lead which includes doing what their children like to do, for example exploring the room; parents feel the exploring behaviour making it difficult for them to engage and interact with their children.

d. Category 4 – DIR/Floortime[®] outside of the house and the clinic

This category describes parents' comments on engaging in the DIR/Floortime[®] intervention in other places beside their house and the clinic. Although parents enjoyed engaging in the DIR/Floortime[®] intervention at home, they also tried to engage in the DIR/Floortime[®] session outside of their house and the clinic. They reported during the interviews that they have taken their child and engaged in the DIR/Floortime[®]-related activities at the playground, at their grandparent's house, at the beach as well as the supermarket. Parents said it was easier if their children are familiar with the places. Since the DIR/Floortime[®] intervention approach can be done in any activities, parents also brought their children to the supermarket to do their grocery shopping and implemented the intervention. This quote illustrates how Mr. C engaged in the DIR/Floortime[®] intervention-based activity at the supermarket:

"...we did implement it outside of our home, in a supermarket. But it is not like playing [activity was shopping]. We make a task, a shopping list. For example, that day we

wanted to make a home-made ice cream. So, we listed out what are the things we needed to make the ice cream, then we went to the supermarket and bought it. All three of us, including him and his younger sister. I considered that as DIR/Floortime®”.

Some of the parents reported that they avoided engaging in the DIR/Floortime® intervention at places outside of their house due to their children’s inappropriate behaviour. Parents reported that their children were unable to adapt to new environments, new people and activities, therefore, making it difficult to be involved in the DIR/Floortime® session. For example, Mrs. A said she wanted to try do various activities in various settings with her six-year-old son with ASD but he sometimes screams, and acts out (tantrums) in a new environment. She said, “when we take him to a different environment [other than home], that makes him like to scream; he was tumbling about on the floor in front of the aquarium [new place]”.

e. Category 5 – “I like training session at the clinic”

Parents also said that they like the parents training session on the DIR model and Floortime® intervention approach. The two three-hour training sessions were conducted prior to the intervention phase where parents learnt about the intervention approach. They said the training session is a learning opportunity for them that open their mind to learn new things and develop new skills to help develop their children’s skills and abilities.

f. Category 6 – How parents do DIR/Floortime® intervention at home, at the clinic and other places

The category features eight sub-categories describing how parents engage in the DIR/Floortime® intervention with their children both at home and other places.

i. Sub-category 1 – “Follow the child, what the child likes”

Most of the parents said that they follow what their child wanted to do. It is in accordance to the DIR/Floortime® intervention approach, which is a child-led

intervention. Mrs. B described her approach of engaging in the DIR/Floortime[®] sessions during her interview, “*we have to study our child first, we have to explore his world. Only then we... [engaging in DIR/Floortime[®]] because before this, I was more straightforward. Honestly, I did not have the childish-like personality*”. Another two mothers also agreed. Mrs. A added that although parents should follow what the child wanted to do and likes, parents should also keep in mind the parent’s goal as well. A mother of a nine-year-old boy, Mrs. D also said that following the child’s wants and likes includes accepting the fact that they might not always want to play together with the parents. Children sometimes preferred to play alone and parents should follow what they want and stop forcing their child to engage with them at that time.

ii. Sub-category 2 – Engaging in DIR/Floortime[®] intervention during daily routine activities

Parents were recommended to participate in the DIR/Floortime[®] intervention for at least ten hours per week, at any time, doing any activities according to their convenience. Since half of the mother participants are working while the other half are housewives, they usually engaged in the DIR/Floortime[®]-related activities while doing their daily routine activities. Parents started to engage and interact with their child as suggested by the DIR/Floortime[®] intervention approach including, when they were having dinner, in the car ride to school, when they do their groceries and laundry.

iii. Sub-category 3 – “*Play as you normally do*”

All parent participants involved in the home-based intervention period attended the training sessions where they learnt about DIR model and Floortime[®] intervention approach. In the DIR/Floortime[®] approach, there is no specific regime or method of engaging in the DIR/Floortime[®]-based activities. Parents were given a seminar on the basic concepts of the intervention and were taught several recommended techniques,

for example, ‘*play and pause*’ which could be used through out their play session as they see fit. During their interviews, parents described that they would play with their children, as they normally do. One of the mother, Mrs. D emphasised that play is not always an end, it is a mean for parents to interact and connect with their children and said, “*just play, [you] don’t have to excel*”.

- iv. Sub-category 4 – “*Use the DIR/Floortime[®] approach when engaging in activities that child is already familiar*”

Needing to stick to a routine and difficulties in adapting to a new environment and activities are common problems that children with ASD face. Parents shared their approach in applying the DIR/Floortime[®]-related techniques that they think would be easier for them to get their children’s attention and engagement. One example was engaging in the DIR/Floortime[®]-based activities the child with ASD is familiar with. A mother of a six-year-old boy, Mrs. E used a structured intervention approach for years and only engaged in the DIR/Floortime[®] intervention when her child is familiar with the activities. Mrs. E said this:

“New game, we still have to structured it [the activity]. [We] can’t follow him too much, [if they do] he will jump to another activity. If we structured the activity, then he can focus. At one point when he has become familiar with the activity, then we can do DIR/Floortime[®] because now only he can engage with us.”

- v. Sub-category 5 – Interacts and engages in activities in a delicate and intimate way to ensure child is in a calm emotional state

Another way that parents reported to successfully engage in the DIR/Floortime[®] intervention with their child with ASD was by interacting with them delicately and intimately. Parents said that their child throwing temper tantrum is challenging for them to engage in the DIR/Floortime[®] intervention, so they changed their way of interacting

with their children to keep them calm and alert which is helpful. One of the mother said that it was helpful because he was more productive when he was in a good mood.

vi. Sub-category 6 – Parents instructed the child what to do

The DIR/Floortime[®] approach, is literally means spending time with the child, however, it is a child-led intervention. Although parent participants attended the training session prior to the home-based intervention period and were informed on the model and concept that basis the DIR/Floortime[®] intervention approach, some of the parents shared the way they engaged in the DIR/Floortime[®] sessions with their children was by instructing them what they should do. Even though it is not an accurate representation of the DIR/Floortime[®] intervention approach, the mother of a seven-year-old boy thought by instructing the child, the child would follow and they could spend time together. The following quote illustrates how Mrs. G engaged in the DIR/Floortime[®] intervention approach with her child:

“I have to asked him to ‘really play’, if not he will enjoy by himself. ‘Really play’ is playing together, then he will follow my instruction. At places he is familiar with, doing the activity he normally does, [I]have to force him to do it”.

vii. Sub-category 7 – Working parents, spend more time during the weekend

Four of the mothers involved in the study are working full time, and their husbands are also working. All of them did not have a domestic helper or maid, so they take care of their family’s needs and the house chores by themselves with help from their husband. In Malaysia, office hours commonly start at 8 a.m. and end at 5 or 6 p.m. The mothers all said they had to balance their time between working, taking care of the children and completing the household chores, leaving them little time to engage in the DIR/Floortime[®]-related activities with their child. One of the mother, Mrs. H said, “we

are both working, during the weekdays we can only spend maximum an hour [for DIR/Floortime®]”. She also said that the most convenient way for them to spend quality time while applying the DIR/Floortime®-related techniques was to do it during the weekend.

viii. Sub-category 8 – *“Bring along his toy when you are engaging in DIR/Floortime® intervention in other places”*

Parents also recommended that it was helpful for them to engage in the DIR/Floortime® intervention in other places besides their home and the clinic. However, it would be challenging since the child is not familiar with the new place. To make it easier, parents usually brought along something their child is familiar with such as their toys.

g. *Category 7 – Parents perspectives on the benefits of DIR/Floortime® intervention*

Parents have reported positive perspectives about the DIR/Floortime® intervention program due to various benefits for them and their child. The benefits that parents mentioned during the interviews are described in the following sub-categories:

i. Sub-category 1 – Interaction and communication

During the interviews, the majority of parents said that the DIR/Floortime® approach is a good intervention approach because it helps developed and improved parents and their child’s interactions as well as their communication. Since parents spent considerable amount of time with their child with ASD engaging in the DIR/Floortime® intervention, they witnessed their child shows a significant improvement in their communication with them. The following quote is from a mother of a four-year-old boy, Mrs. H illustrates this sub-category, *“DIR/Floortime® can be continue [after intervention program ends], [because] it is easy for a child learning to talk...he communicates more [with parents]”*.

In addition, the DIR/Floortime[®] intervention approach also supported parent's interaction skills. Some of the parents reported that they instructed their child on what to do and how to do something as they had been taught that it is the right way. For example, a father of a six-year-old boy, Mr. E said, "*we instruct our son to do activities because we were taught that children have to follow instructions*". After they had attended the training and had been practicing the intervention approach for several weeks, parents changed their way of interacting with their child by being less instructive.

ii. Sub-category 2 – Relationship and engagement: "*We are a part of his life.*"

Seven out of eight parents perceived the DIR/Floortime[®] intervention program as valuable due to its contribution to enhance the parent-child relationship and engagement. Being in their own world is one of the characteristics that children with ASD typically exhibit. Child participants in this study were also reported by their parents to have similar issue. Parents stated in their interviews that by using the DIR/Floortime[®] approach, they now had better connections with their child and they were able to engage with and get into their child's world. Most of the time, parents said that they felt that their child with ASD engaged, connected with them and showed that they were pleased that someone else was trying to understand them. These data extracts were retrieved from two parents:

"In terms of father-child relationship. It is good. At least...we have interaction. At least he does not feel that we are strangers to him. We are a part of his life. We play with him." (Mr. A)

"I feel like I connect with him more. He also feels like we join his world and he join in ours." (Mrs. D)

iii. Sub-category 3 – Skills development

Both parents and their child enjoyed the benefit of skills development with the implementation of the DIR/Floortime[®] home-based intervention. Parents shared their observation on their child's communication, interaction, play and cognitive skills development during their interview. Most of the parents agreed that the DIR/Floortime[®] intervention is useful for their skill development, especially in promoting their child's skills and learning. Mrs. A said that she altered her way of interacting with her six-year-old son when she wanted to teach him academic-related information by taking into consideration his strengths (i.e., more productive when he is happy) and weaknesses (e.g., gets easily upset when forced to do something).

Mrs. H who is a full-time professional, admits that she had limited time to spend with her son. When she participated in the program and learnt about the approach, she tried to spend as much time as she could with him because she said it was beneficial for his development. Additional to that, her play skills also developed which was closely related to her child's development. She shared this during her interview:

“DIR/Floortime[®] is good, that is the only time I can spend with him that is beneficial for his development... Before this, we just play. We didn't have any goals. Now, we have a concept, we have a script. When we have the script, we talk to him more. I can help [his] communication. Now, he talks more.”

iv. Sub-category 4 – Play

Regarding to the improvement in the children with ASD's play skills, Mrs. C said that her six-year-old son's pretend play had been more elaborate since they started engaging in DIR/Floortime[®]-related activities at home with him. They can also play with others including the parents, siblings and other distant family members. Mr. E, Mr. F, Mrs. G and Mrs. H also reported the same. Child E and Child F now play together

with their parents; Child G plays with his siblings, while Child H plays with his cousins when he went back to his grandparents' house. The example below shows the improvement made by Child F, as reported by his mother:

“He [child with ASD] watched a video of children use animal toys to prank people. So, he went and hid a snake toy in the oven. ‘Kakaish’. ‘Kakaish’. Then he called mama, asked me to open it. He wanted to surprise me. Then we acted surprise [upon finding the snake toy in the oven]”.

Parents also said that their play skills developed upon engaging in the DIR/Floortime[®] intervention with their child for few weeks. Other than becoming less instructive, parents also said that the intervention was good for them as it teaches them how to approach their child while playing. Mrs. D described that she learnt about parallel play and she practiced it with her son, which resulted in her son becoming more interested and engaged in what they were playing.

v. Sub-category 5 – Positive behaviour

The DIR/Floortime[®] intervention approach is also deemed good by parent participants as it induced positive behaviour amongst their child with ASD. Mrs. D, Mr. C and Mrs. G all reported that their child exhibited positive behaviours upon engaging in the DIR/Floortime[®]-related activities for a few weeks including being able to adapt to unfamiliar people, taking turns and sharing their toys with siblings and friends. One mother, Mrs. B said that not only can her son take turns, he can patiently wait for his turn. The following quote from Mrs. G's interview is illustrative of the DIR/Floortime[®]-related benefits reported by parents on their child's behaviour:

“He can now share his toys with his younger brothers. Even at school, his teacher said he can now share things with his classmates. They can line up. Usually, his

younger brother will lead the play. So, he and his youngest brother will line up. They can take turns and play together”.

vi. Sub-category 6 – Positive wellbeing

In relation to the children’s improved positive behaviour, parents said that it impacted their wellbeing. This is one of the reasons why parents think the DIR/Floortime[®] intervention approach is a suitable intervention for themselves and their child with ASD. Most parents said once they practiced the recommended DIR/Floortime[®]-related techniques and their child started to show some improvements, this made them feel happier, less worried and stressed. Parents acknowledged that by implementing the DIR/Floortime[®] intervention approach, parent-child engagement improved to be satisfactory for both parents and children, hence impacting their wellbeing.

For example, Mrs. G said that she did not usually play with her son because he usually plays with his father. She felt happier when her son responded to her positively when they played together. Meanwhile, Mrs. C was less stressed when her son’s expressive communication improved which made him calmer as he could convey what he wanted to say or feel that parents could understand him, resulting in less tantrums.

vii. Sub-category 7 – Natural, flexible and easy approach: *“It is easy to do. There is no specific time, no specific place.”*

One of the most important benefits of the DIR/Floortime[®] approach is the nature of the intervention, as it is a naturalistic approach and would be suitable for most children. Parents said the intervention is flexible and easy for them to engage in the DIR/Floortime[®] intervention with their children as the approach is not a regimented approach where parents have to do specific tasks or activities. The DIR/Floortime[®] intervention, did not require any extra toys or equipment, and it could be done at

anytime and anywhere parents deemed suitable and convenient – “*there is no specific time, no specific place. Just like that. Just play*” (Mrs. D).

The DIR/Floortime[®] intervention approach is also flexible which can be done while engaging in any activity including the daily routine activities like Mrs. B and Mrs. E were doing with their child at home. One father, Mr. C also shared his experience engaging in the DIR/Floortime[®] intervention at the supermarket.

h. Category 8 – Parents perspectives on the limitations of DIR/Floortime[®] intervention

Although parents perceived the DIR/Floortime[®] intervention program as having a lot of benefits, several limitations of the DIR/Floortime[®] approach were also mentioned. The limitations of the DIR/Floortime[®] intervention have shown negative impact on parents’ level of involvement in the suggested play routines with their children with ASD. This includes parental perceptions of the DIR/Floortime[®] intervention as not beneficial in changing child’s tantrums as commented by Mr. A, “*DIR/Floortime[®] itself does not eliminate [child’s] tantrum*”. He added that he sticks to what he used to do (method of interacting and teaching that was more parent-oriented rather than child-oriented) when he deemed that his engagement with his son using the DIR/Floortime[®] approach had become preposterous.

One parent also expressed that his child with ASD would not benefit from the intervention if he only used the DIR/Floortime[®] intervention approach because of his son’s behavioural problems. Mr. E said during his interview, “*for my child, [using the] DIR/Floortime[®] only, he will not make it [still have behaviour problems]. His behaviour used to be terrible*”. For him, if they used only the DIR/Floortime[®] approach and no other intervention approach, they as parents would be negatively impacted as well as their child. This is because he perceived that the DIR/Floortime[®] intervention approach is too flexible and problematic behaviour could only be change with a more structured-based approach.

Since the DIR/Floortime[®] approach proposes that parents should follow their child's lead, parents concern was that when they do this, although they have a close relationship with his son, he might manipulate them. Mrs. E voiced her concern during the interview, "*we are afraid that if we cut him loose too much, he will come and manipulate us. That is why it is difficult for us as parents*".

She also mentioned that she is afraid that if she engages with her son it will negatively impact her and her husband's role as parent. In Malaysia's culture, parents should be respected by their children and have a distinct boundary between parent and their children. She said:

"If togetherness, togetherness [becoming closed with her son] when he grows up, I am afraid he will respect us less.... how do we control this thing....do not get too much togetherness [engagement], [then] there is no difference... [between parents and child]." (Mrs. E)

The intervention approach's authors highly recommended parents to engage in the DIR/Floortime[®] intervention with their children with ASD and gradually involve other people including siblings and friends. The recommended time requirement for this study was lower than the actual recommendation proposed by Greenspan and Wieder (2006). However, parents thought that the DIR/Floortime[®] intervention program created a negative impact on parent's engagement with the child with ASD's sibling/s due to the extra time they spent implementing the intervention.

Parents have attended the training and the recommended way of engaging in the DIR/Floortime[®] intervention strategies with the child and the other siblings was also discussed during the training. Mrs. F reported that, "*the negative effect is to his younger sister. Sometimes, I feel sorry for her. We wanted to spend time with her brother [doing DIR/Floortime[®]], so, we spend less time with her because they [child with ASD and younger*

sister] could not play together”. Mrs. H also shared the same concern because she had some difficulty in focusing her attention on both of her children.

5.5.2 *Theme two – Challenges in implementation of and engagement in DIR/Floortime®*

Although parents have expressed positive notions about the DIR/Floortime® intervention program for various reasons. They also stated that they had encountered several challenges to implement and engaging in the DIR/Floortime®-related intervention activities due to a few reasons. The challenges to taking part in the DIR/Floortime® intervention techniques are discussed in this theme and presented in the following five categories: (a) challenges to engaging in DIR/Floortime® at home, (b) challenges to engaging in DIR/Floortime® at the clinic, (c) challenges to engaging in DIR/Floortime® due to the child’s negative behaviour and limited capabilities, (d) challenges to engaging in DIR/Floortime® due to parents’ negative behaviour and lack of skills, and (e) challenges to engaging in DIR/Floortime® due to the child with ASD’s siblings.

a. Category 1 – Challenges to engaging in DIR/Floortime® at home

In theme one, parents described that they enjoy engaging in the DIR/Floortime® intervention at home, but they still encounter some challenges. The challenges were due to several reasons including their child’s negative emotional state, the home environment and parents’ time availability.

Parents expressed that although they like engaging in the DIR/Floortime® intervention at home, sometimes, it was challenging because they had to deal with their child’s tantrums. The primary concept of the DIR/Floortime® approach is following the child’s lead and it was difficult for parents to do it when the child was in negative emotional state and exhibiting problematic behaviour. Most of the parents who perceived this to be a reason challenging for them to engage in the DIR/Floortime® intervention were more familiar with a structured intervention approach prior to participating in this study. Mrs. A mentioned this during her

interview, “it is challenging to deal with his tantrums, we have to follow his mood. So, it is difficult. Sometimes, his mood does not add up to what is happening at that time or what we [parents] want”.

Some of the parents thought their home environment was part of the challenges for them to be in the DIR/Floortime[®] intervention approach. Contrary to some opinions in category two of theme one, Mrs. H said that her four-year-old boy did not explore much at home because of its familiarity and that makes it difficult for her. She also acknowledged that she needed more toys, to make him more interested to explore and engage in various activities which then makes it easier for her to apply the DIR/Floortime[®] recommended techniques.

As aforementioned in theme one, half of the parent participants were both working full-time and had limited time to engage in the DIR/Floortime[®] intervention with their child. Parents mentioned between dealing with their child’s difficulties (e.g., behavioural problems), taking care of the other children, and doing the household chores; to find a suitable time to fully dedicated to engaging in the DIR/Floortime[®] intervention was challenging. The following interview extract depicts the point described by Mrs. A:

“If he is in a good mood [positive emotional state], he is more productive... forcing him to do something, it is not [productive]. The time constraint, that is the reason, because we have to find a time that suits his mood [positive emotional state]. Aaaa...that is actually [the reason]”.

b. Category 2 – Challenges to engaging in DIR/Floortime[®] intervention at the clinic

Most of the parents felt that being involved in the DIR/Floortime[®] intervention at the clinic was challenging for them because of their children’s behaviour in an unfamiliar environment. It is typical for children with ASD to explore the environment especially when they are not familiar with it. But, it could also due to their lack of attention and hyperactivity

behaviour that are causing them to wander around the intervention room. Parents perceived the exploring behaviour posed as a challenge for them to successfully engaging in the DIR/Floortime[®] intervention at the clinic. Mrs. A said this during her interview, “*at the clinic, it is just once a week. So, he wanted to play...you know, things he is not familiar with*”. Meanwhile, another mother, Mrs. E also noted that it was helpful that there were a lot of toys in the intervention room at the clinic. However, she felt that she needed to work harder to be creative so she could make him interested in playing with what was available since his play skills and interests are limited.

c. Category 3 – Challenges to engaging in DIR/Floortime[®] intervention due to children’s negative behaviour and limited capabilities

This category discussed the parental perspectives regarding their child’s negative behaviour and limited capabilities that posed challenges for them to complete the DIR/Floortime[®]-related activities. The challenges are further explained in the following six sub-categories:

i. Sub-category 1 - Children with ASD’s negative emotional states

The DIR/Floortime[®] approach mainly focuses on following the child’s lead with the purpose of gaining the child’s attention and slowly enticing him into joining the social world (shared world). However, it has been deemed to be challenging as parents have expressed that they often have to face their child’s unsettling and negative emotional states throughout the day. When engaging in the DIR/Floortime[®] intervention and the child was in negative emotional state, it was less satisfactory. Mrs. A, Mrs. D. and Mrs. F stated the same point during their interviews. Mrs. C also shared her experience of being involved in the DIR/Floortime[®] intervention at home that she felt was challenging due to her six-year-old son’s emotional state:

“Sometimes, we have planned ahead what are we going to do, we wanted to expose him to a new thing... It is challenging, especially when he is not in a good mood [negative emotional state]”.

- ii. Sub-category 2 – Children with ASD’s inappropriate behaviour in new, unfamiliar places and activities

Parents reported that their children were unable to adapt to new environments, new people and activities, therefore, making it difficult for parents to implement the DIR/Floortime® intervention program. For example, Mrs. A said she wanted to try and engage in various activities in various settings with her six-year-old son with ASD but he demonstrated problematic behaviours when he is in new environment such as screaming and tumbling about on the floor. Mrs. A’s son also screams when he sees a lot of people around him. Mrs. D also said the same thing, but her son likes to jump and clap his hands, *“at the shopping complex, he feels that the place is spacious, he likes it more... he starts to jump, clap his hands”.*

- iii. Sub-category 3 – Children with ASD’s limited attention span

The children’s inability to focus and easily becoming distracted with objects in the environment also made parents feel it was difficult for them to engage in the DIR/Floortime®-related activities. Mrs. F mentioned this in her interview, *“here [occupational therapy clinic], he is distracted looking at all the toys he wants to play”.* Mrs. E added that she thinks that her six-year-old son’s various unsettling sensory issues including sensory seeking behaviour causes him to have a short attention span which makes it difficult for parents to follow and engage in the DIR/Floortime®-based activities with him. Contrary to the other mother’s reports, two mothers also reported that their child would get easily bored when they engaged in activities and would stop doing the activity instead of jumping from one activity to another.

iv. Sub-category 4 – Children with ASD’s limited interest in play activities

Another issue of concern that parents reported as challenging for their active engagement in the DIR/Floortime[®] based-activities was the child’s lack of interest to play. The following data extracts depict this sub-category:

“Playing with car, he does not play anything with the car [just examine the car]. But for us to make it extremely fun as in DIR/Floortime[®], we are unable [to do it]. Because he seems forced to...For us to inject the DIR/Floortime[®] elements is quite difficult because he is not interested in playing” (Mrs. E).

“I do not see any toys he really likes [to play with]” (Mrs. B).

One of the activities that parents liked to engage in the DIR/Floortime[®] intervention with their children was play. However, parents reported that they faced some challenges engaging in the DIR/Floortime[®] intervention’s activities due to their child’s lack of interest in playing with them. Mr. F reported, *“...he plays alone, rarely he wants to play together with us”*. While Mr. E said that his son with ASD avoids playing with him and his wife, he said *“the moment we come in to [play with child], he will go away and do another activity”*.

v. Sub-category 5 – Children with ASD’s limited skills and abilities

Parents reported that their child with ASD had various limited skills and abilities such as limited communication skills and difficulties to act spontaneously without being prompted which posed some challenges for parents. For example, Mrs. B said that her child did not know how to express his feeling and got easily frustrated. Then, he would start to throw his tantrums and its challenging for the mother. Both Mrs. A and Mrs. C also shared their encounters:

“...we do not know anything, all of the sudden he will throw his tantrums. He keeps pushing us. What is it? We do not understand” (Mrs. A).

“he does not know how to [express what he wants]. He immediately gets angry”

(Mr. C).

Since the DIR/Floortime[®] approach’s primary goal is to follow the child’s lead, Mrs. E felt it was challenging because of her son’s lack of initiative that he needed to be prompted to engage in activities. She said, *“we have to prompt [him], we asked him to push the car toy, then he will follow and push the car”*.

d. Category 4 – Challenges to engaging in DIR/Floortime[®] due to parents’ negative behaviour and lack of skills

The first goal of the DIR/Floortime[®] intervention is to follow what the child is doing for the purpose of engaging with them and gain their attention, and followed by the second goal, bringing the child into shared world. However, some of the challenges to implement and engage in the DIR/Floortime[®] intervention were due to several issues related to parents’ expectations and behaviours, roles, as well as skills.

i. Sub-category 1 – Parent-oriented approach: “getting him to do what we want, it’s challenging...he does not want to follow”

In the DIR/Floortime[®] approach, the main concept is to follow the child’s lead, however due to culturally derived directive parenting styles where children are typically expected to follow or abide by parental expectations, needs and/or standards, this can be a hindering factor for parents to engage in the DIR/Floortime[®] intervention program at home. Most of the parents seem to think that the reason it is difficult for them to engage in the DIR/Floortime[®]-related activities is because their child would not follow what parents asked them to do. Although this contradicts the concept of the DIR/Floortime[®] approach, this was true for the parents. For example, Mrs. A shared this during her interview, *“we try to enforce something [onto him] following what we wanted to, we do not mind about what he wants, that would trigger his tantrums. It is*

challenging to deal with his tantrums”. Both Mrs. and Mr. F also shared the same issues as they mentioned that making their son do what they wanted is one of the most challenging aspects for them.

Other than that, both Mrs. A and Mr. A were also recorded saying their child’s preferred activity, pretend play with the pencil is “*weird*” and that restricted their engagement in the DIR/Floortime[®] intervention approach. In addition, parents’ expectation of wanting the engagement session to be successful was perceived to be challenging for them. Mrs. B said, she wanted the session to be successful, but her child’s behaviour was not always at his best and that seemed to be problematic for her.

ii. Sub-category 2 – Parental role

All families involved in this study do not have a maid or domestic helper; all household chores were completed by mothers with their husband’s help. Parental perception of priorities where household chores over playing with their children or spending time with their children at home for both non-working and working mothers; and that was one of the challenges for parents to take part in the DIR/Floortime[®] intervention. This is illustrated in the following participant quotes:

“As a housewife, I have to get all the house chores to be done first, then only I feel I can play with my child” (Mrs. B).

“We have chores to do, we do not have a maid [domestic helper] at home. [I] have to do other things at home too” (Mrs. F).

In some families, both parents are working and they reported that there are some days when they are too tired to spend time or play with their children once they got home after work. This was also reported as one of the challenges parents faced when engaging in DIR/Floortime[®]-related activities with their children at home. One of the fathers, Mr. F mentioned in his interview that even if he was tired, he still forced

himself to play with his child. However, his child's difficulties sometimes resulted in his child demonstrating negative behaviour such as tantrums during the play activity which then led to Mr. F getting angry or annoyed, making him more frustrated and tired, which in turn impacted his engagement in the DIR/Floortime[®]-related activities.

Parents also stated that since they were both working, it is challenging for them to allocate sufficient time for them to be involved in DIR/Floortime[®]-related activities with their children particularly during the weekdays. During the weekdays, they usually have time to spend with their children once they have completed all the chores which was mostly at night after dinner.

Parents' expectations of the father's and mother's role were also found to be one of the factors why parents found it challenging to engage in the DIR/Floortime[®]-based activities with their children at home. Fathers are expected to be more involved in leisure activities with their children such as playing sports and games, while mothers usually are more involved in education and learning activities (e.g., reading and writing tasks) with their children. One of the mothers who was actively involved in the DIR/Floortime[®] intervention program reported that she encountered some difficulties since her child had always previously engaged in play activities with his father and not her – *“before this, he plays with his father. Mother rarely plays, usually ask [child with ASD] to study”* (Mrs. G).

- iii. Sub-category 3 – Parents' limited play and interaction skills: *“[I] am blur, what to do?”*

This sub-category is comprised of several codes relating to parents' skills that impeded parents' engagement in the DIR/Floortime[®] intervention with their children. Parents reported that some of the challenges that they faced included trying to get their child to play and to play with their child.

Most of the mothers of the child participants mentioned in their interviews that they do not know how to play with their child. For example, a mother of a nine-year-old boy, Mrs. D mentioned that she does not know what she wants to play with her child, she keeps asking herself how she should join her son's play. One mother, Mrs. H, reported that she actually strongly compelled her son to play. This was because she usually does not play with her child before and she was not familiar with how to initiate play or join her child's play.

Sometimes, parents know how to play but they are struggling to create an activity that is enjoyable, playful and beneficial to their child's development. Parents also have difficulties to initiate and attracts their child to play with them. For example, Mrs. E shared one of her challenges when implement the intervention, *"his [child with ASD] play skills are very poor, so we [mother] have to be creative to create [an activity] with what we have in the room, I am at my wits end to attract his attention"*.

Parents' play skills were different than what is recommended by the DIR/Floortime[®] intervention approach. Their play concept was always to teach their children to do something including play and it did not turn out well. A father of a six-year-old boy, Mr. E mentioned in his interview *"we want to teach him to play, but he still... does not want to attend [engage] and interact with us"*. Parents also reported that they usually took the leading role in play activities with their child instead of letting their child take the lead. This inhibited parents from successfully engaging with their child in the context of the DIR/Floortime[®] approach. This quote from Mrs. A depicts the point, *"before this, I play [by] giving him instruction"*.

Parents' lack of interaction skills with their child with ASD was also perceived to be one of challenges faced by parents. Parents were always more focused on their child's academic performance than having an impact on their interaction with their

child. They usually interact with their children with the goal of teaching them something. For example, one of the parent participants mentioned in his interview, “*we always want to teach, to teach, teach, teach*” (Mr. C); or engaging in educational related activities as reported by Mr. E, “*before this, we trained him in a way more formal. More to table task*”.

A couple of parents revealed that they did not know how to interact with their child in their daily life routine or in certain situations, such as when their child was not in a good mood to do certain activities they had planned for him. One of the mother participants expressed this in her interview, “*if my son throws tantrums, what do we say, what do we do*” (Mrs. C).

Some of the parent’s interaction skills are based on their knowledge that children have to be given instruction for them to be able to perform or engage in any activity. For example, a father of a six-year-old boy with ASD, Mr. E mentioned this, “*we instruct our son to do activities because we were taught that children have to follow instructions*”. Although this is one way of interacting with children, the DIR/Floortime[®] approach is centred on a child’s lead interaction, two-way communication instead of children following instruction. Hence, parents feel like it was challenging for them to engage in the DIR/Floortime[®] intervention with their child with ASD.

e. *Category 5 – Challenges to engaging in DIR/Floortime[®] due to children with ASD’s siblings*

Parental responsibilities related to caring for the siblings of the child with ASD is also perceived as an impeding factor to engaging in the DIR/Floortime[®] sessions. Parents reported that they needed to focus on their other children, as well as spending

time playing or doing activities with their children with ASD. The following quotes are indicative of this:

“She [younger sister] wants to do as well... she will climb, play something, or do something, so we have to stop for a while [engaging in activity with the child with ASD]” (Mrs. F).

“To play with him, we don’t have that much of time. He has other siblings, we have to check his older brother’s homework as well, and all [house chores]” (Mrs. A).

5.5.3 Theme three – Parents’ perceptions on their child’s play: Benefits and limitations

The DIR/Floortime[®] intervention approach encourages parents to engage in activities with their children with ASD to build their interaction, engagement and relationship. It was recommended that parents interact with their children in all types of activities especially play activities. This theme discusses parents’ perception of play in two categories in the context of their child with ASD: (a) parental perspectives on the benefits of play, and (b) parental perspectives on the limitations of play.

a. Category 1 – Parental perspective on the benefits of play

During the training sessions, parents learnt about the importance and benefits of play for children’s development. Parent participants shared that after joining the DIR/Floortime[®] intervention program, they had engaged in play activities with their children more and they noticed that playing is fun which they can engage in at anytime, anywhere. Furthermore, they also said that they began to understand the importance of play once they observed several improvements in their child with ASD’s developments including cognitive, problem solving, communication socioemotional and physical skills.

Mrs. C reported that she and her husband learnt about how to play with their child with ASD during the training sessions and it has helped them a lot. They have played with their child in various ways and perceived that it aided in their child's cognitive development. The following data extracted from Mrs. C and Mr. C's interview depicts their opinion on how important play is:

“The more we play with him, actually in the same time we can train him. Train him in term of his social [skills]. For example, waiting, playing with his younger sister. His social [skills] improved, so we understand that we can learn from that [play]. When playing, he will think about it [the activity] ...we trained his problem solving...motor skills. Play for him to be creative, for his development [cognitive]. Play - it is very important.”

Several other parents stated that play is important for their children as it would make their children feel happy. Mrs. D added that, it is also a way for parents to show their children that they love them. She said, *“play is important because we wanted our child to develop. Plus, our child needs to know that we [parents] love him. Play is a way to communicate with him, to make him feel happy.”*

b. *Category 2 – Parental perspectives on the limitations of play: “if it is just play, it's a waste of time”*

Although parents engaged in play activities countless of times throughout the 14-week program, a few parents also voiced their opinion on the limitations of play. Two parent participants, Mr. A and Mrs. B said rather than just play, children have to learn (i.e., formal learning) as well or otherwise it would only be a waste of time.

One parent participant, Mr. A, was adamant that play does not has a lot advantages for his child with ASD, particularly in changing his behaviour. During the interview, he said, *“we could not see how play can change his [child with ASD]*

behaviour”. Hence, he shared that he usually set up some boundary between playing with his child with ASD, and spending time with the child. This is because for Mr. A, playing does not benefit the child much nor benefits parents at all.

5.5.4 Theme four – Improvements and changes in children and parents’ abilities and skills

Theme four focuses on the improvements that parents perceived their child with ASD and themselves made after the DIR/Floortime® intervention was implemented in the home environment for eight weeks. Parents reported a variety of their children’s behaviours and skills that had changed over time since they started attending the DIR/Floortime® intervention approach’s training sessions and implementing it at home. Children’s improvements are presented in category one and parents’ improvements in category two.

a. Category 1 – Improvements and changes in children with ASD abilities and skills

Children with ASD’s improvements are further explained in nine sub-categories which are: (i) play skills, (ii) social play, (iii) increase expressive language, (iv) self-control/self-regulation, (v) social skills, (vi) social interaction with family/familiar people, (vii) understanding social rules, (viii) awareness of other people, and (ix) expression of positive feelings: *“he likes to smile”*.

i. Sub-category 1 – Improvements in children with ASD’s play skills

Children with ASD’s play skills were perceived to have improved after the implementation of the DIR/Floortime® intervention at home by parent participants. Parents reported that their children with ASD’s skills including ball play skills improved after they engaged in the DIR/Floortime® session with their child. For example:

“... playing ball...he can...catch the ball” (Mrs. G).

“Now I see [him] with the ball, he throws the ball...now he understands the function of a ball. Kicking, I have not seen him do that yet” (Mrs. B).

Some parents also reported that their children with ASD's play preference had changed. Mrs. H said her son used to obsess over animal toys, he would only play with animal toys. But after she started the intervention at home he was no longer fixated on the animal toys only, he can play with other toys as well. On the other hand, Mrs. B also said that her son with ASD showed his preference in toys including cars, helicopters or fruit plastic toys such as banana, apple and grapes. It is not only toys, the child with ASD's play activity itself has changed also, as Mr. F reported, "*now he usually plays something that we can play together [child and parents]*".

Parents also shared that when playing, their children with ASD had prolonged their engagement:

"Playing with sword [fighting with sword] he has improved. He prolongs the play. Before this, he attacked us once, then he ran away [doing other things]. Now, he keeps attacking us over and over again" (Mr. E).

"...he seems to be more excited, look at this, look at this.... he shows us what he can do [while playing]" (Mrs. C).

After eight weeks of home-based DIR/Floortime[®] intervention being implemented, parents reported that their children with ASD could now imitate play activities from videos they watched. Many parents also indicated that their children with ASD began demonstrating pretend play and becoming more imaginative and creative in their play. Mrs. D reported that her son with ASD was able to pretend play more than before. Mr. F also shared that his son demonstrated that he likes to pretend cooking and even pretended during his time for shower. He described the incident during his interview, "*when we want to take him for his shower, he will run away. He pretended to run away as if he does not want to take a shower*".

Mrs. C was delighted with the improvements her son showed after a few weeks of implementing the intervention. She said that her husband and her now always play with him and it gives her son with ASD the opportunity to develop his imagination. The child is becoming more creative. She said this during the interview,

“He [child with ASD] is more creative. We always play with him. So, his imagination is more developed. When he plays alone while talking to himself, he changes the object into something like a phone. Sometimes we wonder, how can this object can be a whole new thing...”

Children with ASD’s play skills related to play complexity also reported by parents appeared to improve since parents had been spending more time engaging in DIR/Floortime®-related activities with their children. The examples below typify this point:

“We show him first, then he follows. Sometimes he adds something else, for example, we were pretending to cook, that was all we showed him. Then, he will show us something else. He fetched the toy kettle [initiating other cooking activity-boiling water]” (Mrs. H).

“He likes to cover himself with blanket [to hide], or I will hide at this one place at home and called him. Call him and he will try to find me. We started to play the ‘covering’ [hide and seek-like game] during the DIR/Floortime® home-based intervention phase” (Mrs. B).

Meanwhile, Mrs. E was pleased with her son with ASD’s improvement in his two-way play activity. Both her and her husband used to play fighting with the sword with him. But after implementing the DIR/Floortime® intervention approach, she said that her son who used to just withstand the sword’s thrust when he was attacked by his parents, now chased and attacked them back using the sword.

ii. Sub-category 2 – Improvements in children with ASD’s social play

Concomitantly with the improvement of the children’s play skills, many parents noted that their children with ASD were able to play with others including parents, family members and friends. Both Mrs. E and Mrs. F said that their child with ASD likes to ask them to play together. Mrs. E observed that her son did not just always ask her husband and her to play with him, but he even started to ask his grandparents to play with him whenever they went back to his grandparents’ place.

Mrs. B also noticed that her son with ASD now started to play with his siblings. She said, *“if he wants to ask his brother to play with him, he will toy with his ears and see if he smiles back at him. When his brother smiles back at him, he will take his brother’s thing and run”*. Mrs. D also said the same thing where her son with ASD was involved in rough and tumble play activities more often with his younger brother at home although sometimes it will end up with a real fight since the youngest likes to pick on his ASD’s brother. Mrs. G also noticed that his eight-year-old son with ASD can play with his two younger brothers.

Children with ASD have shown improvements in their ability to play with their close family members and even with some distant family members. Mrs. H reported that when they went back to their hometown, her child with ASD can play with his cousins. She described the incident during her interview, *“he can play with his cousins when we went back to our hometown. He plays ‘tarik upih’ [Malaysian’s traditional game, one child sits on the sheath of a palm-like leaf, several people will pull it to move it] with them”* (Mrs. H).

Mr. C said that he has received good feedback from his son’s teacher at school that his son has improved a lot at school. He said, *“at school, his teacher said that he now can share the toys with his friends and play together”*.

Parents also reported in their interviews that their children initiated teasing (a type of social interaction) them and their siblings. For example,

“Now, he knows how to tease people. Before this, if he does not want something, he just doesn’t want to. Now, he pretended as if he does not want to do it (take a shower). He teased us, try to run away” (Mrs. F and Mr. F).

“He likes to tease people. Maybe he wanted to say hi, that is his way of greeting people. When someone come to our house, he will go and smack that person, then he giggles” (Mrs. D).

iii. Sub-category 3 – Improvements in children with ASD’s expressive language

Parents reported that their children with ASD demonstrated improvements in their expressive language skills including increasing the number of words used in everyday conversations as well as becoming more frequent with verbal communication with other people.

Mrs. H said that his four-year-old son with ASD can now start using three words when he talks and he talks a lot more now compared to before they joined the DIR/Floortime[®] intervention program. Although he talks more, she said that sometimes it was incomprehensible. Mrs. G also reported the same thing about her son’s language ability, *“...because now his wording has increased, before this when we wanted to eat, he just took the plate but will never said he wanted to eat. Now, he said ‘I want to eat rice’...”*.

Child participants also showed improvements in expressing their wants and needs verbally. Both Mrs. A and Mrs. E said that their sons were able to verbally communicate to them what they wanted and did not want instead of only physically gesturing their intentions. Mrs. A said, *“now he is more expressive. He can tell me what he wants. He can verbally communicate with me what he wants, he used to throw*

tantrums when things did not go the way he wanted to". Meanwhile, Mrs. E reported that her son said to her, *"I don't want to"* and physically gesturing that he does not want to when asked to finish his meal.

Furthermore, when their children with ASD talked, parents reported that they spoke with more expression and animation. For example, parents reported:

"In terms of his speech. His verbal conversation. His...expression. Sometimes he says what he wants or verbally indicates that it is good (object, activities, food). He knows how to express it [verbally] although it was in his own terms [words]"
(Mr. C).

"He will ask his younger sister to get into the lift quickly. Sometimes if we left his sister behind, he will say wait [afraid of the sister will be left behind or get wedged in between the lift's door]" (Mr. F).

"Now he can say, 'let's play. I want Ultraman. Dad, I want Sesame Street'..."
(Mr. A)

Parents also said in their interviews that their children with ASD have showed improvements in their singing (which relates to the children's expressive language skills). Their child with ASD was able to sing new songs and songs they already liked in a more rhythmic fashion than they had previously able to perform prior to the implementation of the DIR/Floortime[®] home-based activities. Examples are as follows:

"Now he can sing, his pronunciation is clearer. Ba ba black sheep [sings rhythmically]. He can sing the songs completely. Now, he likes to sing, he will sing all the songs continuously" (Mrs. F).

iv. Sub-category 4 – Improvements in children with ASD’s self-control/self-regulation

Almost all child participants had self-control or self-regulation issues of some type prior to the home-based DIR/Floortime® intervention program being initiated. During the interview, majority of the parents reported that their child with ASD had improved in their self-control or self-regulation abilities. The child participants appeared to their parents to be able to control themselves better, demonstrating by not being as easily aggravated, being more easily to calm down, being more relaxed, and having a decreased number of tantrums. These following interview extracts provide examples of how children improved their self-control or self-regulation abilities in their daily routines:

“Now his sleep time is controllable, even if he sleeps in the evening. At night, he will still go to bed at midnight. If he cannot sleep, he will still lie on his bed, he did not go up and play or do something else” (Mrs. G).

“He wakes up in the morning, now he did not cry as much. Before this, he will cry when he goes to sleep at night and when he wakes up in the morning” (Mrs. B).

“He can calm down easier. Even if he gets angry, we can calm him down. Before this, if he wanted a chocolate, he wanted it right there and then. Now, I am able to divert his attention saying the chocolate is at home. He will wait until we get home” (Mrs. H).

Mrs. D reported that his son now improved in his ability to keep himself calm and not being angry when someone approach him while he was playing with his toys by himself. She said that her nine-year-old son with ASD did not like it if someone came to him when he played with his toys and before this he would get angry but now he just let them watch and continues playing with his toys. She added that he seems to be more

relaxed after he started engaging in the DIR/Floortime[®] intervention at home. Mrs. B also reported similar experience, *“now, he is more relaxed”*.

The child participants were seemed to be able to control their anger according to their parent’s reports during the interview session. Mrs. C said that her seven-year-old son with ASD would get into a disagreement with his younger sister since she sometimes does things that he did not approve. When she does, he will tell them (both Mr. C and Mrs. C) or verbally asked her not to do it. Similar incident was reported by Mrs. E. She reported that even if her child with ASD gets angry, it would not be for long. He will stop being angry when they (Mrs. E and Mr. E) stopped doing what they were doing that caused him to be angry. She said, *“when we stop doing it, he will be okay. If he gets angry it will not be long. Before this, he can go on throwing tantrums for hours”*.

Mrs. A and Mrs. B both reported that their sons’ frequencies of temper tantrums have been decreasing ever since they started the intervention program. Mrs. A said, *“...before this, he even throws his tantrums at home. But now, it has been decreasing”*. Meanwhile, Mrs. B reported, *“he seems a little bit happy. Tantrum also has decreased”*.

Mrs. B’s son did not only improve in reducing the occurrence of tantrums but he also seemed to be more tolerant in his daily life. She reported this in her interview:

“He is much more tolerant. For example, when we went into a supermarket there are ice creams. I told him, you have already eaten the ice cream. That should be enough. There was a whimper from him, just for a while. Then, he will be okay. He used to sleep with me only. Now, after we went back from my hometown, he can sleep with his father as well. Before this, he could not sleep with his father because he snores”.

The child participants were also viewed as being more confident and responsive to other's unwanted actions towards them. For example, Mrs. D said that her son was becoming more confident to fight his younger brother back when he did something that he did not like such as when his younger brother took his things. Mrs. E described an incident at home with her six-year-old son reporting his improvements, "*I was massaging his face, doing the oromotor facial massage. He was sleepy. He closed his eyes. Then I massage him again. He said 'sleep' ...*". She adds that now his son will express his unwillingness and disagreement both verbally and physically towards them when he was asked to do something he did not like.

Both Mrs. F and Mr. F shared that their son is now more confident to respond according to his wants when his father asked for some of his food. They said that he did not share his food with his father anymore, and to avoid being asked to share he will finish the food as quickly as he can (e.g., ice cream). However, it was only with Mr. F but he was still willing to share with his mother. They think maybe because Mr. F always eats a great portion of their son's food, whilst Mrs. F will only just eat a little portion and still leave him with considerable amount of food to finish.

One parent also reported that their children with ASD had demonstrated more initiative and independence towards performing his daily self-care tasks since being involved in the DIR/Floortime[®] intervention program.

"We engage in DIR/Floortime[®] intervention performing daily activities such as putting on shoes. Before this, we have to help him taking his shower, rub off some parts of his body. Now, he has improved a bit. He can do that by himself" (Mrs. E).

- v. Sub-category 5 – Improvements in children with ASD’s social interaction skills and engagement with parents and family members

Child participants in the present study were also reported to have demonstrated improvements in their social interaction skills. This included communicating with other people non-verbally using body gestures when they wanted some help getting something or when they need something. Mrs. B reported several incidents where her non-verbal five-year-old son with ASD communicated with her:

“When we go out and he sees 7-Eleven, he will pull my hand towards the store for an ice-cream. My husband said if the object is placed too high, he will grab his hand and let it go. He grabs people’s hand if he wanted something. But, he seems like he wanted to point up. When the hand is up in the air, he let it go. He will do that two or three times. When I was on my iPad, before this he will just took it from me. Now, I said to him, you have to wait. Wait for me to finish playing, just for another two rounds then I will give it to you. He sits beside me and waited for it. But, occasionally he will look at me, as if he is asking me “are you done yet? He will sign ‘wait’ and slowly stroke his chest, meaning wait”.

Mrs. E said that her child with ASD showed interest in what she was doing. He tried to socialise with her, attracting her attention towards him. Mrs. E describe the incident:

“At home, I will read the magazine and give him a book for him to read. I told him to read the book because I wanted to read as well. Once he saw me reading the magazine, he will close it and put it away. I take it back and he did the same thing. So, he wanted me to stop reading and spends time with him”.

Another parent, Mrs. H also reported that her child now waits for her parents to respond when they are talking to each other while playing, *“he will keep repeating the*

same words. For example, he kept repeating “horse run faster” until we said the words, then he will stop. He waited for our response”.

Another noted improvement made by the child participants since the parents’ participants implemented the DIR/Floortime® intervention with them was social interaction. Parents reported during their interviews that their children with ASD were starting to interact with them and their siblings at home. Mrs. H noticed that her son with ASD interacts with her and her husband. He also started to interact with his younger brother during meal time where they feed each other. Both Mr. and Mrs. F also reported similar incident:

“He starts to call papa and mama. If he sees us, he will greet us ‘mama’, ‘papa’. Before this, he did not greet us. We have to ask him...then only he will answer [say mama or papa]. Sometimes he will come at me and said ‘mama, mama, mama’ ... he did not ask me to do anything. He came and give me a hug”.

Mr. and Mrs. F also mentioned that their son started to initiate interaction with his younger sister where he shares his toy and asked to play together. Mr. F also said that his son now shows concern towards his younger sister:

“If we were at the lift, he will ask his younger sister to get into the lift quickly. Sometimes if we left his sister behind, he will say wait [afraid of the sister will be left behind or get wedged in between the lift’s door]”.

Similarly, Mrs. E’s son with ASD also showed improvement in his interaction with her. She said that her son now pays attention to what she was doing and started to do something to gain her attention. She reported that one time when she watched the television and got preoccupied, he came and turned off the television when he normally did not even bother with his surrounding and other people in the immediate environment. He would insist on what he wants, using both non-verbal and verbal

language. Mrs. E said, *“he asked me for some nuggets. When he saw me delaying...he went to the refrigerator, take out the nuggets and put it next to the stove. He came to me and said ‘mama, I want nugget’...”*.

Mrs. B’s five-year-old son showed improvements in his social interaction with his older brother and sister. He likes to tease his sister and tried to engage in a ‘*main kejar-kejar*’ (i.e., children’s game, tag) with his brother, initiating with toying his brother’s ears. Another mother, Mrs. D also said during her interview that his son started to interact with her husband and her, as well as his older brother. He now comes to them and asks for hugs and kisses.

The child with ASD participants did not only interact with immediate and familiar family members, they even started to interact with their extended family members and neighbours. Mrs. C said that her six-year-old son seems to be friendlier, he will say *“hi friend or hi guys”* to people walking by their house, and sometimes join a group of children if they are doing something interesting to him such as watching a video or playing a game on their gadget.

Meanwhile, Mrs. D’s son also showed improvement in his interaction with other people. However, his way of initiating the interaction with other people was inappropriate – *“when someone come to our house, he will go and smack that person, then he giggles. He tries to initiate a conversation but his way of interacting is not proper. Before this, he just let them be”*.

Parents also reported that their children with ASD engaged with parents, talked with them more and had eye contact with them when they engaged in conversations. Mrs. E said that Child E’s eye contact had improved, he now looks at them when they communicate with each other. He interacted and engaged with his parents when prior to the implementation of the DIR/Floortime[®] intervention program at home he could not

even bother with their presence. She said, *“he is engaging with us. Before this, if we were there or not, it is just the same for him”*. In addition, her child even expressed his objection verbally by saying *“I don’t want”* when she asked him to take his medicine. Mrs. C said that her son enjoys telling her and her husband stories and communicates with them more often when they spent time together.

Some parents said that their child now plays together with them. Prior to the home-based intervention, they said that their children enjoy playing alone and involved them in the play activities. Mr. F said that his son likes to play something that they can play together. Meanwhile, Mrs. H said that her son waited for her to respond to his verbal cue when he plays with the toy horse before continue playing.

- vi. Sub-category 6 – Improvements in children with ASD’s understanding of social rules

Since starting the home-based DIR /Floortime[®] intervention program, parents reported that their child had shown several improvements including a better understanding of social rules. The child’s behaviours indicated that they were beginning to understand social rules in their everyday life. Parents reported that their child with ASD was able to understand other people’s emotions and react accordingly to them. The children with ASD had improved their understanding of the concepts of cause and effect. Mr. F reported this:

“When we make our angry faces, he will get afraid of us. Usually, he is not scared of us because he did not understand if we were angry. Yesterday, he did not want to sit in his car set, he wanted to go out of it. [I] stopped the car, I have not even say anything [get angry], I just stepped out of the car. He just sits still in silent. Before this, he will fumble around.”

Mrs. H's son also showed improvements when she reported in her interview that she was able to ask him to wait until they got home for a chocolate and once they reached home he will repeat the word chocolate until he gets it. Meanwhile, Mrs. C reported that her son understands the effect of her action when they were going out to the mall. She reported:

“At the shopping mall, he wanted to play after we tell him it's time to leave. So, we push our shopping cart and slowly walk away from the play area, leaving him behind. We wanted to see if he understands it or not [cause and effect]. He started to walk towards us, he was afraid we would leave him there. Before this he did not care if we leave him”.

Mrs. E also said the same. Her son with ASD once tried to use his tantrums to get what he wanted but since the behaviour was ignored, he did not do the same thing again the next day. This is somewhat similar to what Mrs. G described in her interview where her son understands the consequences of his action:

“When he is in an environment outside of our house, he will get easily distract. He will take this toy, and leave it on the floor, then take another one and leave it on the floor. He knew he does not have these toys at home, plus he knew his mother will not get angry, so he did it. If we were outside, I will not get angry with him. But, at home, he knew I will [get angry with him] then he will behave himself accordingly”.

Parents also reported that their children with ASD exhibited improvements in their understanding of the concept of waiting. This was told by both Mr. F and Mrs. F during their interview where they describe that their child with ASD said “wait...wait...” when they tried to take the phone when he was playing with it and when he left something in the house when they were going out. Mrs. D said that her son

was able to wait when she asked him to when she was playing with her tablet. Prior to this, she said that her son would just snatch it out of her hand. Similar to these parents, Mr. C also said that his son showed improvement where he was able to wait patiently.

vii. Sub-category 7 – Improvements in children with ASD’s awareness of other people

Another significant improvement in the children reported by parents was their child’s awareness of the whereabouts of other people, showing an interest in what other people were doing, trying to find familiar people in the same environment as they were, and even trying to interact with them. Parents reported:

“When we were engaging in an activity with him, his little sister will do something else, she will climb up things or anything...so, we stopped what we were doing with him. We told his sister not to do it [climbing up furniture], he will then go and pull his sister off the furniture. He will try and help me to stop her from doing it, he will pull his sister, told her not to do it. But, he is a bit rough with her, she did not like it. If we went out together, his little sister walks slowly. He will go and pull her to get her to walk faster. He is aware of his sister whereabouts” (Mr. & Mrs. F).

“If his younger brother is playing, cycling for example. He will make sure the area is clear from any obstacles to make sure his brother will not fall” (Mrs. G).

“His cousins dump the toys in the living room and ask him to play together with them. He went and took some of the toys that he likes. He then brought it somewhere else and played by himself. Then, if he sees people laughing in the group, he went over to the group of his cousins to see what is going on. He explored why they were laughing. When the two of us are at home, I will hide at a

place and call him. Just to see if he will find me. He did. And when he could not find me, he started to cry” (Mrs. B).

Although some of the children had shown their interest to a particular person (such as close family members) in an inappropriate, immature way, the social behavioural changes were noteworthy for a child with ASD. For example:

“Maybe he wanted to say hi, that is his way of greeting people. When someone come to our house, he will go and smack that person, then he giggles. He tries to initiate a conversation but his way of interacting is not proper” (Mrs. B).

“I watched the television last night, he saw me preoccupied with the drama on the TV. He took the remote control and shut it off. Before this, he did not even care with what I was doing” (Mrs. E).

viii. Sub-category 8 – Improvements in children with ASD’s positive behaviour

Children with ASD also have been exhibited improvements in their behaviour including turn taking and sharing.

“Since we started engaging in the DIR/Floortime[®]-based activities with him, he plays together with his little sister. So, now he can wait [take turns] and share [toys]. He has improved in those behaviours. But, there are times he still cannot do it [taking turns and sharing]. His teacher at school said he will before this he just takes things from other people. Now, he can share it together with other students” (Mr. C).

“He can now share his toys with his younger brothers. Even at school, his teacher said he can now share things with his classmates. They can take turns and play together” (Mrs. G).

On the other hand, Mr. F reported that his son showed an interest to play with his younger sister although she did not want to. He shared the incident where he played the

‘smack-a-mole’ game with both of his children during his interview, *“I asked him to play with his little sister. He wanted to play with her because we asked him to. He gave her the mallet. But then, she did not want to play with him”*.

Not only that, the children with ASD also showed improvements in their cooperation with familiar people, and started to listen to instructions more often than prior to the DIR/Floortime[®] home-based intervention program being implemented with them. Mrs. C said, *“since we started spending more time with him, he is happier. He likes it. We are less stressed...to get his cooperation is easier now”*. Mrs. B shared the same response, and added that her son with ASD’s tantrums have decreased along with the improvement in his behaviour.

Meanwhile, Mrs. E reported that her six-year-old son with ASD did not only cooperate more; he was able to attend and finish the activity that was not to his liking, as her son usually would not even border to sit and try to engage in the activities that he was not interested in. She said:

“He cooperates more. He does not like to play puzzle, except the one he is already familiar with. For example, this new puzzle, usually he is not interested at all. He will stand up and leave. Now, he has an effort to start doing it, he sits down and continue doing it with us until finish. We just sit with him; we did not force him to finish it”.

- ix. Sub-category 9 – Improvements in children with ASD’s expression of positive feelings: *“he likes to smile”*

The last sub-category for the children’s improvements category is the expression of children’s positive feelings. Most of the parents reported that their child expressed more positive feelings since they started to engage in the DIR/Floortime[®] intervention with them. They showed that they were now enjoying playing either alone, with their

parents, siblings or other family members more and that they could express their emotions verbally and non-verbally (face and body gesture) more readily. Parents also reported that their child appeared to enjoy talking and interacting with them as well as enjoying their everyday life.

Mrs. B was happy to say that her son had improved positively since joining the DIR/Floortime® home-based intervention program. Her son was more cooperative, listened to instructions and his tantrums had decreased. He also seemed happier and he likes to smile. Similarly, Child C was also reported by his father to be happier because they spent more time with him.

Majority of the parent participants (Mrs. B, Mrs. C, Mrs. D, Mrs. E, Mrs. F, Mrs. G and Mrs. H) said that their child appeared to be happier and enjoys playing with others. For example, Mrs. D described her son's positive emotional improvement, "*he is happy; he is not stressed. He enjoys being with us, he enjoys playing. He likes to play with us, he laughs more and he enjoys playing with us*".

In addition, Mr. F also said that his son enjoys going to the pre-school which he just enrolled in towards the end of the intervention program. The child participants did not only seem happier; they also showed enjoyment in playing with their siblings and cousins including Child G and Child H.

b. Category 2 – Improvements and changes in parents' abilities and skills

This category describes the improvements in parents' abilities and skills. The semi-structured interviews conducted with parents asked them about any changes they perceived within themselves as well as in regard to their child. Parents reported several positive changes in themselves including increased skills and improvements in their skills, knowledge and quality of everyday life and more competence in completing the DIR/Floortime® home-based intervention program with their child. They also noticed

improvements in their interaction and play skills with their child with ASD. Parents also reported feeling more confident since their understanding and awareness of the importance of play for their child's development had increased. The improvements reported by parents were grouped into seven sub-categories: (i) play skills, (ii) engagement and interaction with children with ASD, (iii) social interaction with other people, (iv) knowledge about play, interaction and engagement; and (v) positive emotions, wellbeing, and sense of competence. Each of the sub-categories is reported in more detail below along with illustrative quotes from parent interviews.

i. Sub-category 1 – Improvements in parents' play skills

Parents of children with ASD reported that their play skills improved since initiating the DIR/Floortime[®] intervention program with their child at home. By incorporating the DIR/Floortime[®] home-based intervention principles at home, they have learnt and become more confident in applying the concepts and the DIR/Floortime[®]-related techniques. Parents reported that they have improved, they know how to play with their child, and are playing at home more frequently.

Mrs. B confessed during her interview that prior to joining the program, she had no idea how to attract her son's attention. After she had learnt the DIR/Floortime[®] intervention's concepts and techniques, she said she now has some ideas on how to attract his attention. She knows how and what to play to attract his attention and engage with him. Mrs. B also said that she did not know what his favourite toys were because he did not show any preferences before. However, after practising the following the child's lead technique, she figured out his favourite toys and that helped her engage in activities with him.

Similarly, Mrs. G said that she now knows how to play with her son since he used to play with his father instead of her. She said, "*now I know more on...how to play with*

children, with my child. Mrs. G has incorporated more play activities with her son at home compared to prior to joining the DIR/Floortime® intervention program.

The DIR/Floortime® approach emphasises on child-led play and parents should be actively involved in the activity without orchestrating the activity. This improved both Mrs. and Mr. E's play skills with their son. Mrs. E reported that, "*when he plays with puzzles, we just sit beside him; we did not push him [to complete the puzzle]*". In another occasion, she said that they took their child to a lake park to play and she was able to get herself and her husband to give him the chance to play freely without them telling him what he can and cannot do. Mr. E also said that his play skills have improved as he has now learnt the way to attract his son's attention. He said, "*when playing with him, I don't feel as stressed as before. Before this, to get his attention was difficult. Now, I don't feel stress to play with him...I enjoyed more playing with him*".

Mrs. F, Mr. F and Mrs. D all said that after participated in the program, they played with their child more. The more they played together with their child, the more they enjoyed playing. Mrs. D said it was because of her improved play skills. She said that she now knows how to engage with him while he was playing:

"...now I started parallel play first. I play on my own, he plays on his own [side by side]. At last, he will look at me, wondering what I am doing. I don't know how to engage with him [during play] before this, now I know. I am more relaxed and know when is the right time to engage with him [during play]".

Parents also said that they are overall more playful when completing other activities at home. Both Mrs. A and Mrs. B said that they were strict with their child prior to joining the DIR/Floortime® intervention program. Mrs. B said during her interview:

“Before this, I was stricter. Just straight forward said to him ‘you cannot play this, you cannot do this’, no childlike character. After I join the DIR/Floortime[®] [intervention program], then the fun part of me came out [becoming a playful person]”.

Other than becoming more playful, upon joining the DIR/Floortime[®] intervention program parents said they sometimes improvise their play skills. Parents reported that they are more flexible about the type of play activities their child engages in. Mr. F and Mrs. F used to play with their child with ASD and they said the program has made them become more creative and start to improvise their play activities. Mr. F said that they improvise their way of playing to help their son’s development and his wife use their son’s favourite activities to engage in activity with him. She said, *“he loves pretend cooking. Sometimes, when I baked cookies, we baked together”*.

Mr. E also said that he has become more flexible when he played with his five-year-old son with ASD. He now follows what his child was doing, becoming more like a child and it helped him engage with his son. He said, *“when he jumps, we jump. So, now we have become like a child [behaviour becoming more playful]”*.

Furthermore, parents also stated that their ability to use play activities to facilitate and provide learning opportunities has increased. As a working mother with three children, Mrs. A takes care of all the family and rarely plays with her children. Since her son with ASD has started going to school she feels the need to focus on his academic achievements and has been applying the same techniques as she had used before. Since joining the DIR/Floortime[®] intervention program, she said she has learnt and beginning to apply the ‘*learning through play*’ approach with him. Similar to his wife, Mr. A noticed that his child loved to play with pencils and he used it to create learning opportunity for him to learn the essentials of school and writing readiness such

as copying, drawing, writing and spelling. This is what he said during his interview regarding his improved ability:

“He likes to play with pencils. What I did was I took a piece of paper, asked him to draw on the paper. I search pictures online, held his hand and drew, then wrote down the name of the object under the drawing. But, he still wants to play with the pencil. At least we can turn his playing with pencils into learning how to write, or something like that” (Mr. A).

Mrs. C also used games and play activities to facilitate her six-year-old son’s learning and cognitive development as illustrated below:

“At home, we play games based on academic work. We understand that play is something like this [academic based], it does not necessarily have to use books, ...play...they can learn through play. When he plays, he thinks, ... his problem solving... All types of toys, anything that we found in the night market can be used as academic tools”.

Some parents also reported that the DIR/Floortime[®] intervention is a naturalistic approach and they were familiar with a more structured approach. Due to this reason, it has positively influenced how they play with their children. One parent, Mrs. D said the intervention approach influenced her way of playing with her nine-year-old son. She now plays with him anytime, anywhere he wanted to. She shared this during her interview:

“Whenever we have time, we play. It’s fun that way. We play in the car. Play is not necessarily I have to hold his hands and play [i.e. physical play]. Even talking is play. If he says something, I just follow him. That is also play. Whatever, whoever we are, we just use that. Play with my child. We just have to

be ourselves. Just see him play, I said 'hey, what are you doing?'. There is no need to plan''.

- ii. Sub-category 2 – Improvements in parents' engagement and interaction with their child with ASD

Parent participants practicing the DIR/Floortime[®] intervention's principles at home and noticed that their engagement and interaction with their child improved after a few weeks. Following the child's lead is the core concept of the DIR/Floortime[®] approach that was believed to be the key factor of understanding the child and enhanced child-parent interaction and engagement. Mrs. D shared that she now approaches her child with ASD in a relaxed way without forcing her way on him. She just sits beside him and plays; and that intrigued him, which encouraged him to start to look at what she was doing and eventually engage with her.

Mrs. C on the other hand, shared that she used to instruct her son to do what she wanted him to do. But now, she listens to what her six-year-old son with ASD is saying, although sometimes it does not make sense to her, she understands that it is what suits the child best. Having his mother listens to him, making the child enjoyed their engagement together and get more excited to interact with her. After that, he started to show to the parents what he can do, he talks to his parents and engage with them more. She confessed that helped her understand him better and improved her confidence to interact and engaged in activities with her son with ASD.

In addition to following the child's lead, the other underlying concept is the way of interacting with the child in a fun and playful way also helped parent-child interactions. This would make the child enjoy their engagement and sparked their interest in interacting with their parents. Mrs. B described this point during her interview:

“[Implementing] the DIR/Floortime[®] intervention at first is quite difficult because, first we have to study his behaviour, what he likes. Then, we joined his world, and we have to change our characterisation to be more childish...to match our child’s target development”.

iii. Sub-category 3 – Improvements in parents’ social interaction with other people

Parents’ social interaction with other people consequently improved with the improvements in their interaction and engagement with their child, as previously discussed. These improvements in their emotions and wellbeing will be discussed in the next sub-category. Parents reported that upon knowing how to engage with their child, they felt more comfortable to interact with them at other places than home. For example, Mrs. B said that she has not been visiting her old friends during the festive season for several years due to her four-year-old’s unpredictable inappropriate behaviours such as tantrums. She was worried that it would make other people feel uncomfortable, so she avoided engaging in social events with him. Mrs. B was happy to report this had changed, *“only this year festive season I got to visit my old friends. Before this, I just stayed at home”.*

iv. Sub-category 4 – Improvements in parents’ knowledge in play, interaction and engagement

Majority of the parent participants gladly shared that through their 14-week involvement in the DIR/Floortime[®] home-based program, they had gained new knowledge on how to play, interact and engage with their child with consideration of the child’s unique characteristics. Parents said that they learnt about it during the training session, but mostly during their engagement in DIR/Floortime[®] sessions at home and the clinic.

One mother participant, Mrs. B, reported that following her child's lead opened up the opportunity to learn about her four-year-old son and eventually engage with him more:

“Before the DIR/Floortime® [intervention program] I don't know... I didn't know how to attract his attention...the way I wanted to go into his world...I don't know. Then, after I joined the DIR/Floortime®, at least I have an idea...I understand that we actually wanted to get him to join our world. We have to join his world first, explore and study what he likes. Once my child starts to interact with me, he started to engage with me”.

Mrs. D also shared the same view as she described,

“Prior to the study, when he was playing by himself, I wanted to join him but I didn't know how. Sometimes when I joined in the play, he did not like it. Then, I learned how to, I started playing parallel to him. I used to feel stressed to engage in activities with him. Now, I am more relaxed, I know how and when is the right time for me to join him [in his play]. I am no expert, but I know more...”.

Meanwhile, both Mr. F and Mrs. F said that although they have been playing with their four-year-old son with ASD prior to this study, now they understand that play can help their child's development. They shared that they improvised their play to help his speech development as well as his social skills (with his younger sister).

Consequently, all parents agreed that their newly acquired knowledge and understanding related to play, interaction and engagement, greatly improved their skills, positive emotions, wellbeing and sense of competence.

- v. Sub-category 5 – Improvements in parents’ positive emotions, wellbeing and sense of competence: *“now, I can loosen up a bit”*

This sub-category describes parents’ positive emotions and wellbeing improvements. Parents reported that after seeing the changes in their child and experiencing improvements in their skills and knowledge; they have become happier, less stressed, more relaxed, and were enjoying the time they spent with their child.

Over half of the parent participants shared their feeling of happiness upon seeing their children happy. *“Seeing the child with ASD happy makes the parents happy as well”* were reported by Mrs. A, Mrs. B, Mrs. C, Mrs. D, Mrs. F and Mrs. G. In addition to that, Mrs. A said she was happy because her child with ASD can follow her way, while Mrs. B added she was delighted when her son cooperates with her.

After spending time engaging in the DIR/Floortime[®]-based activities with their child at home, parents were less worried and felt calmer knowing they have the abilities to help their child improve. Mrs. C said she was enjoying playing with her son more because she now knew what she was doing. She reported this during her interview:

“Playing with my child...I am enjoying it more. Before this I do not know how, so I ended up instructing him to do this and that. And I thought that is play, it is not! Actually, we do not have to do that. We should just play. No instruction, just do it together, play. Now, I am more relaxed. It does not have to be chaotic. I used to feel stressed to engage in activities with him. Now, I am more relaxed, I know how and when is the right time for me to join him [in his play]” (Mrs. C).

Meanwhile, Mr. F said that implementing the DIR/Floortime[®] intervention, knowing the purposes and the meaning of what they were doing, makes him feel calmer and relieved.

Mr. C stated that he feels like he and his son were together, engaged in each other's world. He did not worry as much as before, because he now had the skills and abilities to implement the intervention with his son using the DIR/Floortime[®] approach which can be done at anytime and anywhere. The same statement was provided by Mr. E where he said he finds himself less worried when his son with ASD was able to express his emotions. Mrs. B on the other hand reported that she is less stressed than she was in the beginning of the program. Seeing her son progressing makes her happy and relaxed that she can finally say, "*now I can loosen up a bit*".

In consequence to their positive emotional experiences, parent participants also gladly reported that their overall wellbeing had improved. One mother participants, Mrs. G explicitly said that her quality of life was enhanced because her seven-year-old child with ASD began to respond to her when they played. This positively impacted her because she was hardly engaged with him in play activities prior to the study.

Parents have also indicated that their sense of competency in interacting, engaging, and helping their children with ASD had developed. Parents have expressed that they are more confident to interact, engage and help their child because they understand their child better and have the knowledge about what and how to help their child with ASD.

During the parent's interview, Mrs. C mentioned that she feels more confident to engage with her child with ASD. She said that before initiating the DIR/Floortime[®] intervention, she always felt like they could not teach or help developed his skills without the guidance of another expert (e.g., therapist). But, after joining the program and implementing the intervention at home on her own, she feels more confident and feels like she can do it without major help from an expert. She even feels less worried if

they could not make it to their therapy session since she can implement the intervention needed to help her child with ASD at home. She said:

“We know more...how to play with our child. Before this, we instructed him to do this and this. We do not play together. If we have some issues, if we are busy, our child is unwell and are unable to go to the session [therapy], we are worried about that. Actually, we do not have to worry about it so much, because we can always do it at home. We can do it anytime, anywhere. We already know [how to play, engage in activities with child with ASD]” (Mrs. C).

Both Mr. F and Mrs. F always play with their son with ASD. However, they thought they were just playing with him because that is what parents do with their children. They solely relied on bringing their child with ASD to attend therapy sessions to help him. However, with their newly acquired skills and knowledge, they felt empowered and confident to help their four-year-old child with ASD as described in the following data extract:

“...we do not know the purpose, the meaning of what we were doing [play, interacting with child]. Now we know, okay, then we do not have to worry as much as we were before. Before this, we always think that if we wanted our child to improve, we must go for therapy session. After we join the program [DIR/Floortime[®]], we know that it is not necessarily. We can do it at home...we know...we can always do it at home, we can improvise what we already know and have [skills]. We are more empowered. We can control...” (Mr. F).

For Mrs. H, the knowledge she gained from the DIR/Floortime[®] training program and the period of time she engaged in the DIR/Floortime[®]-based activities at home with her four-year-old son with ASD made her feel more competent in helping him. She said that by attending the follow-up visit sessions, the feedback she got was helpful so she

knew what she was doing was right, which made her feel relieved and confident. She said,

“...at least...I...am not stressed. I know what to do. At least, I know something whether it is right or wrong. At least, I can help him. I am more competent. I can help him in terms of his communication, what he should be doing, so we have knowledge. We can help. Before this I have a lot of questions, what do I do?”

5.5.5 Theme five – Parental views and suggestions about DIR/Floortime[®] intervention program

The DIR/Floortime[®] intervention program was divided into several phases – pre-intervention, intervention and post-intervention. In the pre-intervention phase, parents were provided with two training sessions relating to the DIR model and the Floortime[®] intervention approach. The intervention phase consisted of the home-based DIR/Floortime[®] sessions provided by parents with their child with ASD for eight weeks. Follow-up appointments at the clinic were scheduled every two weeks during the home-based intervention period where child-parent free play sessions were recorded, parents’ reflective journals were collected and parents’ coaching sessions were conducted. This theme describes parental opinion about the DIR/Floortime[®] intervention program and several factors that parent participants reported could help improve the program. Parents opinions and suggestions on the main part of the study are discussed in the following two categories, respectively.

The first category explains in detail parental perceptions on several main parts of the study: (i) parents self-report questionnaire, (ii) parent’s reflective journal, (iii) follow-up sessions, and (iv) the time requirement of DIR/Floortime[®] engagement at home. Meanwhile, the second category describes parents’ suggestions on improving the DIR/Floortime[®] home-based intervention program including the parents training session, the monitoring system,

engagement in the DIR/Floortime[®] intervention-based activities at home and the follow-up session.

a. Category 1 – Parents’ opinions on several parts of the study

i. Sub-category 1 – Parents feel bored to fill out the self-report questionnaires

Parents completed the self-report assessments once in each of the study’s phases. All three assessments were in Malay language which is the primary language of all parent participants. They were given time to complete the assessment at the end of the session or to be completed at home at their request in case of shortage of time. Most of the parents brought the assessment home for them to complete and handed it over during their next session. Mrs. D on the other hand, usually completed the assessments at the end of the session as she did not want to risk forgetting to bring it back during the next session. However, she confessed that she often completed the assessments quickly because she wanted to get it done as quickly as possible. She also adds that she did not really like to complete the assessment as it has a lot of questions and she often got bored while completing it.

ii. Sub-category 2 – Parent’s reflective journal

Parents have said that by completing the reflective journal every week, it helps them to play more with their children with ASD. However, parents also voiced their concern with filling out the reflective journals because of several reasons including having a lot of work and house chores to be completed, having some issue of deciding how to- and what to write in the journal as well as forgetting to fill it out. Parent participants also mentioned during their interviews that they engaged in the DIR/Floortime[®]-based activities with their child spontaneously at home and it was difficult for them to write it in the journal. They said, they could not fill it out immediately and put it on hold to do it after they had completed all their chores.

Unfortunately, they often forgot what they had done at the end of the day and ended up leaving it blank or simplifying the entry which they think did not convey the real picture of what they were doing at home. One of the mother participants also said, sometimes she forgot to fill it out as she was wrapped up with the household chores.

iii. Sub-category 3 – Follow-up sessions

Follow-up sessions were conducted at the clinic once every two weeks. Most of the time, the sessions lasted for 45 minutes to an hour, but was longer during the sessions that involved parents self-report and child participants' pretend play assessments. Majority of the parent participants said the frequency of the session, once every two weeks is reasonable to see their children's improvement. It also gives parents some time to practice and improve their technique based on the feedbacks and comments they got from their previous session. For working parents, they said it was manageable for them to arrange their meetings and their child's appointments with several health services they received.

iv. Sub-category 4 – Time requirement of DIR/Floortime[®] engagement at home

Participants were asked to engage in the DIR/Floortime[®] intervention-based activities at home for a minimum of ten hours per week. They could engage in the DIR/Floortime[®]-based activities per their convenience, at anytime and anywhere. Only few participants were able to complete the minimum time requirement, but they have reported that initially, it was stressful for them to complete. This was because of the perceived extra work they had to do to engage in the DIR/Floortime[®] intervention at home with their children with ASD. However, parents confessed that eventually they did not feel as stressed once they were familiar with the intervention approach and could see the changes in their child.

b. *Category 2 – Parents’ suggestions for improvements of the DIR/Floortime® home-based intervention program*

i. *Sub-category 1 – Parents’ suggestion on the objectivity of parents training session during intervention phase*

Parent participants expressed the challenges they faced and the benefits they gained when implementing the DIR/Floortime® intervention with their child with ASD. They also provide suggestions that they thought could improve their effectiveness in implementing the DIR/Floortime® intervention including improving the objectivity of parents’ training. Although the training provided to parents included the DIR/Floortime® intervention’s concepts and techniques accompanied with several examples about how to do it, with few examples of how to manage behavioural issues, parents perceived that it was not enough. Parent participants indicated they should be trained to use the DIR/Floortime® approach so that it specifically related to their child with ASD’s issues and parents’ goal relating to their child’s development since the training they attended only provided general information without addressing the specific issues relevant to each participant.

Mr. A has raised his concern regarding the effectiveness of the DIR/Floortime® intervention approach in helping him overcome his son’s tantrums. So, he and his wife suggested that the training should be conducted in a manner that parents are trained to overcome their child participant’s issues or problems as well as their goal for the child. The following data extracted from their interview:

“...maybe...the objective can be specific for tantrums. I do not know how to.... maybe we could tailor the DIR/Floortime® specific to his problem [e.g., tantrums]. So, it can be specific and measurable. Instead of it being general [parents training

session on DIR/Floortime®]. What to do, make the program...DIR/Floortime®, suits the child's problem. Other parents may have different problems from us...".

Mrs. E suggested that during the training, the researcher could provide an example of a case that is similar to the child participant's issues or problems as it would be a useful reference for them. This is what she said:

"...if during the training there are some sample videos of a child whose developmental stages [issues] is the same as my child, that would be good. Then we can make it as our reference on how to do it [DIR/Floortime® intervention]".

Some parents also suggested that during the training sessions, more instructions about basic practical management skills should be provided for parents before they start implementing the DIR/Floortime® intervention at home with their child with ASD:

"...show some videos and then we have to do it [during the training session] ... father plays together with the child. There and then, correct the father's technique [before parents implement at home with child with ASD]" (Mrs. C).

"...practical, internal practical before we went out [implement at home]" (Mr. E)

"...maybe can try providing us with hands-on [practical], how to play, suggestions on how to play with toys... increase the hands-on activities during the training" (Mrs. F).

- ii. Sub-category 2 – Parents' suggestion about increasing the number of instructional sample videos provided during parents training session

During training sessions, several sample videos were presented to the parents including videos of the DIR/Floortime® sessions conducted by parents and videos of several activity suggestions for parents. However, according to parent participants' interviews, the number of videos that were included were not enough and the number and range of videos available for parents to view should be increased. Mrs. C said that

the researcher should show more videos showing the specific DIR/Floortime[®] recommended techniques so parents would be able to remember how to do it instead of just listening to the technique being described. She also said videos of suggested activities to be engaged with children with ASD and some kind of instructional video might be helpful:

“...show us, provide us with more videos of activities with children. How to play this, and then change it to play another activity. Sometimes we could not think of how to do that...provide us with sets of videos on how to do DIR/Floortime[®] at home. Provide us with videos of parents engaging in DIR/Floortime[®] intervention with their child with background comments on the techniques, activities, suggestions...” (Mrs. C).

Mrs. E also shared the same thought and she added another suggestion based on the training she previously attended that she thinks would be very helpful. She suggested that during the training program, the researcher could give the participants instructional or sample video of activities or techniques that can be used with children for each level of development proposed by the DIR/Floortime[®] approach:

“Videos that shows how to do it [engage in DIR/Floortime[®], technique]. Because sometimes the approach is different with the others. For example, in the Hanen [intervention approach for speech therapy] program they provide us with videos for each level. What to do in each level, it is quite specific”.

iii. Sub-category 3 – Parents’ suggestions for improving the monitoring system:

“online monitoring system”

Parent participants were provided with a reflective journal each week for them to report their daily engagement in the DIR/Floortime[®] intervention at home including the activities and duration of the activities as well as any comments or issues that they

faced when implementing the DIR/Floortime[®] sessions at home. This was done to monitor how participants implemented the intervention as well as to help parents improve their skills when engaging in the DIR/Floortime[®] intervention with their child. The journal was collected during their follow-up sessions and a new one was provided. Some parents viewed that the monitoring system can be improved to help enhance their skills and abilities. This included using an online monitoring system and changing the setting of the follow-up visits. Examples of participant quotes illustrating these ideas are below:

“...maybe the journal can be changed to online. Use the diary system, like the planner so we can share it online. It would be easier to monitor. So, you don't have to wait for the next follow-up session to collect the journal. You can straight away provide any suggestion to me to improve...” (Mrs. G).

“writing in the journal, I have some difficulties doing that. We play a lot with our child at home, a lot. A lot to write in the diary. So, we just report the major thing we did at home. For me to record the video at home...it is a bit difficult. Because we do not plan what or when do we want to play, it is spontaneous. I don't mind if you come and observe us at home. Because I have a lot of toys at home and my house is near to a playground. But, it depends on the individual...” (Mrs. D).

- iv. Sub-category 4 – Parents' suggestions on providing guidelines and an activity book to improve parent-child engagement and implementation of the DIR/Floortime[®] principles at home: *“if we have a book, that would be better. DIR/Floortime[®] guidelines, how to... and a book of set of activities”*

Parents were provided with printed notes and information about the DIR model and the Floortime[®] intervention approach as well as a list of suggested reading materials including articles, books, websites that they can visit, and videos available

online. All the materials were provided as additional references for the parent participants to assist them in implementing the DIR/Floortime[®] intervention at home. Parents reported during their interviews that the additional reference material was helpful, but in addition to the materials that were provided, they needed an extra reference source – a book consisting of suggested activities or guidelines about how to actively engage in and implement the DIR/Floortime[®] intervention. Data extracted from the interviews describing this request for further references are as follows:

“...notes that focuses more on each of the techniques, if we have a book, that would be better. The DIR/Floortime[®] guidelines, how to... and a book of set of activities that can be done with children. Because, we cannot play the same thing [repeatedly]...” (Mrs. C).

“...if we have a book, a booklet...about the DIR/Floortime[®]. Suggestion of activities to be done with children at his level [child with ASD’s developmental stage]. So, parents can follow it because sometimes we chose an activity that is not appropriate for his level [skills], then it will not work out. So, if there is a guide. Just a simple guideline” (Mrs. E).

- v. Sub-category 5 – Parents’ suggestions on receiving comments on the parent-child free play video during the follow-up sessions

During the follow-up sessions, parents were asked to play with their child with ASD while being recorded for 15 minutes. During the recording, the student researcher only observed the child-parent interactions during the play without commenting or giving suggestions. The videos were shown to the parents during the de-briefing session after the parents’ interview. The student researcher showed the most significant moment and discussed it with parent participants. Parents also suggested that the video

recording of them playing with their child with ASD should be shown to them along with feedbacks at the end of each session.

This would be another opportunity for them to see visually what strategies worked and what they should continue to work on. One of the mothers, Mrs. H said that during her interview, *“show back to us the video, then you comment on that. So, we know what should we work on, how to improve. Because I don’t know what am I doing, so you can comment whether it is right or not”*.

- vi. Sub-category 6 – Parents’ suggestion on receiving specific activity suggestions during the follow-up sessions

Parental coaching sessions were conducted during the follow-up clinic visits every two-weeks where the researcher provided feedback about the issues that the parents had reported during the session. Parents were coached and provided with feedback while they were playing with their child with ASD (after the first 15 minutes of playing that was recorded). Parents stated that the coaching sessions helped them improve their skills and confidence. They reported that the coaching sessions were also a good opportunity where suggestions were provided that assisted them to improve the repertoire of strategies to trial during subsequent DIR/Floortime[®] sessions with their child at home.

Although parents have said that it was helpful, they also recommended that the comments should be provided more frequently, and should be on the spot during their engagement in play activities with their child with ASD instead of after the play activity. One of the parent participants, Mrs. F said that the student researcher could also suggest a specific activity that parents can engage with their children with ASD which helped with the child’s specific issues at the time (e.g., develop child’s understanding direction [up and down] via jumping on a trampoline).

In addition to the coaching during the follow-up visit session, Mr. F suggested that additional coaching sessions would be very helpful for the parents. He suggested that the session should be separated from the follow-up session with only the parent participants present without their child with ASD. He said this during his interview:

“more often you provide your feedback is better. It is not necessarily during follow-up session. We can come for a session just for parents only, without our child. Then you can explain our child development, feedback on our implementation, what should we change...because we can concentrate better without the child around...”.

Majority of the parent participants said they were fine with the frequency of the follow-up session. However, one of the mother participants suggested that if the session was conducted once a week, it would be better as parents could see the improvement of their child. She also recognised that working parents probably might have difficulties to attend the once-a-week follow-up session because of time commitment issue as reported by other parents.

Overall, based on parents' interviews, the parent-mediated home-based DIR/Floortime[®] intervention promotes changes in child-parent interactions, child with ASD and parents' skills development and psychological wellbeing including social, communication and play skills. The interviews also revealed that it is feasible for parents to implement the intervention at home although they reported some challenges when implementing it.

In the next chapter, the quantitative and qualitative results will be integrated and discussed in regard to the impacts of DIR/Floortime[®] intervention on children with ASD and their parents, its practicality among the families in this study's sample as well as the feasibility of further implementation of the DIR/Floortime[®] intervention program in the Malaysian context beyond the context of the current study.

Chapter 6

Discussion

6.1 Introduction

In this chapter, both quantitative and qualitative results are integrated and discussed in detail. This chapter is divided into three main sections, starting with the benefits of the DIR/Floortime[®] home-based intervention on parents and child with ASD participants. This includes the direct impact of the DIR/Floortime[®] intervention program on child-parent interactions; parents' outcomes including quality of life, psychological wellbeing and sense of competence; as well as children with ASD's pretend play. In addition, the intervention's indirect impact on parents and children with ASD including their knowledge, skills and capabilities will also be discussed. Since the study is the first to utilise the DIR/Floortime[®] intervention approach in the Malaysian context, its practicality is discussed in regard to the time requirements, the Malaysian cultural context, intervention-related costs as well as availability of resources. Following that, the continuation of implementation of the DIR/Floortime[®] intervention in Malaysia is also reviewed in detail.

6.2 DIR/Floortime[®] – Is it beneficial?

This study investigated the impacts of parent-mediated, home-based DIR/Floortime[®] intervention program on child-parent interactions, parents' quality of life, psychological wellbeing and parenting competence as well as children with ASD's pretend play. All study's objectives were measured quantitatively from video-ratings of child-parent interactions, parents' self-report questionnaires (quality of life, wellbeing, parental sense of competence) and ratings of children's pretend play; as well as qualitatively via parents' interviews. In this section, the findings are discussed in relation to how the DIR/Floortime[®] program has been helpful for both parents and children with ASD. The positive impact of the DIR/Floortime[®]

model was evaluated from quantitative findings with complimentary information from parents' reports as well as the researcher's observation notes of the follow-up sessions. Throughout the section, parents' quotes from their interviews will be used to illustrate examples and supported the discussion. From the interviews, parents perceived that the DIR/Floortime[®] intervention program was beneficial for several reasons. In the following subsections, the impacts of the DIR/Floortime[®] model for each study's objective will be discussed in further detail.

6.2.1 Impact of the DIR/Floortime[®] home-based intervention on child-parent interactions

Child-parent interactions were assessed via multiple observations of child-parent free play sessions during the pre-intervention, intervention and post-intervention phases. Four types of interaction episodes were observed and rated by two independent raters – (i) the parent-initiated directive communication (PI-D), (ii) parent-initiated non-directive communication (PI-ND), (iii) child-initiated directive communication (CI-D), and (iv) child-initiated non-directive communication (CI-ND). The frequencies of each interaction were visually and statistically analysed and these quantitative results are integrated with what parents reported in their interview. This will be discussed further below.

a. Parent-initiated interaction

The DIR/Floortime[®] approach is based on following the child's lead, hence, parent-initiated directive communications (PI-D) are expected to decrease with the implementation of the DIR/Floortime[®] intervention. The visual analysis showed that half of mother participants' (n = 4) frequency of PI-D significantly decreased from the baseline phase to the intervention phase. Meanwhile, the statistical findings indicated that the DIR/Floortime[®] intervention program contributed to a decrease in the number of mother-initiated directive communication episodes (very effective = 2; moderately effective = 2; questionable effective = 1; not effective = 3). Father participants' interactions did not show any significant

differences between the baseline and intervention phase. However, the frequency of all of the fathers' initiated directive communication episodes increased.

On the other hand, the PI-ND episodes of both mother and father participants were found to have not significantly improved with the implementation of the DIR/Floortime[®] intervention program at home. The DIR/Floortime[®] intervention program was found to have little to no effect since only one mother-child interaction increased in its frequency. None of the fathers' interactions were found to have significantly increased with the implementation of the DIR/Floortime[®] intervention. However, two fathers and mothers' frequencies of non-directive communication did surpass their baseline frequencies.

Although not all cases were found to have significantly decreased in number, the frequency of PI-D episodes (n = 5 mothers) and only one mother's interactions demonstrated an effect on increasing its frequency. However, almost all parents reported that their interactions with their children had changed for the better. Findings of the qualitative analysis suggested that parental changes occurred for two reasons. First, the training and coaching sessions provided parents with an understanding about the interaction styles that best facilitated children's development, and second, the parental perception of the benefits of the DIR/Floortime[®] intervention in supporting children's development.

During the interviews, parents described that after attending the parents training sessions, implementing the DIR/Floortime[®] intervention at home and receiving input from the researcher during the coaching sessions, they had become less directive when they interacted with their child with ASD. They also reported that they tried as much as possible to follow their children with ASD's interests and lead when engaging in activities with them. For example, one of the mothers, Mrs. C was observed (by the researcher) instructing her son with ASD to engage in certain activities or to play with certain toys during their pre-intervention sessions. Sometimes when Child C expressed his interest in engaging in another

play activity, she sometimes went along. However, she always dictated what he should do. Later, during their follow-up sessions, her interaction style was observed to have significantly changed. She started actively listening to him expressing what play activities he wanted to take part in, observed him play and started joining his play while asking him how should they (her husband and herself) play with their son. This led to Child C describing the activities he engaged in. Mr. C also mentioned that he had also modified his style of interacting with his son that resulted in a more fun and enjoyable mutual play experience.

The measures of parents' directive and non-directive interactions used in this study are similar to parental responsivity scales used in several studies (Kim & Mahoney, 2004; Shire, Gulsrud, & Kasari, 2016). Responsive parenting interaction style is described as parents noticing children's cues and changing their interaction according to the children's interests, speech and non-verbal communication (e.g., body language, facial expression), with limited redirection from child to parent's interests and parents' initiative to control the interaction (Mahoney & Perales, 2003; Shire et al., 2016). The findings in the current study suggested that parents were able to change their interaction style by being less directive in their actions, or becoming more responsive when they interacted with their child with ASD after becoming familiar with the DIR/Floortime[®] intervention principles.

The results are consistent with findings from previous studies that adopted parent-mediated intervention strategies where it has been shown that it can facilitate and increase parents' responsive behaviours (Ginn, Clionsky, Eyberg, Warner-Metzger, & Abner, 2017; Liao et al., 2014; Shire et al., 2016). It was found that since parents have spent a considerable amount of time implementing the suggested techniques associated with the DIR/Floortime[®] approach, the frequency of their directive interactions decreased. Furthermore, parents also reported that the comments and suggestions provided during the coaching sessions were

helpful in altering their behaviour. This corroborated the findings reported by Shire et al. (2015, 2016).

The structure of the current intervention study included follow-up sessions where parent's engagement in free play activities with their child with ASD were recorded to assess the changes in child-parent interactions. During each visit, a coaching session was conducted after the child-parent play recording. Parents were provided with feedback related to their interaction with their child from the researcher. Parents also discussed with the researcher any issues they encountered while engaging in the DIR/Floortime® program activities at home with their child. Most of the time, parents were asked to continue engaging in activities with their children during each session and the researcher then provided suggestions and demonstrated to the parents how to improve their interaction and level of engagement. Parents mentioned that this was helpful and informative for them in modifying the way they interacted with their child.

This was evident from the parents report as illustrated by this quote from Mrs. H's interview, *"I like the comments sessions, we [parents] don't really know much, so when [researcher] give comments, we know if it's right or wrong for us to practice at home"*. Similarly, both Mrs. and Mr. F also shared that the input they received assisted them in evaluating their interaction skills and obtaining suggestions on how to improve their skills.

In a similar study, Schertz and Odom (2007) reported that parent participants were able to engage in activities promoting children's interactions through coaching sessions. In this current study, comments and suggestions provided to the parent participants were tailored to the observation of child-parent interaction, as well as issues that parents discussed with the researcher.

Since the intervention program structure involved training sessions (pre-intervention phase) and coaching sessions (intervention phase), a specific outline of child-parent

interactive-type activities were not provided. However, a few parents had expressed that it would have been more helpful for them to engage in the DIR/Floortime[®]-based activities at home if they had been given a specific plan to follow. The training and coaching sessions were conducted in a less specific manner since receiving training, coaching, feedback and suggestions were believed to promote parents taking on a more active role in exploring the child's world. It also assisted parents with planning and implementing the best way of interaction and activity that helped to nurture children's development (Schertz & Odom, 2007; Shire et al., 2015).

This was one of the primary concerns that was taken into consideration when coaching and training sessions were created. The study was designed as such so parents could be the main planner and implementer of intervention activities that best suit them and their children in their day-to-day, real life context. This is because although the importance of parent-mediated interventions with children with ASD has been acknowledged, implementation of these types of programs in real-world practice settings is not common practice (Dingfelder & Mendell, 2011). Therefore, by encouraging parents to be the main planner and implementer with professional supports via coaching and training, parents could continue the activities after the end of the formal study (Stahmer et al., 2017).

The DIR/Floortime[®] model has also been recognised in assisting parents to modify their interaction style from being parent-centred to child-centred where parents were encouraged to be more playful with their children on their level. The changes resulted in a productive and enjoyable child-parent interaction and engagement. Although parents deliberately decreased their directive communication when interacting with their children, they kept in mind the goals of the engagement in the activity (e.g., learning a new concept, learning new words). Both Mrs. A and Mr. A acknowledged this during their interview reporting that their six-year-old son with ASD got easily irritated when they required him to

do something they wanted, which usually resulted in him having a tantrum as illustrated below:

“As long as we don’t badger him too much, we just go with the flow [follow the child], but we still keep in mind what we want. Our way [change] from strict to playful, so he becomes happier. When he is in a good mood [happy], he would be more productive, he could follow our instruction”.

Meanwhile, Mrs. E also stated that she used to be stricter and more structured in her interaction style with her six-year-old son with ASD, but this changed when she participated in the study. Mrs. E shared that one of the reasons she changed her parenting interaction style was to help keep her son to remain calm and engaged in the activity. This was because he got easily frustrated when he failed to do something successfully or follow his parents’ instructions and would then disengage from the activity or his interaction with his parents.

Reports by parents are similar to findings from Ginn et al.’s (2017) study that utilised Parent-Child Interaction Therapy (PICT) (Bagner & Eyberg, 2007). The PICT is a parent-child interaction and relationship focused approach and it involves a parent training intervention that consists of two phases, child-directed and parent-directed phases. Bagner and Eyberg’s (2007) study involved 30 families of children with ASD where parents were trained to increase parental warmth and improve parent-child relationship. Intervention’s efficacy for improving both parents and children’s functioning was evaluated. The study found that negative maternal leading behaviour (or in this study referred to as parent-initiated directive communication [PI-D]) mediated changes in children’s behaviour. It is known that children with ASD have difficulties in their expressive language and social interaction, and by placing excessive demands on them, the parent could easily overstimulate their child. This is because it requires the child to process language information and plan an appropriate response in a timely manner. Overstimulation often leads to negative behaviours such as

tantrums or emotional outbursts of anger and frustration which then disrupts the engagement. Hence, reducing the parents' levels of initiated interaction would be helpful in facilitating children with ASD's engagement (Ginn et al., 2017).

Parent participants' perspectives on the benefits of the DIR/Floortime[®] intervention program also suggested that it influenced changes in parents' interaction style. From the analysis of the parents' interviews, six of the eight parent participants mentioned that they believed one of the benefits of the DIR/Floortime[®] intervention program was that it helped develop and improve their interaction and quality of engagement with their children. Of the six parents, three of them also showed a decrease in the frequency of directive communication with their children.

One mother, Mrs. D's frequency of initiated directive communication was found to show a significant decrease and that the intervention was very effective in decreasing the number of her episodes of directive communication. Complimentary to the data obtained from her child-parent interactions, Mrs. D also reported several positive elements during her interview including the perceived benefits of the DIR/Floortime[®]-based intervention for child-parent engagement and her fondness of engaging in DIR/Floortime[®]-related activities with her nine-year-old son.

It has been suggested that when parents view an intervention as being valuable to promote their children's development, they were more likely to try to implement the intervention approach by applying suggested techniques and changing their behaviour as recommended (Kim & Mahoney, 2004). Most parents of children with ASD were not accustomed to an intervention that placed them in a central role, particularly in Malaysia where more therapist-based interventions are utilised (Ginn et al., 2017; Kadar et al., 2015). Currently, Kadar et al. (2015) is the only study that has investigated Malaysian occupational therapists' practices with children with ASD. From the study, Kadar et al. (2015) determined

that most occupational therapists working with children with ASD in Malaysia reported that they have always worked with parents or caregivers in delivering therapy interventions.

However, the majority of participants (i.e., occupational therapists) indicated that they used sensory-based approach interventions such as sensory integration training or sensorimotor training, but no one mentioned the use of parent-mediated interventions or similar interactive-like services. Despite being unfamiliar with this type of intervention approach, it is encouraging that the findings of the current study suggested that parents from a Malaysian context could learn and adapt the techniques suggested and actively implement the parent-mediated, developmentally grounded, trainer guided intervention. The implementation has successfully improved their children with ASD's behaviour as well as their own interaction style.

b. Child-initiated interactions

Despite the frequencies changes observed in parent-initiated interactions, changes in child-initiated interaction were not as forthcoming or obvious. The child-initiated directive communication (CI-D) episodes were rarely observed, only three children were observed on one occasion throughout the seven sessions to exhibit this type of communication pattern. It was possible it just occurred by chance. Meanwhile, based on the two standard deviation bands analysis, one episode of child-initiated non-directive communication (CI-ND) with his mother was found to show significant improvements from baseline to intervention phase. With the implementation of the DIR/Floortime[®] intervention, the same participant and another participant's scores (Child E and Child G with their mothers) were found to have a moderate intervention impact to increase the frequencies of child-initiated non-directive communication episodes.

Although the findings of both visual and statistical analysis indicated that the majority of child participants who initiated directive and non-directive communication did not

significantly change with the implementation of the home-based DIR/Floortime[®] intervention, parents reported otherwise. Most parents reported that upon changing their way of interacting with their children with ASD, they observed positive changes in their children's interaction with them. For example, both Mrs. C and Mr. C said, "*we can see that our child connects with us more, he was more alert with us. [We] follow him, so he becomes more excited to talk to us, he showed us what he can do...he communicates with us more*".

Most parent participants gladly reported that their children with ASD communicated verbally and non-verbally with them more during their daily activities and play sessions. A four-year-old boy with ASD was reported to have teased his parents repetitively during his daily shower time. His father, Mr. F shared this during the interview, "*sometimes, when we wanted to get him to go take a shower, he will run away pretending as if he does not want to [shower]*". Both Mrs. F and Mrs. D also said that after they practiced following their children's lead when they interacted with them, their children started to ask them to play together more frequently and voluntarily greeted and hugged them at home more than before they participated in the study.

A similar finding was also reported in a study conducted by Casenhiser, Shanker and Stieben (2013). Casenhiser et al. (2013) used a similar intervention approach as in this current study also reported that children with ASD exhibited a greater involvement and enjoyment in their engagement with their parents by the end of the intervention program. Although only findings based on parents' reports revealed this improvement, it is similar to previous studies. The findings on children's social outcomes were mostly based on data from parents reports (Aldred, Green, & Adams, 2004; Keen et al., 2010).

Parents' claimed of the association between parents' responsiveness and children's social skills development is supported by findings of Casenhiser et al. (2013), Kim and Mahoney (2004), Mahoney and Perales (2003) and Shire et al. (2016). Although previous

studies have reported that children's engagement was correlated with maternal responsiveness, however, the direction has yet to be confirmed (Casenhiser et al., 2013; Shire et al., 2016). Improvement in children's communication is commonly noted with changes in their engagement. Parents' reports are consistent with findings from previous studies (Casenhiser et al., 2013; Kasari et al., 2010; Kim & Mahoney, 2004; Solomon et al., 2007). This is due to the predictive link between social interaction and language development (including verbal communication) as indicated by Casenhiser et al. (2013).

The analysis of the frequency of Circle of Communication (CoC) episodes for all four interaction styles did not demonstrate any major improvements for parents or their children with ASD. This is probably due to the clinic setting where the interactions were observed. Parents mentioned that it was challenging for them to engage in the DIR/Floortime®-based activities at the clinic mainly because their children got easily distracted in the intervention room. The room had a number of toys and it made them keep switching from one activity or toys to another. Parents also said that their children with ASD liked to explore the room since it was a novel environment for them.

Children's exploring behaviour is good for their development and it is a great opportunity for parents to follow their children and learn what they liked. However, parents perceived this as a challenge for themselves. It has been shown that mother typically displayed higher negative parenting approaches due to their children's problem behaviour (Blacher, Baker, & Kaladjian, 2013). One of the parents also mentioned that she wanted the engagement in the DIR/Floortime®-based activities with her child to be successful (e.g., her son playing together with her). When he was not responsive, she would start to instruct him to do something to get his attention and engage in activities. One parent was recorded saying, *"before this, [I] just instruct him. Because we attended a seminar and was taught that children have to follow instruction. We have to firmly instruct him"* (Mr. E).

It is not surprising that parents believed that they must use a directive interaction approach to get children to do something that the child may refuse or did not know how to do for the child to engage and learn to do it, as several authors have also reported the same opinion (Kim & Mahoney, 2004; Stahmer et al., 2005; Wong et al., 2014).

Parents also reported that the clinic environment is “*too official*” which parents perceived to be challenging for them to follow their child’s lead. This is because of their child exhibiting inappropriate social behaviours and parents perceived that they have to act in a certain formal manner and adhere to social expectations which affected parents’ interaction with their child. Parents tended to instruct their children so they would do something or behave in a manner that was perceived to be more socially appropriate. It was reported that mothers usually used controlling or directive behaviours with their children especially during episodes that involved interaction difficulties (Blacher et al., 2013).

Although parents were asked to play freely in the clinic with no formal set of instructions or activities to be followed, some parents in this current study reported that they perceived the clinic as a structured, formal environment and that affected their interactions with their child. This has also been suggested by Blacher et al. (2013) where it was found that maternal negative parenting was consistently higher in structured settings.

The quantitative analysis of the frequency of CoC occurring did not show all interactions improved with the implementation of the DIR/Floortime[®] intervention, however, parents reported both their children’s and their own interactions improved. With the quantitative findings and parents reports, the DIR/Floortime[®] intervention program does appear to have some benefits for child-parent interactions. It appeared to reduce the frequency of occurrence of episodes of parental directive communication and increase the instances of children with ASD’s initiating communication.

6.2.2 Impact of the DIR/Floortime® home-based intervention on parents' quality of life, wellbeing and sense of competence

Overall, the wellbeing of parents improved with the implementation of the DIR/Floortime® intervention program at home. The descriptive analysis of the Bahasa Malaysia Depression Anxiety Stress Scale 21 item (BM DASS-21) indicated that the majority of mothers reported a decrease in self-reported maternal depression and anxiety while their stress levels increased or remained unchanged at the end of the intervention program. On the other hand, most of the fathers reported decreased levels of anxiety while their depression and stress levels appeared to increase. However, qualitative analysis of parents' interviews revealed otherwise. Although parents did not explicitly report that they were feeling less depressed or anxious, they shared that they had been feeling happier, calmer, relaxed, less worried about their children, and feeling less guilty.

Contrary to the self-reported BM DASS-21 scores, more than half of parents said they were experiencing less stress during the qualitative interviews. These findings concurred with previous studies that indicated that parental depression, anxiety, and stress levels of parents decreased with the implementation of parent-mediated intervention (Estes et al., 2014; Keen et al., 2010; Keenan, Newman, Gray, & Rinehart, 2016; Liao et al., 2014; Patra, Arun, & Singh Chavan, 2015; Solomon et al., 2014; Stadnick, Stahmer, & Brookman-Frazee, 2015; Stahmer et al., 2017; Tellegen & Sanders, 2014).

Both Liao et al. (2014) and Solomon et al. (2014) utilised a DIR model-based intervention implemented by the parents of children with ASD. In Solomon et al.'s (2014) randomised controlled trial, two groups of parents of children with ASD participated in the one-year home-based intervention study. One group only received the usual community service intervention and another group received both DIR-based, PLAY (Play and Language for Autistic Youngsters) intervention and the usual community service intervention. Parents

in the PLAY intervention group received the PLAY Project DVD that consisted of the PLAY principles, methods, activities and techniques and the written materials describing the DIR developmental stages prior to the first home visit, and were encouraged to review it. Then, PLAY consultants trained parents on how to implement the intervention with their child with ASD through coaching, modelling and video feedback of child-parent interaction during the 3-hour monthly home-visits for 12 months.

Parents in Solomon et al.'s (2014) study implemented the intervention for an average of 10 hours per week. Parental psychological wellbeing was measured pre- and post-intervention using the Parenting Stress Index (PSI) and the Centre for Epidemiologic Studies Depression Scale (CES-D). The ordered logistic regression analysis showed that both groups' parenting stress level decreased over time but no significant difference existed between the groups. Meanwhile, PLAY group's parental depression significantly decreased more than the community group at the end of the intervention period.

In another study, an intervention which was developed based on the developmental model, the Project ImPACT (Improving Parents As Communication Teachers), also demonstrated that parental stress reduced following the 12-week of weekly parents' coaching session and curriculum supporting the use of the strategies to facilitate interaction skills (Stahmer et al., 2017). Through parents' reports, majority of the parents said that they felt less stressed upon completion of the intervention and one of the factors contributing to their reduced level of stress was the improvement in their children's behavioural problems. In a similar study, Stadnick et al. (2015) also showed a decreasing trend for both parental stress and depression while the children's social and communication skills demonstrated an increasing trend after the intervention ends.

Parents reported that they associated their positive feelings with their children with ASD's behavioural improvements. For example, six parents shared that they felt happy and

enjoyed playing with their children more during their interviews. Also, four of them specifically stated they felt happy when their child with ASD was happy. Three parents also shared that overall, they were less worried about their children. Children with ASD were reported to have become more cooperative, and tolerant. They were observed to demonstrate sharing and turn taking behaviours as well as following instructions more frequently. Fewer tantrums were noted and the expression of happiness and enjoyment occurred more often.

Although no correlation or regression analyses were completed in the context of this study due to the small sample size, it has been previously reported in other empirical studies that children's problematic behaviours are one of the known predictors of parental depression, anxiety and stress (Barker et al., 2011; Bendixen et al., 2011; Benson, 2010; Falk et al., 2014; Ginn et al., 2017; Keen et al., 2010; McStay, Dissanayake, Scheeren, Koot, & Begeer, 2014; Osborne et al., 2008). Falk et al. (2014) found that children with ASD's aggressive behaviour was the best predictor of maternal depression and paternal anxiety. However, contrary to the findings of previously reported studies, the aggressive behaviour of children with ASD was not a significant predictor for parental stress (Falk et al., 2014).

In addition to children's positive behavioural changes, their skill development was also believed to contribute to the improvement in parents' psychological wellbeing. Among other developments, the majority of parents reported that their children's social skills (including interaction and communicating with parents, siblings and other people) had improved. Parental reports in this study were consistent with the findings reported by Davis and Carter's (2008) where they determined that delays in children's social skill development was one of the key predictors of parental stress among parents of children with ASD.

The findings suggested that parents perceived their children with ASD's behaviours had changed in a positive direction and this impacted on their psychological wellbeing especially in the area of reducing mothers' depression and anxiety. This is likely due in part to the fact

that mothers usually assume the primary role in child rearing compared to fathers, especially in the context of the current study, that being Malaysia (Braunstein, Peniston, Perelman, & Cassano, 2013; Elder, Valcante, Yarandi, White, & Elder, 2005; Ilias et al., 2017; Rejani & Ting, 2015).

Compared to fathers, changes in children with ASD's behaviour impacted mothers more than fathers since they were the ones dealing with the child's problematic behaviour during their daily life routines as well as while engaging in leisure and social activities. Although four of the families with children with ASD who took part in the study involved both parents, mothers assumed the majority of the responsibility for implementing the DIR/Floortime[®] intervention program, hence, explaining the larger positive impact for mothers compared to fathers.

Based on parental report, it was evident that fathers have increased their level of involvement in the implementation of the DIR/Floortime[®] intervention program at home with their children with ASD while engaging in daily life routines, leisure (play) interests, and social activities. The increased involvement of fathers might be one reason why paternal depression and stress levels increased at the end of the intervention program. Taking on the primary role in the delivery of the DIR/Floortime[®] intervention program might contribute to paternal depression and stress since they may become more aware of their children's disabilities, and how important their involvement could positively impact their children with ASD (Keen et al., 2010).

On the other hand, the involvement of fathers could be one of the reasons why there was a decrease in maternal depression and anxiety. No doubt the active involvement of fathers in childrearing lessens the burden of mothers giving them time to relax or engage in activities they enjoy other than taking care of their family. It could also be due to the experience of mothers receiving increased social support from their husbands since they are

more involved. Studies have suggested that with increased social support received, parental depression decreases, and parents usually seek out social support from their spouses, families and friends (Falk et al., 2014; Kuhaneck, Burrough, Wright, Lemanczyk, & Darragh, 2010; Sawyer et al., 2010).

Other than social support, professional support had also been established to help parents of children with ASD. Parent participants attended two three-hour training sessions where they learnt about the DIR model and Floortime[®] intervention approach. They were encouraged to explore their children's unique characteristics and use it to plan their intervention activities at home. Through the training sessions, parents were also taught about the central concept of the DIR/Floortime[®] approach that helps children's skills development (e.g., communication, play) and underlying causes of some of the behaviours commonly exhibited by children with ASD. Meanwhile, during the coaching sessions, they were taught and coached to read their children's cues, as well as identify any cues they may have ignored or missed. This helped parents change their style of interaction with their children and attempted to mitigate their children's problematic behaviours, thereby improving their psychological wellbeing.

Several parents shared their appreciation for the great impacts that the training and coaching sessions had on their observation, behavioural management, and coping skills. Feedback and suggestions provided during the parental education sessions were deemed to be helpful for parents to evaluate their techniques, identify their weaknesses and improvements needed. Similar to this current study, participants in Farmer and Reupert's (2013) study reported that after attending six weeks of parent education program related to autism, they understood more about their children and became more confident when assisting their children. They also reported that the parental level of anxiety significantly reduced at the end of the program.

Although parents were asked to implement the intervention at home by themselves, the coaching and suggestions provided to them during follow-up visits appeared to assist them in their interactions with their children. Evidence of this was reported by parents during their interviews where they became closer to and more connected with their children with ASD after practising the DIR/Floortime[®] program. Since parents played the central role in implementing and being coached to improve the implementation of DIR/Floortime[®]-related techniques they used to best help their children, this allowed the parents to experience a sense of purpose. It is common to feel unworthy and perceive life as meaningless when parenting a child with ASD, particularly when it is challenging to meaningfully engage and connect with their own children on a social and emotional level (Farmer & Reupert, 2013). Therefore, enhancing the quality of the child-parent relationship could help parents feel less depressed, anxious and stressed.

These findings are consistent with previous studies (Farmer & Reupert, 2013; Tonge et al., 2006). It is also possible that using a coaching approach helped the parents of children with ASD to improve their abilities as well as their children's behaviours by assisting them to be more comfortable when interacting with their children and subsequently improve their own parental psychological wellbeing (Stahmer et al., 2017).

Receiving professional support through parental training, education or coaching has been found to be one of the factors that reduced parental depression, anxiety and stress as shown by Farmer and Reupert (2013) and Keen et al. (2010). Keen et al. (2010) reported that participants who received professional support (i.e., training and consultation from facilitators) when implementing an intervention with their children with ASD, experienced less stress compared to participants that did not receive any consultation from facilitators. Contrary to the findings reported in Keen et al.'s (2010) study, parent participants in this study, based on the stress scores reported, indicated that they experienced an increased level

of stress. This could be due to the termination of the program which in turn ended the professional support that they received once every two weeks. Parents might have felt more stressed as they had less specific DIR/Floortime[®]-related professional input.

At the time of the current study, although all parents with children with ASD had been attending their occupational therapy sessions regularly at the clinic (during the alternate week of the biweekly follow-up for DIR/Floortime[®] intervention program), the therapists at the clinic were not trained in or utilised the DIR/Floortime[®] intervention approach in their practice. This was likely the reason as it was evident from the interviews, several parents suggested that they would have liked to have had additional follow-up sessions that specifically focused on the DIR/Floortime[®] approach after the end of the intervention program to further gauge their progress.

Lack of improvement in parental stress however is not surprising as it has been established from previous studies that parents of children with ASD are prone to experiencing higher level of stress compared to parents of typically developing children or children presenting with other types of disabilities (Giovagnoli et al., 2015; Gulsrud et al., 2010; Nikmat, Ahmad, Oon, & Razali, 2008) due to several child-related, parent-related and social-environmental factors. Nikmat et al. (2008) conducted a cross-sectional study with 52 parents of children with ASD in Malaysia and found that 47 parents were experiencing significant stress (i.e., Parental Stress Index's scores of more than 69). The study also demonstrated that parents agreed that their stress was contributed by the dysfunction in their child-parent interaction and their child's difficult behaviour. Meanwhile, similar findings were shown by Giovagnoli et al. (2015) where parents of children with ASD exhibited a greater level of stress when compare to parents of typically developing children. Parental stress was associated with children's behaviour and emotional problems (e.g., attention problems, aggressive behaviours, emotionally reactive, withdrawn).

As shown in these two previous studies, parental stress was readily elevated and mostly associated with children with ASD's various problems. In this current study, from the score of stress sub-scale, it showed that five parents were experiencing more stress after the end of the intervention period. This might be linked to the children's lack of improvement in their behaviour problems and interaction skills. For example, based on the observation and parents' interviews, four child with ASD's participants still exhibited repetitive and rigid behaviours such as shaking toys, turning toys and play with toys in a very rigid action even after receiving intensive DIR/Floortime[®]-based intervention at home.

It is also likely that the majority of the parents' stress remained unchanged (3 mothers, 1 father) and increased (3 mothers, 2 fathers) after the intervention due to the additional demands placed on parents to implement the intervention at home (Falk et al., 2014). These findings are opposite to the findings of previous studies that investigate the effectiveness of parent-mediated DIR/Floortime[®] home-based intervention (Liao et al., 2014; Solomon et al., 2014) despite the same time requirement of ten hours per week was placed on parents. Perhaps, the follow-up visits should be longer, from one hour to two hours similar to Liao et al.'s (2014) model of intervention procedures. In this current study, the follow-up sessions were conducted for an hour per participants' usual therapy session and it was done so to limit the additional demands placed on parents when they participated in the study. It might be helpful for the parents to discuss their concerns and issues in implementing the intervention in a longer session therefore potentially reducing their stress even more.

It is also possible that parents feel stress due to the difficulties of translating the techniques they learnt during the training session and coaching session at the clinic to their home environment. In contrast with the current study, parents in Solomon et al.'s (2014) study were visited by the intervention's consultant every month for 3 hours and they were trained and coached on how to implement the intervention in their own home environment.

This could help parents to successfully translate the practice into their usual environment and reduce their stress of having to implement and fulfil the time requirement. However, some parents might have difficulties participating and implementing the intervention if home-visits were incorporated in the intervention program due to the cultural issues of having someone going to the participants' home to video-record the sessions while training and coaching them.

During their interviews, parents expressed that initially they felt stressed, but after becoming familiar with the DIR/Floortime[®] techniques and implementing the recommended techniques for a few weeks, their feelings of stress started to subside. Perhaps if the intervention period was longer, the impact on parental stress might be more apparent as parents would be more familiar and comfortable to implement the intervention. As seen in Liao et al. (2014) and Solomon et al. (2014) study, the intervention period was longer, ten weeks and a year, respectively. However, although parents' scores increased at the end of the intervention, no participants' scores were in the moderate range or above. Furthermore, there was no reports of parental heightened feelings of stress that needed medical attention throughout the study phases.

The majority of parents' efficacy scores of PSOC increased upon completion of the intervention program ($n_{\text{mother}} = 7$, $n_{\text{father}} = 3$). Meanwhile, for the satisfaction scores, almost all of the mothers' scores increased ($n = 7$), while the fathers' scores decreased ($n = 3$) and the other two parents were feeling less satisfied upon completion of intervention program. The mothers' findings were expected as it had been found that self-efficacy was associated with satisfaction (Coleman & Karraker, 1998). The quantitative findings were supported by parents' reports. Parents stated that after becoming familiar with the DIR/Floortime[®] intervention approach, they felt more confident when interacting with their children during

their daily routines as well as while engaging in the DIR/Floortime[®]-based activities. Some parents, including Mr. F mentioned this:

“Now we don’t have to worry so much, we used to think...if [we] want to improve, we have to go to therapy. Now, after we know DIR/Floortime[®], it is not necessarily for us to go to therapy. We can do it at home, we know [more], we were [more]empower. We can control”.

Parental reports confirmed the quantitative findings which suggested that parents’ competence improved with increased knowledge and skills while interacting with their children with ASD. Their knowledge improved throughout the course of the intervention program which in part occurred from the parents of children with ASD attending the training sessions and taking part in the coaching sessions. Parents gained new knowledge and understanding of their children’s disorder and behaviours, and this positively influenced how they interrelated with their children that best supported their development (Raj & Salagame, 2010). The findings of this current study corroborated with previous studies conducted by Ingersoll, Wainer, Berger, Pickard, and Bonter (2016), Keen et al. (2010), Kuhn and Carter (2006), Sanders and Woolley (2005), Sofronoff, Jahnel and Sanders (2011), and Tellegen and Sanders (2013).

In Keen et al.’s (2010) study, two groups of parents of children with ASD aged 2 to 4 years old were involved. One group of parents received professional support that included an education program, and an hourly home-based consultation for ten weeks; while another group of parents received an instructional DVD, and implemented a self-directed intervention program with their children with ASD. The results indicated that although parental self-efficacy scores improved at the end of the intervention, the scores of the parents who received professional supportive interventions increased to a larger degree than the self-directed intervention group.

Although both Ingersoll et al. (2016) and Keen et al. (2010) demonstrated that parental self-efficacy improved regardless of the type of intervention that parents received (professionally supported versus self-directed), parents who received coaching (as part of the professional support module) made superior gains compared to the parents who did not receive this support. This indicated that in addition to parents playing the implementer role, those parents who received active and constructive feedback were also empowered.

Contrary to this current study's findings of improved parental sense of competence, a randomised control trial conducted by Estes et al. (2014) that utilised an intervention that integrates the developmental, relationship-based and applied behavioural analysis approach, the parent delivered Early Start Denver Model (P-ESDM) (Rogers & Dawson, 2010) did not find a significant increase in parents' sense of competence. Estes et al. (2014) investigated the impact of parental stress and sense of competence upon completion of 12 weeks of parental coaching and parent-delivered intervention with 49 parents of children with ASD and 49 parents in the community intervention. Parents in the intervention group received one-hour per week, centred-based coaching sessions for 12 weeks.

The session involved a sharing and discussion session, live coaching and practice during child-parent engagement in activities, modelling by the therapist and intervention planning (Estes et al., 2014). Following intervention, no significant difference in parents' sense of competence between parents in the intervention and the comparison group were found. The mean score of the intervention group decreased at the end of intervention (Estes et al., 2014). Although the intervention was based on similar developmental, relationship-based approach as the current study and the coaching sessions were also delivered quite similar to the current study, the impact on parents' sense of competence was completely opposite.

It might be due to the time parents in this current study engaged in implementing the intervention which was longer than parents in Estes et al.'s (2014) study. Furthermore, in

addition to the coaching during the follow-up sessions, parents in this current study also received training on the DIR model and the Floortime[®] intervention approach prior to the initiation of the intervention. This might be the reason that parents in this current study improved in their sense of competence as they gained more knowledge through the training and further developed their understanding and skills with the coaching received during the follow-up sessions.

Since all parent participants attended the training sessions that includes topics related to autism, how the DIR/Floortime[®]-based techniques could help children's development and how to implement the DIR/Floortime[®]-based intervention techniques; this promoted their levels of confidence (Altiere & von Kluge, 2009; Hodgetts, Savage, & McConnell, 2013; Pakenham, Sofronoff, & Samios, 2004; Tellegen & Sanders, 2014) and encouraged them to be more actively involved in the implementation of the DIR/Floortime[®] intervention in their home environments with their children with ASD. It has been suggested that enhancing parental self-efficacy could improve parents' involvement in their children's treatment (Raj & Salgame, 2010; Solish & Perry, 2008).

This might be the case in the current study, especially for the father participants. Fathers reported that they became more confident in engaging with their children with the new concepts and approaches they had learned during the DIR/Floortime[®] program training. Further, the feedback that parents received during the coaching sessions; and also seeing the positive changes in their child contributed to increased confidence (Hesse, Danko, & Budd, 2013; Morawska & Sanders, 2006a, 2006b; Sofronoff et al., 2011; Stahmer et al., 2017). This suggested that not only self-efficacy could predict parents' involvement, it could also be enhanced by parents' active involvement in their children with ASD. Parental involvement could also increase the levels of support (e.g., social and professional) that parents received (especially for mothers), and it has been reported previously that social support is positively

associated with parental sense of competence (Dunn, Cox, Foster, Mische-Lawson, & Tanquary, 2012; Giallo, Wood, Jellett, & Porter, 2013; Weiss, Cappadocia, MacMullin, Vecili, & Lunsky, 2012).

Dunn et al. (2012) conducted a study utilising the Contextual Intervention with 20 parents of children with ASD. In the study, parents identified goals, activities and activity settings (children's activities) that they needed support according to their priorities and interests. Parents were then coached by the occupational therapist via phone or face-to-face for approximately an hour each session for ten sessions. The occupational therapist coached parents on how to design the intervention plan for each week using reflective statements, questions and comments, no expert advice or directives were given to the parents during the coaching session. This was done in order to foster parents' insights and be the main planner and implementer of the intervention with the support of the therapist.

Analysis of pre-test and post-test PSOC scores showed that parents exhibited significant improvement in their self-efficacy after the intervention, while their satisfaction remained unchanged. Dunn et al. (2012) suggested that the intervention focused on building parents' capacity to achieve their own goals that are meaningful to them and by implementing the strategies themselves, they got to experience and learn the best strategies suitable for their children's unique characteristics. This later increased parents' self-efficacy as they have managed to plan, implement, modify their intervention strategies that resulted in significant improvements in their children's activities performance.

On the other hand, the increased involvement of fathers might explain their decreased levels of self-reported satisfaction. When they are more active in the provision of the DIR/Floortime® techniques with their children, fathers' awareness of their role in their children's development might cause them to reflect on how much they have been involved which could then lead to feeling less satisfied with their parenting skills and abilities. Parents'

involvement in their children's treatment has been reported to positively influence children's outcomes (Lovaas, 2003) including the frequency of children's positive behaviours and communication skills (Keen et al., 2010; Sofronoff et al., 2011).

Most of the parents in this study reported that their children with ASD's behaviours and communication skills improved constructively. From previous studies, it is evident that children's positive behaviours were one of the major predictors of parenting competence (Cohn, May-Benson, & Teasdale, 2011; Coleman & Karakker, 2000; Giallo et al., 2013; Johnston & Mash, 1989; Keen et al., 2010; Ohan et al., 2000; Ozturk, Vivanti, Uljarevic, & Dissanayake, 2016; Rogers & Matthews, 2004). In Rogers and Matthews (2004), parental sense of competence of 716 mothers and 270 fathers (part of the study's participants) of children in Australia were analysed in relation to children's disruptive behaviour. They found that both maternal and paternal satisfactions were negatively associated with children's intensity and number of disruptive behaviours, meanwhile, only paternal efficacy was found significantly associated negatively with children's disruptive behaviour's intensity. Although parents in the study were reported to complete the PSOC prior and during the follow-up treatment (e.g., group parenting program and written parenting advice), only pre-treatment scores were analysed and reported. Thus, no information of improvement in parental sense of competence resulting from the treatment program was available.

In another study, Cohn et al. (2011) investigated the relationship between parental sense of competence and their children's behaviour associated with sensory processing disorders (SPD) among 248 parents of children with SPD. From the correlation analysis, the total score of PSOC and the score of satisfaction-sub scale were found to significantly associated with emotional or social response and behavioural outcomes of sensory processing, while the score of efficacy sub-scale was correlated with emotional or social response. Further analysis of regression showed that several children's behaviours best

predicted parental satisfaction and efficacy, including unaware of other people, enjoys strange noises or seeks to make noise for the sake of noise, seeks out all kinds of movement, as well as uncooperative. These findings of previous studies reflected the plausible cause of improvement in current study's parental sense of competence due to the children's positive behaviour. Although no causality could be inferred in this study, based on parents' reports of their children's behavioural improvements and their own competence suggesting that a degree of relationship exists between these two positive changes.

In addition, parental levels of depression and stress have also been found to have a negative association with parents' sense of competence (Dunn et al., 2012; Giallo et al, 2013; Ozturk et al., 2016; Rogers & Matthews, 2004; Weiss et al., 2012). Rogers and Matthews (2004) found that a low level of depression and stress were positively associated with parental satisfaction while a positive parenting interactive style contributed to parental self-efficacy. As determined by Rogers and Matthews (2004), participants who were mothers exhibited the same trend of decreasing levels of depression while increasing their levels of parenting satisfaction. Meanwhile, participants who were fathers reported an increase in their stress scores and a decrease in their parenting satisfaction scores.

In this current study, parents reported that they had changed their interaction style from being directive to a more positive interactive style and in turn this improved their sense of competence, thus agreeing with the findings of previous studies (Hesse et al., 2013; Rogers & Matthews, 2004).

6.2.3 Indirect impact of the DIR/Floortime[®] home-based intervention based on parents' reports: parental improved knowledge and skills

Parents' outcomes after the implementation of the DIR/Floortime[®] home-based intervention were measured quantitatively using three self-report questionnaires – the Malay versions of the QoLA and PSOC, and the BM DASS-21 to evaluate the changes in their

quality of life, sense of competence, and psychological wellbeing, respectively. Parents were also interviewed to obtain their perspectives about the impact of the DIR/Floortime[®] intervention program their children and themselves. The analysis of the interviews revealed supporting information of the quantitative outcomes and several indirect impacts for both parents and children with ASD.

Although no measurement was conducted to quantify the changes, since this study is the first to evaluate the impact of a parent-mediated DIR/Floortime[®] home-based intervention program in the Malaysian context, it is worth discussing parents' improvements. Parents reported during their qualitative interviews that their knowledge and skills related to interacting, engaging in activities and playing with their children with ASD greatly improved. From the interviews, most of the parents reported that their knowledge related to play skills (n = 5) and play skills (n = 7) had improved throughout the course of the DIR/Floortime[®] intervention program.

The majority of parents also described having an increased understanding into the best way to interact and engage in activities with their children that led to enjoyable, mutual engagement. The analysis of parents' interviews suggested that parents associated their improvements with their involvement and engagement in the DIR/Floortime[®] intervention at home, the training program, and the coaching sessions they took part in. Most parents were observed using a more directive style when interacting with their children during the pre-intervention sessions. They usually instructed their children to engage in academic-based activities instead of play activities.

Parents mentioned in their interviews that they used to feel stressed when they were engaging in play activities with their children. Some of the parents said that during the initial phase of the program, they did not know how to play and keep playing with their children, and it resulted in parents feeling pressured. This was likely due to their children being

unresponsive to them most of the time, and/or both parents and children were not enjoying the play-related activities because of the clash in their interest and intention which often resulted in the child having an emotional outburst (e.g., crying, tantrums). Parents were observed to have demonstrated improvements in their interaction and play skills throughout their follow-up sessions and were later confirmed by the parents during their interview where they shared their perceptions of decreased stressed when playing as a result of the changes in their interaction style. This quote from one of the mothers, Mrs. D illustrates this point, “*I used to instruct him, now we play together. We don’t have to force him, we just play and relax...when he sees us, he will join [play] slowly. [We] enjoy playing with him*”.

One of the possible contributing factors to the parents’ development in their knowledge, confidence, and skills was attending the training sessions where parents were educated on the nature of autism spectrum disorders, the underlying causes of most of the difficulties their children face, as well as the DIR/Floortime[®] approach and recommended techniques. During the training sessions, the researcher taught parents the techniques recommended including following the child’s lead, ‘*pause and play*, being responsive by treating their children’s actions as meaningful, and always responding to all actions and communication that the child initiates.

The training assisted parents to understand that following their child’s lead was a potential gateway for getting closer to their children that resulted in capturing the children’s attention, which is the component of successful social interactions. Parents reported that they had altered the way they interacted with their children and that the outcomes were promising (see result chapters). One of the mothers shared this during the interview:

“The theory class (training session) was also very helpful. Because before this, we don’t understand why. So, when we know the theory, the explanation of this...and

this...so we can see more the flow [understand the cause and effect of an action]” (Mrs. C).

It has been suggested that training programs for parents of children with ASD are needed as it has been beneficial for them since parenting a child with ASD is challenging (Matson, Mahan, & Matson, 2009). Previous studies have demonstrated that parental education programs have been beneficial for parents to acquire greater knowledge about ASD (Brookman-Fraze, Stahmer, Baker-Ericzen, & Tsai, 2006; Jocelyn, Casiro, Beattie, Bow, & Kneisz, 1998), about interaction skills (Elder et al., 2005; Mahoney & Perales, 2003; Pajareya & Nopmaneejumrulers, 2011; Solomon et al., 2007) and play (Liao et al., 2014; Pajareya & Nopmaneejumrulers, 2011; Siller, Hutman, & Sigman, 2013).

Since almost all intervention approaches being used with children with ASD were developed in Western cultural contexts including the DIR/Floortime[®] approach, it has been showed that with parent education programs, parents could successfully implement the intervention in other cultures. For example, both Liao et al. (2014) and Pajareya Nopmaneejumrulers (2011, 2012) utilised the DIR/Floortime[®] intervention in non-western culture countries, Taiwan and Thailand, respectively. In the studies, parents received training on the DIR/Floortime[®] approach prior to implementing the intervention at home, findings from the studies showed that participants’ interaction and play skills have improved. As demonstrated in this current study, parents in the Malaysian context also showed a refined knowledge and skills after the implementation of the DIR/Floortime[®] intervention program at home.

Although the training sessions provided parents with knowledge of how to interact and play with their children, practising the recommended techniques they learnt, further developed their skills. The time parents spent practising the techniques assisted parents to explore and understand their children with ASD’s unique characteristics, which then changed

parents' way of interacting and playing with them. Parents mentioned in their interviews that their children with ASD responded better to them when they played or were being more playful with them. Some parents said that they now usually engaged in play activities that also involve learning. For example, they play throwing and catching balls while counting and naming the colour of the balls. Parents who implemented the intervention and recommended techniques had been found to demonstrate a significant contribution to improvement in their child-parent interaction, engagement and play skills (Dionne & Martini, 2011; Elder et al., 2005; Ginn et al., 2017; Liao et al., 2014; Mahoney & Perales, 2003; Pajareya & Nopmaneejumrulers, 2011; Shire et al., 2016; Solomon et al., 2007).

In Liao et al.'s (2014) study, mothers of children with ASD in Taiwan received training on implementing the DIR/Floortime[®] program at home and received counselling (e.g., coaching and feedback) every two weeks. After completing the intervention, child-parent interactions showed notable improvements with mothers reporting that they felt confident and eager to play with their children. This concurs with the findings in the current study. Even with training and practising, parents acknowledged that receiving feedback on their techniques, helped to further develop and refine their skills. After the video-recording of child-parent play during the follow-up sessions, parents continued playing with their children and the researcher commented on what the parents were doing well, children's cues that parents may have missed, and what parents could do to improve their engagement.

Coaching assisted parents to fully utilise the recommended techniques with their children. Parents used the feedback to modify their skills to adapt to the current issues they were facing when implementing the intervention at home. For example, one mother said that she did not know what her four-year-old son liked to do. She was observed frequently holding him and sitting close to him to keep him from wandering around the room. When he ran around the room, sometimes she would go after him and call his name or jiggle a toy she

wanted him to play with to get his attention. Most of the time, he would look at her, stop for a while and then start to run away from her when she got close to him. He was observed doing the same thing several times with his mother, but the mother failed to take note of the cues from him (e.g., stopping for a while and looking at the mother, run when she got close), inviting her to play chasing games or ‘play tag’ with him.

After received feedbacks from researcher, the mother then took note of the cues he gave her and was coached to pick up the cue by chasing him and making some sounds when she was chasing him. He responded by giggling and running away from her. After the session, the mother-child dyad was observed playing tag several times during the follow-up sessions. The child was also observed playing tag with his older sister and his mother during one of the sessions with him chasing them around the room. However, he kept being outrun by them and this triggered an emotional meltdown from him.

This was pointed out to the mother and she asked her daughter to pretend to lose and get caught by him. Surprisingly, after that, he was observed to be playing this game in a similar manner as it was normally played by children. After he caught his sister, he then laughed and began to run away and look at his sister indicating that it was her turn to chase him. The mother also reported during her interview that after the session, he had been involved in a game of tag at home with both his older siblings and was able to take turns when engaging in activities with them (e.g., while playing games on the iPad).

The findings of the current study confirmed the previously reported studies that utilised coaching strategies as part of the delivery of parent-mediated intervention in encouraging parents to implement the intervention successfully (Dionne & Martini, 2011; Elder et al., 2005; Fettig, Schultz, & Sreckovic, 2015; Fukkink, 2008; Kasari et al., 2014; Liao et al., 2014; Matson et al., 2009; Mudford, Martin, Eikeseth, & Bibby, 2001; Schertz and Odom, 2007; Shire et al., 2015, 2016). In the Kasari et al.’s (2014) study, participants were grouped

into two groups, a Caregiver-Mediated Module (CMM) and a Caregiver Education Module (CEM) intervention group. The first group received active one-to-one coaching at home while the second group only received group training without coaching while implementing the intervention at home with their children with ASD.

Although caregivers in CEM group perceived more difficulty in implementing the intervention strategies compared to the CMM parent group, both groups showed improvements in their joint engagement (child-parent interactions). However, the group that received coaching exhibited superior outcomes than the non-coaching group.

6.2.4 Impact of the DIR/Floortime[®] home-based intervention on children with ASD's pretend play

Children with ASD's pretend play was assessed using the Test of Pretend Play (ToPP) (Lewis & Boucher, 1997) at three data points – prior to, during and after the DIR/Floortime[®] intervention period. Of eight of the children participants, only one participant (Child B) did not show any interest in engaging in pretend play when the ToPP was administered, hence no score was given. Only two children with ASD were tested in a structured play situation during the pre-intervention session, while the remaining children were assessed in an unstructured play situation. No children with ASD were tested in a structured play situation during the intervention and post-intervention DIR/Floortime[®] sessions.

The ToPP is comprised of four sections and the total raw score can be transformed into an age equivalent score based on the age norms published in the ToPP manual. The age norms were based on the British standardisation population where the ToPP was developed. Due to the inconsistencies of the play situations and the differences between the population of ToPP age norms (i.e., British population) and the participants in the current study (i.e., Malaysian population); the changes in the total raw scores of the ToPP across the three phases of data collection and the age equivalent scores would not be accurate to discuss.

Therefore, for the purpose of this study's discussion, the pretend play skills of the children with ASD in the current study will be discussed based on the categories described in the Taxonomy of Pretend Play proposed by Barton (2010) rather than the scores of each section of the ToPP itself. The score for each ToPP items was transformed and categorised into categories of pretend play as outlined in the taxonomy.

In the Taxonomy of Pretend Play (Barton, 2010), pretend play is categorised into two types - *functional play with pretence*, and *substitution*. Substitution encompasses of three types of pretend play, (a) object substitution (OS), (b) assigning absent attribute (AAA), and (c) imagining absent object (IAO) (Barton, 2010). For this discussion section, items in the ToPP were grouped into the categories previously mentioned based on the Taxonomy of Pretend Play. The earliest form of pretend play, *functional play with pretence* is consistent with items in Section I of the ToPP. Meanwhile *object substitution* (OS) is corresponded with all items in Section II, item III.3 and IV.1 of the ToPP. The ToPP Item III.2 and IV.3 are referred to as *assigning absent attribute* (AAA) or property attribution, while ToPP Item III.1 and IV.2 are denoted as *imagining absent object* (IAO). Finally, ToPP Items III.4 and IV.4 (that involve sequencing of all three types of substitution [OS, AAA, IAO]) are signified as *sequences play*, the most complex form of pretend play. The number of participants who were observed producing each type of pretend play is presented in Table 6.1.

Most children with ASD in the current study demonstrated spontaneous pretend play behaviours even prior to implementation of the DIR/Floortime[®] intervention. This contradicts previous published studies that suggested children with ASD have problems in producing spontaneous pretend play behaviours (Jarrold, 2003) and usually are only able to initiate pretend play with adult prompting and modelling (Barton & Wolery, 2008; Blanc, Adrien, Roux, & Barthélémy, 2005; Kasari, Freeman, & Paparella, 2006).

Table 6.1

Number of participants observed during each data collection phase for each type of pretend play

Categories and types of play	Number of participants per data collection phase (n, participant)		
	Pre- Intervention	Intervention	Post- Intervention
Functional play with pretence			
(ToPP Section I)	3 (A, C, D)	4 (C, D, F, G)	4 (A, C, F, G)
Substitution			
Object substitution (OS)			
Non-functional objects (ToPP Section II)	4 (A, C, D, F)	4 (A, C, D ^b , F)	4 (A ^a , D, F, G)
Teddy (ToPP Item III.3)	4 (A, C, D, F)	2 (A, D ^a)	4 (A, D, G ^b , H)
Self (no object) (ToPP Item IV.1)	3 (C, D, H)	1 (C)	2 (A, C)
Assigning absent attribute (AAA)			
Teddy (ToPP Item III.2)	6 (A, C, D, E ^a , F, H)	6 (A, D ^a , E ^a , F, G, H)	3 (A, D, G)
Self (no object) (ToPP Item IV.3)	3 (A, E ^a , H)	3 (D ^a , F, H)	4 (A, C, F, H)
Imagining absent object (IAO)			
Teddy (ToPP Item III.1)	2 (A, C)	1 (F ^b)	3 (A, F, G)
Self (no object) (ToPP Item IV.2)	2 (A, C)	4 (A, C, G, H)	4 (A, C, D ^b , F)
Scripted play			
Teddy (ToPP Item III.4)	2 (A, C)	0	1 (G ^b)
Self (no object) (ToPP Item IV.4)	0	0	1 (C)

Note: ToPP = Test of Pretend Play (Lewis & Boucher, 1997). Categories and types of play are based on Taxonomy of Pretend Play (Barton, 2010). The number refers to number of participants observed producing the type of play during the session. Upper Case letters refer to the child with ASD participant observed producing the play during the assessment.

^aInstructed play. ^bModelled play.

The children in this study also produced pretend play in an unstructured play situation (e.g., free play) most of the time with exception of two children, Child A and Child D, who were assessed in a structured play situation during the pre-intervention phase.

The current study's findings confirmed the outcomes of other researchers that found children with ASD could engage in pretend play spontaneously in free play situation (Libby et al., 1998; Strid, Heimann, & Tjus, 2013), and that they have the capability of understanding and producing pretend play (Bentenuto, De Falco, & Venuti, 2016; Blanc et al., 2005; Dominguez, Ziviani & Rodger, 2006; Jarrold, Smith, Boucher, & Harris, 1994; Libby et al., 1998; Rutherford & Rogers, 2003).

The majority of children with ASD in this current study engaged in at least one type of pretend play especially with an object present. This might be due to the toys presented and made available during the test that facilitated children with ASD's play behaviour. The ToPP manual indicated that the child being assessed should be presented with a doll and a teddy for Sections II and III, respectively. However, the ToPP was adapted to more appropriately fit the features of Malaysian culture where several of the test items were added or replaced with more culturally suitable ones (see Chapter 3 for details). Children with ASD were presented with alternative toys including a female doll, a male doll, and an Ultraman action figure for Section II, and a teddy bear and a cat plush toy for Section III.

In addition, there were other toys available in the room where the ToPP was administered, and since the test was conducted mostly in an unstructured play situation, children with ASD could play with toys of their choice. This might be the reason why most children with ASD in this study were observed engaged in pretend play, contrary to what has been published previously in peer-reviewed literature. By presenting the children with ASD with toys from their daily lives (e.g., the Ultraman action figurine, cat plush toys) that they

are familiar with, it is highly likely that they are playing with the toys since they have some intrinsic interest values for them.

The study took place in Malaysia where it is uncommon for boys to play with dolls or teddy bears. Hence, they were given more culturally relevant alternative toys. For example, Ultraman is one of the TV shows that was popular among children in Malaysia at the time when the study took place, while a plush cat toy might be more relatable for children since having a cat as pet or seeing a cat in their daily living environment is more common in Malaysia. It has been suggested that children's selection of toys might be influenced by social constructs such as popular culture and mass media (DuBois, 1997), and by presenting them with those types of toys that may have some relevance, this could be a motivating factor for the children to play. This was demonstrated in a study by Dominguez et al. (2006) where children with ASD were observed playing more with a Thomas the Tank Engine train set and Power Ranger action figures that were based on well-known television programmes at the time than with other less familiar toys presented to them (e.g., construction toys, dolls, house toys).

Pretence behaviour also has been said to be highly context dependent, where it could be enhanced by having toys readily available in the surrounding environment for children to play with (Barton & Wolery, 2008). Having toys in the immediate environment could peak children's interest in the objects that lead them to explore and play with the toys. This would eventually lead to pretend play with the toys as they had become more familiar with the objects' characteristics (Hidi, Renninger, & Krapp, 2004; Kang, Klein, Lillard, & Lerner, 2016).

This was apparent in the current study as the intervention room used during the sessions was equipped with many toys and non-functional objects or junk object (e.g., common object that do not represent any specific function such as a piece of cloth, a stick, etc.) in addition to

the ToPP materials. Most children were observed using the non-test materials and toys effortlessly in their play during the follow-up sessions towards the middle of the intervention phase.

Another possible explanation for the improvement in children with ASD's pretend play is parental beliefs. It has been suggested that parental belief about pretend play impacts their participation in the play with their children. For instance, parents would encourage and participate in pretend play when they believe it has positive impacts on their children's development (Haight, Parke, & Black, 1997). A study conducted by Farver and Wimbariti (1995) with Indonesian parents (who share similar cultural values as Malaysian parents) revealed that play was viewed as not having a significant relationship to children's development and parents' participation in play was inappropriate. Their beliefs led to a lack of engagement in child-parent pretend activities.

Therefore, it is possible that the shift in parental beliefs related to pretend play in the current study occurred after attending the training session. In other words, by attending the training and practicing the DIR-based intervention, parents' level of engagement in play activities with their children increased, thus improving their children with ASD's pretend play.

Pretend play is one of the developmental capacities proposed in the DIR model that the Floortime[®] intervention program is based on. Parents were taught about the model and how they should encourage their children's development based on the stages as well as how pretend play related to other developments such as language and socioemotional. It was evident from the results of the ToPP and parents' reports as most of them said that their engagement in their children's play had increased as they focused on their children's language, communication and social skills development as well as for enjoyment within the play activities.

Parents also received verbal and written feedback from the researcher during their follow-up sessions for parents to be more responsive to their children's cue to pretend play. For example, Child C was always pretending to be a bulldozer or an excavator (mostly indicated by the sound of the truck he was making or he verbally informed his mother) when he was looking for toys hidden in the ball pit during his engagement in one of the activities. However, his mother always ignored the behaviour, and then ask him to act properly to find all the toys quickly (e.g., finding the toys in an orderly fashion, focusing on the goal of finding the toy without being playful). After she received the feedback from the researcher, she was observed to be more engaging in her child's pretend play. She began to address him as the truck he was pretending to be (e.g., "excavator C") and asked him to get a specific toy or ball when performing the activity. This was helpful in developing Child C's pretend play as he was observed producing the more sophisticated pretend play and the only one who produced sequence pretend-self play after the implementation of the DIR/Floortime[®] intervention.

This reinforced the point that by implementing the DIR/Floortime[®]-based activities (e.g., following the child's lead), it could contribute to improvements in children with ASD's pretend play skills and skill complexity. This is because parents encouraged their children's play using verbal encouragement by providing them with verbal reinforcements and acknowledging their pretend play while participating in the child's play (Bornstein, Venuti, & Hahn, 2002). Parents' involvement and behaviour during the play sessions has been shown to have a positive impact on the development of children's pretend play since it helps promote children's play, their understanding of pretence as well as their play behaviour being more advanced (Ban & Uchiyama, 2015; Bentenuto et al., 2016; Lillard & Witherington, 2004; Nakamichi, 2015; Noll & Harding, 2003; Venuti, de Falco, Giusti, & Bornstein, 2008).

Parents following their children's lead provided the children with ASD more opportunity to play and explore the toys which then encouraged them to engage in pretend play. From Table 6.1, it is apparent that some children's pretend play improved with the implementation of the DIR/Floortime[®] intervention program. For example, two children were observed producing the functional play with pretence, object substitution with teddy bears and assigning attribute to self, during the assessment completed at the intervention phase of the study.

Functional play with pretence is the simplest form of pretend play since it involves the functional use of the object(s), nonliteral behaviours that result in non-reality outcomes, and may not be symbolic (Barton, 2010). It usually involves everyday life routine behaviours such as feeding, grooming and dressing (Barton, 2010; Lifter, Ellis, Cannon, & Anderson, 2005; Rutherford et al., 2007). Since play behaviours are closely related to children's everyday routines, it is possible that children with ASD already have the capacity to produce the pretend play but have not been exposed or given the opportunity to play. Since parents were asked to spend time with their children, it could be the reason that the children with ASD were engaged in play activities more than before, hence encouraged the child to produce pretend play. It has been suggested that pretend play develops from child's exploration of objects, which then leads to pretending with the objects (Bornstein et al., 2002; Tamis-LeMonda & Bornstein as cited in Bentenuto et al., 2016).

The increase in children with ASD's level of demonstrating pretend play after taking part in the parent-mediated home-based DIR/Floortime[®] intervention concurs with a previous study conducted by Keen, Rodger, Doussin and Braithwaite (2007). This study involved 16 children with ASD and their parents who attended a two-day parent's workshop and completed six weeks of home-based intervention based on the social-pragmatic approach. The objective of the intervention was to emphasise the children's communication and

symbolic behaviour. Children with ASD's symbolic play behaviour (or referred as pretend play in this current study) showed a significant improvement upon completion of the six-week home-based parent-mediated intervention.

As previously mentioned, children in this study exhibited behaviours that fit the object substitution pretend play category. Interestingly, the number of children who were observed demonstrating '*functional play with pretence*' were fewer than the more complex category of pretend play, referred to as '*substitution*'. One possible explanation is that the cultural norms of play behaviours associated with '*functional play with pretence*' limited the Malaysian children's engagement in this type of play. '*Functional play with pretence*' often involves play behaviours that are more feminine or domestic-related such as dressing, feeding and grooming a doll.

The current study was conducted in Malaysia and since all child with ASD's participants were boys, it was not surprising that only a minority of the children with ASD were observed engaging in functional pretend play during the pre-intervention session. In Malaysia, boys are not accustomed nor encouraged to engage in play activities that involve dolls or domestic-related activities, therefore possibly explaining why children with ASD in this study did not produce the '*functional play with pretence*'. As aforementioned, children might have the capacity, but did not demonstrate pretend play due to cultural norms as some of the children who did not exhibit '*functional play with pretence*' were observed engaging in at least one type of the '*substitution*' pretend play throughout the study.

While '*functional play with pretence*' is not limited to playing with dolls since it can be also done with other toys performing functional (or domestic-related) actions, however, the type of toys that children with ASD in this study often played with might not been seen performing these sorts of activities that would scaffold their play behaviour. It was noted that children with ASD in this study played with the ToPP action figure (e.g., Ultraman) more

than the dolls (both female and male dolls). This is similar to previously reported findings by Harrop, Green, and Hudry (2017) and Dominguez et al. (2006). Both studies found that children with ASD engaged in highly gender-specific toys, similar to their typically developing peers. For example, Harrop et al. (2017) found that boys with ASD were observed playing with cars more than dolls, while Dominguez et al. (2006)'s findings reported that children with ASD (including both male and female) played with action figures and plastic animals significantly more than dolls.

The action figure is based on one of the popular TV shows aimed at children in Malaysia and the action figure is not shown performing domestic activities since the character is portrayed as a superhero that fights villains instead. This might be one plausible cause that limits the functional play with pretence among children who played more with such toys.

Following the '*functional play with pretence*', a more complex pretend play was observed. The '*substitution*' was composed of three sub-types, object substitution (OS), assigning absent attribution (AAA) and imagining absent object (IAO). Children with ASD in this study were observed demonstrating all three types of substitution. Results of this current study presented in Table 6.1 both confirm and contradict the findings of previously reported studies of children with ASD's pretend play (Lillard et al., 2013) and children with ASD symptoms (Kang et al., 2016).

Most of the children with ASD in this study were able to perform object substitution (OS) which was in accordance with Lillard et al.'s (2013) findings, but was in direct opposition to results reported by Kang et al. (2016) where it was rarely observed. Similar to the findings of Kang et al. (2016), more children in this study were observed exhibiting AAA and IO types of pretend play while amongst the participants in the study reported by Libby et al. (1998), there were less occurrence of AAA and no occurrence of IO.

However, as expected according to Lillard et al. (2013), a large number of children with ASD demonstrated simple pretend play compared to more sophisticated types of pretend play such as the '*self-pretend*' (i.e., substitution of or assigning absent property to oneself). Only one child was observed performing more sophisticated types of pretend play at all three sessions while another one was observed producing the play during the post-intervention session. One child was observed performing '*self-pretend*' play activities during the post-intervention, however, two of the children that readily showed the capabilities of engaging in this type of play did not show any occurrence of producing the play after the intervention phase's session. The findings suggested that DIR/Floortime[®]-based interventions have a positive impact in improving some of the types or aspects of pretend play ('*functional play with pretence*', OS, AAA, IO with object), however no clear pattern on its impact in improving '*self-pretend*' play was evident.

'*Sequence pretend play*' or '*scripted pretend play*' is the most advanced level of pretend play where it involved at least two types of substitution played in a logical sequence. An example of a '*scripted pretend play*' is as follows: pretending the teddy is riding a bicycle (a wooden block representing the bicycle – object substitution), hit a rock (imagining absent object), falls down and sustained an injury causing the teddy's arm to be broken (assigning absent attribute) . This pretend play skills have been found to improve with prompting, as suggested by Barton (2010). This might be one possible explanation of this current study's finding where only two children were observed exhibiting sequences pretend play with and without a toy at least once during the study.

In this study, parents implemented the core technique of the DIR/Floortime[®] approach by following the child's lead including being responsive to their pretend play behaviour. Being responsive could be equivalent to the act of prompting. For example, parents would play along with their children's play behaviour including pretend play without prompting

them to play in a certain way (e.g., pretend play). With little to no scaffold of sequence pretend play from parents, limiting children's ability to produce sequences of pretend play behaviours in this study.

Children's play performance could be varied in different settings, and it is important to assess the impact of the intervention on children's pretend play both in the clinical settings and in their natural environment, at home (Pierucci, Barber, Gilpin, Crisler, & Klinger, 2015). Hence, in this study in addition to the standardised test (ToPP), parents were also asked about their children's play at home during the interview. Information analysed from parents' reports suggested that children's pretend play was generalised across settings, people and toys. Parents shared during their interviews that children with ASD were engaging in pretend play using different toys (possibly similar) at home with parents and sometimes with their siblings. It was likely that the children's play behaviour was enhanced as the result of parents implementing the DIR/Floortime[®]-related techniques including following the child's lead and being playful during their interaction that their children.

Since children's play were the results of engaging more in child-led activities with their parents (including play), and the play was not directed by the parents, children's pretend play skills were more robust and could be generalised in different settings spontaneously (Kasari et al., 2013). The same generalisation and maintenance of pretend play were found in Barton's (2015) study that utilised the system of least prompts with four children with disabilities. All four children maintained their pretend play in the unstructured, free play setting in their classroom (different setting than the intervention session) without the presence of the interventionists.

Despite being given the opportunity to explore and play more, a few children in this study still showed little to no pretend play after the implementation of the DIR/Floortime[®] intervention program. This might be due to their lack of interest in playing and their

excessive interest in only one toy or one type of play. However, for some children, their lack of interest in playing and their excessive interest in the features of the toy could be one of the factors restricting their pretend play. Two of the children that did not produce the play (Child B and Child E) were observed having no interest in engaging in functional play. Throughout the intervention study, they usually engaged in earlier stages play such as exploration (e.g., turning and examining a toy) and sensorimotor play (e.g., jumping on the trampoline, shaking and banging toys). These findings might be explained by the child's lack of interest or their play development was delayed.

In the DIR model, pretend play is the fifth developmental capacities stage, and both children were still at the earlier stages of capacities with unstable abilities of the first (regulation and attention) and the second (social engagement) stage. It is likely that their play skills are developing with all the exposure and increased engagement in play, but they are not developmentally ready to learn and produce pretend play spontaneously (Kasari, Chang, & Patterson, 2013). It has been noted in the literature that children with ASD's play was delayed, often engaging in repetitive play and lack of spontaneous pretend play (Baron, 2015; Jarrold, 2003; Kasari et al., 2013; Strid et al., 2013; Wing, 1997).

Children's interests and familiarity with the object contributed to their ability to pretend play, however, it was not the case for a few children in this current study. For example, Child B was not generating any pretend play behaviours even with prompting, while Child E was observed producing pretend play only with instruction from his parents. Their limited frequency of engaging in pretend play could be explained in terms of their meta-representational ability and the concept of Theory of Mind (ToM). To be able to pretend, one has to be able to simultaneously hold two mental representations, the real world and the pretend situation referred to as metarepresentational ability (Leslie, 1987). This will allow a child to consciously play with the object or self (real world representations) while

simultaneously assigning a pretence component to the object or self, such as adopting a new role for oneself or imagining an object or assigning an absent attribute or property to the object. The ability is also related to understanding one's own, and other people's mental state as well as how people might perceive the world (Leslie, 1987) or the ToM.

It is believed that children who possess meta-representational ability and greater ToM skills can understand and produce more pretend behaviours (Bingham, 2010; Kang et al., 2016; Taylor & Carlson, 1997). Children with ASD were believed to have problems with their pretend play skills due to these factors. Although children with ASD's meta-representational ability and ToM were not assessed in the current study, it is worth discussing particularly in relation to Child B's inability to demonstrate any pretend play.

Child B was observed spontaneously licking and biting a plastic fruit toy (e.g., apple, grapes) after exploring the toys for several minutes, and after being prompted by his mother to play with the toy on several occasions throughout the study phases (pre- and intervention sessions). This action suggested that he had some problems differentiating between real objects and toys, as well as pretending even after the 'pretending behaviours' were modelled to him (e.g., his mother pretended to eat the toy apple and said "yummy", handed the apple to him asking if he wanted a bite, he then bit the toy with intention of a real-life outcome, taking a bite and eating the apple). He was also observed playing a hide-and-seek game with his mother where he hid inside of a polyester tunnel and deliberately pushed his head to the surface of the tunnel until the shape of his head was visible where she stood beside the tunnel and pretended to look for him. This suggested that he did not have the ability to understand his mother's intention where she was just pretending to not see him, strongly suggesting the association between pretend play and ToM reported in previous studies (Bingham, 2010; Jenkins & Astington, 2000; Kang et al., 2016).

It has been suggested that play has a key link with children's development (Pierucci et al., 2015; Stanley & Konstantareas, 2007; Thieman-Borque, Brady, & Fleming, 2012) and pretend play has been linked to children's verbal ability (Bingham, 2010; Lewis, Boucher, Lupton, & Watson, 2000; Rutherford & Rogers, 2000; Strid et al., 2013). Children with ASD often present with language deficits that negatively impacting their pretend play (Strid et al., 2013). In this study, for all categories and sub-types of pretend play, there were several children with ASD who demonstrated improvement in their pretend play after engaging in the DIR/Floortime[®] home-based intervention program for few weeks. In agreement with the outcomes of the ToPP, parents also reported that their children's language and communication skills had improved with the implementation of the DIR/Floortime[®] intervention (see Chapter 5 for details), supporting the suggested play-child development link. Children's language abilities were not formally assessed in this study, however, only one child was identified as non-verbal by his mother and he did not demonstrate any pretend play behaviours during the three phases of the study (i.e., Child B).

Similarly, Strid et al.'s (2013) findings also indicated that compared with children with ASD who are non-verbal, the number of children with ASD who were verbal, exhibited more skilled pretend play behaviours. In their study, eight of thirteen speaking and only one of six non-speaking children with ASD were observed engaging in pretend play with their parents during free play sessions. Although there was no relationship found between parents' synchronised comments during the play (i.e., responsive communication with the child) and pretend play, Strid et al. (2013) found that parents of children with ASD who were verbal used more synchronised comments and in turn those children displayed more pretend play behaviours than those who were non-verbal. In this study, both Child B and Child E who produced no to little pretend play after the initiation of the DIR/Floortime[®] home-based intervention did have marked language deficits.

Child B was identified as non-verbal and remained unchanged after the intervention, while Child E was reported to have shown improvement, but his two-way communication skill was still very limited. For example, he needed prompting to do or say something. Although Child E was observed producing one of the object substitution types of pretend play with and without a toy (e.g., assigning absent attribute), this occurred after being instructed by his mother. It might be that he was only performing the act of pretend play as instructed without understanding that it is pretend play since he did not display any other pretend play spontaneously.

6.2.5 Indirect impact of the DIR/Floortime® home-based intervention based on parents' reports: children with ASD improved skills, behaviour and expression of positive emotion

Analysis of parents' reports revealed that children with ASD's showed improvement in their skills including communication, social interaction and play skills. Most parents also reported that their children's negative behaviours had reduced while positive behaviours had increased, such as fewer tantrums, being more cooperative, sharing, taking turns and following instructions. Throughout the study, parents noticed that their children with ASD became happier, less stressed and even became more confident in themselves when performing a daily activity and play.

In this current study, only children's interaction with the parents and their pretend play were formally assessed. Thus, children's positive changes in their skills mentioned in the previous paragraph were gathered from parents' reports are treated as the indirect impact of the DIR/Floortime® home-based intervention program. Although it would be more likely for parents to report improvements in their children since they were the one implementing the intervention, however, parents' reports have merit in evaluating the changes. This is because children spent most of their time with the parents, hence parents would be able to detect even the slightest changes more than the formal assessments could as it usually takes a short period

to evaluate, particularly about their communication (Dale, 1991; Keen et al., 2007). Keen et al. (2007) and Stahmer et al. (2017) conducted parent-mediated home-based interventions to facilitate children with ASD's social communication skills and in both studies, children's improvements were obtained from parents' reports.

Since the child-parent relationship is deemed to be the most optimal environment for fostering children's development (Mahoney, Finger, & Powell, 1985), a vast number of studies had utilised the parent-mediated intervention with children with ASD. It shows in the literature that parent-mediated intervention can effectively improve children with ASD's development and skills including language, communication, social participation, cognitive, as well as maximising the children's learning (Dawson et al. 2010; Dionne & Martini, 2011; Keen et al., 2007; Liao et al., 2014; Pajareya & Nopmaneejumrulers, 2011; Siller et al., 2013; Solomon et al., 2007; Solomon et al., 2014; Stahmer et al., 2017; Vismara, Colombi, & Rogers, 2009).

During the interviews, parents reported that they have been playing with their children more (including sensorimotor and pretend play) and using the play activities to teach and encourage them to communicate with them. Parents increased engagement in their children's activities of interest had also led to improvement in children's language, communication and social interaction skills with greater opportunity were provided for them to develop through the activities. Parents' reports in this current study suggested that this child-led based approach intervention, the DIR/Floortime[®] intervention program has a promising effect in improving various children's skills.

The improvements are likely due to the focus of the DIR/Floortime[®] intervention program on child-led activities and encouraging parents to interact with their children especially through play activities. One mother, Mrs. H shared during her interview that she

noticed that her four-year-old son's language skills improved through play activities. He was able to produce three words sentences the more she played with him.

Play has been identified to have a significant association with children's development. For example, pretend play was found to be highly correlated with language and cognitive abilities (Lewis et al., 2000; Thieman-Bourque, Brady, & Fleming, 2012). It also predicts language and social skills development among children with ASD (Toth, Munson, Meltzoff, & Dawson, 2006).

A previous study that utilised a child-led approach to facilitate children's social skills through play, the 'Learn to Play' program has reported a positive improvement in children's play, social and language skills (Stagnitti, O'Connor, & Sheppard, 2012). The study involved 19 developmentally delayed children including those diagnosed with ASD and completed the program for six months. Stagnitti et al. (2012) also reported that there were associations between play and social skills as well as pretend play and children's language upon completion of the program. Similar to the current study, this intervention approach focused on the interventionist following the child's lead (which usually during play activities) and match their behaviour and skills with children's developmental level (Stagnitti et al., 2012).

Children's improvement could also be the result of they are becoming more comfortable to interact with their parents after the implementation of the recommended DIR/Floortime® technique by the parents. Perhaps, children with ASD felt that their parents understand them more when they followed their lead and interest instead of redirecting the activities to fit parents' interests and goals. This might cause them to be more comfortable and confident to initiate interactions with their parents that lead to improvement in their communication and social skills. In the DIR model, the first stage of developmental capacities to be mastered by children is shared attention and self-regulation. By following their children's lead, parents slowly learned the children's unique characteristics and

eventually gain their children's attention. It also helped the children to regulate themselves with their surrounding (including people and environment) as they become more comfortable with other people and familiar with the environment.

Similarly, Casenhiser et al.'s (2013) findings also demonstrated that children with ASD who underwent the DIR-based intervention for 12-months showed significant improvement in their interaction with parents where they were more attentive and more involved as well as exhibiting greater enjoyment during the interaction. The changes were suggested to be facilitated by the changes in caregiver's behaviours during child-parent interactions such as co-regulation, joining, support of reciprocity and expression of enjoyment of the child.

Most of the time, children with ASD exhibited negative behaviours as they had issues with adapting to new things including activity, environment and expressed their frustration in performing the activities. Since they have limited communication skills, they usually expressed their feeling of discomfort and frustration with negative behaviours such as tantrums, screaming and hitting. This is probably due to feelings of stress when being interrupted while engaging in an activity and having to provide an appropriate response to parents' cues or communication within a timely manner. However, with the implementation of the DIR/Floortime[®] intervention, parents were encouraged to follow their child's lead and be responsive to their children.

Being highly responsive, parents signalled their children or communicate with them in a way that is developmentally appropriate to elicit a response from the children (including verbal utterances, non-verbal signals such as gesture, eye gaze, etc.), as well as responding to the children in a timely manner to maintain the interaction (by treating all children's behaviours, cues, signals and communication as meaningful) (Warren & Brady, 2007). This would put less stress on the child to respond appropriately to parent's cues and signals in a timely manner, making the child enjoy the interaction more which led to increasing

opportunity for them to develop their language abilities, communication and social skills (Casenhiser et al., 2013). However, previous studies have demonstrated mixed outcomes of parental responsiveness on aforementioned children's development as some studies found a positive impact in improving it (Landry, Smith, Swank, & Miller-Loncar, 2000; Siller et al., 2013; Tamis-LeMonda, Bornstein, & Baumwell, 2001) while some studies showed little to no impact on children's outcome (Kasari et al., 2014a, 2014b; Shire et al., 2016).

Parental responsiveness has been the primary target in the Developmental Social Pragmatic (DSP) interventions, as well as blended DSP and behavioural interventions such as DIR/Floortime® (Greenspan & Wieder, 1997), Project ImPACT (Ingersoll & Dvortcsak, 2010) and JASPER: Joint Attention, Symbolic Play, Engagement and Regulation (Kasari, Freeman, & Paparella, 2006) as it is the most important factor in fostering children's development including language, communication, social interaction and play skills. In regard to the DIR model's developmental stages, joint engagement (skills started in stage one and enhanced in stage two) has been associated with parental responsivity that scaffolds the later development of social interaction, communication and language skills (Shire et al., 2016).

Solomon et al. (2014) through the PLAY program that operationalised DIR and Stahmer et al. (2017) through Project ImPACT that was based on developmental and naturalistic behaviour models demonstrated that parents' responsiveness had significantly improved after the intervention's implementation. Parental responsiveness had positively impacted their children with and at risk of ASD's social communication skills. It has also been shown in Vismara et al. (2009) that parental interaction with their children has a positive effect on their communication skills development as children's skills continued to develop after the termination of the study where no training or coaching was provided to the parents.

Parents' reports of children with ASD's improved language and communication skills supporting the findings of previous literatures demonstrating parent-mediated intervention's

positive impact on children's language and communication skills. Parent-mediated (fully or with additional of therapist-mediated) intervention based on the DIR model or the developmental components had been established to improve these skills (Casenhiser et al., 2013; Dionne & Martini, 2011; Liao et al., 2014; Pajareya & Nopmaneejumrulers, 2011; Siller et al., 2013; Solomon et al., 2014; Vismara et al., 2009).

In one of the study's utilising the DIR model, Solomon et al. (2014) conducted a one-year randomised control trial study through PLAY Project Home Consultation (PLAY) program, a parent-mediated social reciprocity intervention with 128 parents and children with ASD (community or control group = 64 pairs, intervention or PLAY group = 64 pairs). Similar to the current study, PLAY program was developed based on the DIR model, involving parental coaching, modelling and video feedback analysis. However, unlike the current study, the PLAY consultants went to the participants' home for home visits, recorded child-parent interaction, analysed the interaction and provided parents with a written "PLAY Plan" that outlined the techniques and activities that could improve their interaction and play skills further to encourage their children's development. Upon completion of 12 months of intervention, they found that parents in the PLAY group showed a great improvement in their responsiveness while PLAY children's interaction skills and socio-emotional development had significantly improved. However, the outcome of children's language abilities had shown increasing trend but was not significantly different between the intervention and control group.

Other than following the child's lead, from parents' reports and the observation of participants' follow-up sessions showed that parents had been using the '*play and pause*' technique while implementing the intervention with their children. This technique builds up children's anticipation of what would come next when their play partner (e.g., parents, therapist) pause the play activity. It also encourages the children to initiate or respond

appropriately to their play partner's cues (the act of stopping in the middle of the activity) as children must decipher what is being communicated by the parents' action of stopping the activity and respond appropriately. They would also have to communicate their intention appropriately so the parents could understand them. This provides the children with the opportunity for them to improve their language and interaction skills. It also enhanced the children's cognitive skills as they deciphered the signals and cues from the parents.

Despite being one of the recommended techniques to be used when implementing the DIR/Floortime[®] intervention, most studies did not describe or mention the '*play and pause*' technique being used during the study (either during the training, coaching or intervention implementation). One study that explicitly included this technique as one of the treatment's principles or strategies is the study conducted by Casenhiser et al. (2013). The technique was congruent with the '*support of independent thinking*' item, one of the fidelity to treatment behaviours. From the analysis, caregiver behaviours of supporting children's independent thinking improved following treatment. Regression analysis also showed that the behaviour predicted children's language change, involvement, initiation of joint attention as well as the enjoyment of child-parent interactions.

Another technique that parents used was '*playfully obstruction*', that is obstructing the children's activity playfully to gain, maintain their attention as well as encouraging them to initiate or respond to parent's cues, signals and communications. Furthermore, it can also serve the purpose of breaking the rigidity of children with ASD's behaviour by showing another way of playing with toys. Since it was done playfully, children can ease into learning the behaviour and with improved adaptability, their social skills also improved. Children were reported by the parents to be able to play with their siblings and other family members (e.g., cousins, grandparents) and had engaged more in play activities that they could play together with parents.

Although the technique is one of the recommended techniques in the DIR/Floortime[®] intervention program, only one study that utilised the DIR/Floortime[®] approach explicitly stated the playful obstruction technique was being used. In the study, parents were taught and demonstrated to use the technique and it was being implemented during the intervention. The study was a single-subject study conducted by Dionne and Martini (2011) with a 3.6 years old boy with ASD for the course of nine weeks (two weeks for baseline, seven weeks for intervention). In contrast to other DIR/Floortime[®] intervention's studies, this is the only study which intervention was being implemented by an occupational therapist at the clinic and parents at home with the interactions measured between the therapist and the child.

The child received 30-minutes of the DIR/Floortime[®] program four times a week, for seven weeks and the mother continued the intervention at home (from the mother's journal, the DIR/Floortime[®] program being implemented average of three 20-minutes sessions per day). At the end of the intervention period, the child's interaction as measured from the frequency of circle of communications (CoC) increased with both the therapist during the therapy session (findings of the visual analysis) as well as with the mother at home (information obtained from mother's journal).

This current study's findings suggested that the DIR/Floortime[®] recommended techniques can efficiently improve children's skills and behaviours.

6.2.6 Summary of the benefits of the DIR/Floortime[®] home-based intervention

Details discussion of improvements in both children with ASD and their parents following 14-weeks of the DIR/Floortime[®] intervention program provides a promising impact of the parent-mediated home-based DIR/Floortime[®] intervention. The intervention clearly showed to be beneficial for improving child-parent interactions as parent-initiated directive communication decreased, child-initiated and parent-initiated non-directive communication showed an increasing trend. The implementation of the DIR/Floortime[®]-

based activities were also useful in improving parents' quality of life, decreasing maternal depression and parents' anxiety, increasing maternal sense of competence and paternal self-efficacy. The findings also suggested that the DIR/Floortime® approach supported the development of children with ASD's pretend play. Finally, parents' reports suggested that the DIR/Floortime® intervention program reinforced parents' play and interaction skills as well as children's positive behaviours, emotions and social interactions.

The positive impacts of the implementation of the DIR/Floortime® intervention program can be also discussed in relation to the theories and models underpinning this study including the Canadian Model of Occupational Performance-Engagement (CMOP-E; Polatajko, Townsend & Craik, 2007), the Bioecological Model (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006), the DIR/Floortime® approach (Greenspan & Wieder, 1997), and Piaget's Cognitive Developmental Theory (1962). The theoretical and conceptual basis of the study's findings are discussed below.

6.2.7 Theoretical contextualisation of the study's findings

The occupational performance and engagement of an individual are influenced by three factors as depicted in the CMOP-E (Polatajko, Townsend & Craik, 2007) – the person, occupation and environment. The findings of the current study indicated that children with ASD and their parents' occupational performance and related skills improved with the implementation of the DIR/Floortime® program. These improvements included children's enhanced engagement in daily living activities such as bathing, dressing and eating; increased levels of play behaviour, and increased parental involvement with their children's parenting.

The DIR/Floortime® approach emphasises that parents need to follow their child's lead as a basic premise to promote children's development. Following the child's lead assist parents in the current study to better understand their child's likes, dislikes when engaging in an occupation, and their preferences of performing the occupation. As depicted in the DIR

model and the CMOP-E, it is essential for an individual to engage in an occupation since it promotes skill development and motivation to engage in the occupation meaningfully.

Most parents, prior to participating in the study believed that they have to instruct their children for them to learn and develop their skills. Parents also perceived that play did not have much value for children's development. However, parental beliefs changed after parents attended the DIR/Floortime[®]-based training sessions and implemented the program principles at home with their children. With the shift in parental beliefs, their occupational performance of parenting also transformed from being directive and always instructing their child to follow their child's lead. In other words, the parents let their child take the active role in their interactions and occupational performance versus the parents directing and guiding the child's activities.

When implementing the intervention, parents practised '*following the child's lead*' which they became familiar with from the DIR/Floortime[®] training sessions and resulted in positive changes in their children's occupational performance. For example, one mother reported that her son with ASD could bath on his own after a few weeks of implementing the DIR/Floortime[®]-related principles. The mother, Mrs. E, acknowledged that she used to bath him as it was quicker than to let him do it himself. However, as she learnt that it is important for the child to be regulated for him to be able to engage in the occupation at hands and later developed his communication and other skills; she changed her way of performing the taking care occupation with her child. She used the DIR/Floortime[®]-based techniques, '*play and pause*' where she initially helped her son bathing but stopped in the middle of the activity and waited for him to indicate that she should continue. Using this technique, she gradually let her son perform the bathing activity independently. As reported in the results chapters, children's improvements in their daily functional tasks and social interactions contributed to positive changes in parents' quality of life and wellbeing.

This indicated that the DIR/Floortime[®] program positively influenced parents' cognitive and affective capacities (i.e., components of a person as depicted in CMOP-E) and occupational performance (e.g., parenting, taking care of children by letting the child lead the activity and perform the activity with minimum support). These changes led to children's improvements in their occupational performance and engagement including their self-care activities.

Play is the backbone of the DIR/Floortime[®] approach and parents were encouraged to provide an environment that promoted play skill development. As depicted in CMOP-E and the Bioecological model (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006), the environment is one of the vital components that shapes an individual's development and influences his/her occupational performance. A conducive environment promotes an individual's skill development and occupational performance while an unfavourable, non-supportive environment would limit the development and performance of children's play.

Parents during their interview revealed that they have modified their home environment to make it more conducive for play by filling up their home with toys. One parent reported that they bought toys that they could use to play and for academic-related learning at the same time. Parents also changed their home environment to make it more playful by altering their interaction approach with their child with ASD. When the child was provided with the opportunity to explore the environment that was more conducive to play, it promoted the child's play development and strengthen their social skills.

The combination of changes in parents' beliefs regarding the most appropriate means that promotes children's development, occupational performance in parenting and taking care of their child with ASD led to parents facilitate a conducive context for children's development. This changes in turn promoted children's development and skills including children's body function, motivation and affect (e.g., being happier and enjoying interacting

with parents), as well as their occupational performance in self-care and play activities. The DIR/Floortime[®] intervention program resulted in a range of improvements in children with ASD and their parents.

One of the measures for child participants was pretend play, also known as symbolic play. In occupational therapy, play is a child's occupation and it has been known that it is an important medium for children's development including language, cognitive social and emotional development. The study's intervention was guided by the DIR model that describes children's development with an emphasis on play through the Floortime[®] intervention principles (Greenspan & Wieder, 1997; Wieder, 2017).

The development of symbols in child's play depends on the child's sensorimotor schemas that are built throughout the years of exploring and experienced various objects, persons and environment while playing in the early years (Piaget, 1962; Ungerer, Zelazo, Kearsley, & O'Leary, 1981). '*Exploring and experiencing*' (that can also be regard as '*action and perception*') are the two foundation components of symbol development (Ungerer et al., 1981; Wieder, 2017). Both action and perception are embedded with emotions, therefore the DIR/Floortime[®] approach encourages parents to follow the child's lead and play with them and interact with them affectionately (Wieder, 2017). Parents' affective link to enhanced the child's ability of shared attention, self-regulation, attachment and engagement which promotes the development of pretend play.

It is important for the child to experience '*action and perception*' through parent-child interaction in their everyday life including when performing daily living routine and play. This is because the words, the actions; and the emotional signal that parents convey to them when interacting would be stored in the child's mind and registered as schemes. This would be the precursor of symbols development, hence the importance of parents being responsive (e.g., follow the child's lead) to children's cues and signal (Greenspan & Shanker, 2004;

Ungerer et al., 1981; Wieder, 2017). It is an integral part of children's repertoire of skills to pretend that they understand the original form of an object, person or environment, so they are able to separate the perceptions from the fixed predictable actions when they engage in pretend play (Ungerer et al., 1981; Wieder, 2017).

Children's symbols usually begin with representation of something that is personal, inseparable from them and related to their experiences of being cared and loved during daily routine activities such as feeding, bathing, or being tucked in at night. This was evident in this study as the findings (refer Table 6.1) indicated that majority of children with ASD demonstrated the '*assigning absent attribute (AAA)*' followed by '*functional play with pretence*'. The play behaviours that children demonstrated were usually related to their daily routine such as feeding the hungry teddy with square wooden blocks (substitution for food) placed on a toy plate, or tucked in a sleepy teddy under an A4 paper (substitution for a blanket) on a wooden toy bed. This was expected as the child participants were between the ages four and nine years old and based on Piaget's theory, children usually start to engage in symbolic play when they are 18 months of age (Piaget, 1962). As this type of pretend play bears the most similar to children's daily life routine, even the one child (e.g., Child E) whose scores were the lowest, demonstrated this type of play (e.g., raw scores are equivalent to the play skills of a child aged 19.2 months and 16.9 months during pre-intervention and intervention session, respectively).

Children's symbols develop into a more complex form where it involves more complex emotions and motivations (Wieder, 2017), and then further develops into play with creation of imaginary objects without support of physical object (Ungerer et al., 1981). The most complex type of play involves several forms of pretend play types being demonstrated in a logical sequence or story-like (Barton, 2010). As expected, children with ASD have some delay in their pretend play skill repertoire. For example, in the current study, only a few

children demonstrated the '*imagining absent object (IAO)*' type of pretend play while only one child (e.g., Child C) demonstrated a '*scripted pretend play*' during the post-intervention session. This is an example of how parents being responsive to the child's lead can foster the development of their children's pretend play skills.

Child C was already demonstrating pretend play when he was first assessed during the free play session of the pre-intervention session. Often, his mother would ignore him or ask him to play '*properly*', referring to playing with the toys without pretending. For example, he would play in a ball pit trying to find as many animal figurines that was scattered in the pool. He pretended to be an excavator, digging and scooping the ball in an attempt to find the animal figurines. However, his mother, Mrs. C did not play along with him and told him to play properly and complete the task (e.g., finding the animal figurines) as quickly as he could. Mrs. C then utilised the following the child's lead strategy, one of the foundation of the DIR/Floortime[®] approach and supported Child C's play. At the end of the intervention period, Child C was the only one who was observed to demonstrate the most complex type of pretend play, referred to as the '*scripted*' or '*sequence pretend play*'.

One child, Child B did not show any pretend play throughout the study phases. He still demonstrated exploratory play and had problems in understanding the function of objects or whether an object was real or not. This corresponded to the children's play development as outlined in Piaget's theory where symbolic play emerged after the sensorimotor stage when the child has a repertoire of schemas related to objects and actions (Ungerer et al., 1981). The child has issues with regulating himself and this impacts his shared and joint attention abilities. These abilities are the precursor for children to be able to understand the function of the object which later would assist them in formulating symbols as he needs to be able to separate the real and the representation or the new function of an object that is involved in generating pretend play (Wieder, 2017). As suggested in the DIR model (Greenspan &

Wieder, 1997; Wieder, 2017), developing children's regulation and attention skills are the foundation of children's development and this can be achieved by applying the DIR/Floortime® approach. This was evident in the study that as the intervention period progressed, children demonstrated an improved ability to self-regulate, demonstrated shared and joint attention as well as exhibited the ability to understand signals from parents. This is the precursor for the development of children's symbolic abilities (Wieder, 2017).

Although the findings demonstrated that the parent-mediated, home-based DIR/Floortime® program is therapeutically advantageous for both children with ASD and their parents in various areas, it is crucial to evaluate the practicality of this intervention approach in the Malaysian context. Therefore, a detailed discussion of the DIR/Floortime® program's applicability is presented next.

6.3 DIR/Floortime® – Is it practical?

This is the first study that utilised a parent-mediated home-based DIR/Floortime® intervention approach with parents and children with ASD in Malaysia. In this section, the practicality of the intervention relating to the time requirements, the implementation of the DIR/Floortime®-based techniques and principles, the cost and availability of related resources in a Malaysian context are discussed.

6.3.1 Time requirements of engaging in the DIR/Floortime® sessions at home with children with ASD

Parents were asked to engage in the DIR/Floortime®-based activities at home with their children with ASD for a minimum of ten hours per week. This could be done at any time or place, and included activities at the children's and parents' convenience. Based on parents' reflective journals entries, the amount of time engaging in the DIR/Floortime®-related activities at home every week was calculated and on average, parents engaged in the DIR/Floortime® sessions with their children ranging from 117.5 minutes (1 hour 57 minutes)

to 743 minutes (12 hours 43 minutes). Of the eight participants, five were able to engage in the DIR/Floortime[®]-based activities for a minimum ten hours per week at least once during the intervention period (four of them engaged in an average of ten hours per week across eight weeks of the intervention period - Case 2, Case 3, Case 5 and Case 6). Three of the parents were non-working mothers while Mrs. F (Case 6) was working four days a week and Mrs. G was on study-leave during the first six weeks of the intervention period. Two participants (Case 1 and Case 8) engaged in the DIR/Floortime[®] sessions less than average of five hours per week, these participants were from families where both parents are working (e.g., working full time, Monday to Friday from 8 a.m. to 5 p.m.).

The information relating to the time spent engaged in the DIR/Floortime[®]-based activities was obtained from parents' reflective journals and therefore it might not be completely accurate since it depended solely on the vigilance and accuracy of the parents' reporting. Some parents reported that they actually engaged in the DIR/Floortime[®]-based sessions more than what they had noted in the journals because they often forgot to fill out the journal or were distracted by the multiple other demands of parenting a child with special needs. Partly, this was because of the fact that most of the time they engaged in the activities spontaneously with their child without any plan or preparation and engagement in other daily routines (e.g., household chores, picking up children from school). The information from parents' reflective journals was verified by asking parents to describe some of the activities they had reported in the journals during the follow-up sessions and during their post-intervention interview with the researcher.

No visual proof was obtained to validate the parental time logs and although the method may lack some rigour, this method of collecting information via verbal parental report or written records (e.g., parents' weekly or monthly log) has been used in several other studies that utilised the parent-mediated DIR/Floortime[®] home-based program (Dionne &

Martini, 2011; Liao et al., 2014; Mahoney & Perales, 2005; Pajareya & Nopmaneejumrulers, 2011; Solomon et al., 2007; 2014), other parent-mediated home-based interventions (Keen et al., 2010) as well as home activity programs prescribed by therapists (McConnell, Parakkal, Savage, & Rempel, 2015). Therefore, the information about the time engaged in the DIR/Floortime[®] sessions at home was deemed credible in this current study context.

Greenspan and Wieder (2006) recommended that the DIR/Floortime[®] intervention to be conducted in six to ten 20-minutes sessions each day (e.g., 2-5 hours per day). However, since the findings reported by Liao et al. (2014) showed significant improvements in children with ASD's communication and interaction skills with only ten hours per week of the DIR/Floortime[®]-based activities, parents in the current study were also asked to do the same. As mentioned in the previous paragraph, half of the participants did not fulfil the ten-hour time requirement for eight weeks (one participant did fulfil the time requirement for seven weeks). This could be due to several factors including limited time available for parents, especially when both parents were working. The time commitments related to implementing the DIR/Floortime[®] regimen at the levels suggested by Greenspan and Wieder (2006) and even those used by Liao et al. (2014) appeared to be too demanding or potentially unrealistic for parents in the current study.

This was evident from parents' interviews during which several of them mentioned that they only typically have a couple of hours after they get home from work to complete all their household chores, take care of the family as well as engage in the DIR/Floortime[®]-based activities as per the study's requirement. In the majority of Malaysian families, mothers are responsible for the childcare and household tasks including cooking, doing laundry, cleaning and also helping the children with their schoolwork (Hossain, 2014; Noor, 1999). Since most families do not have a maid or domestic helper, the mother usually does all the tasks with some help from the father. Most mothers mentioned during their interviews that they

prioritised their responsibilities of taking care of the family and household chores over ‘*playing*’ with their child. Parents often used the ‘*play*’ to refer to engaging in the DIR/Floortime[®]-based activities.

Mothers would complete all the household-related tasks first and then only engaged in the DIR/Floortime[®]-based activities with their child which usually at the end of the day. The DIR/Floortime[®] intervention is based on the principle that it is child-led, and parents have to follow what their children are doing and what they are interested in (Greenspan & Wieder, 1997, 2009). Due to the difficulties that children with ASD usually present with such as limited attention span, communication and interaction skills problems, completing an activity while applying the Floortime[®]’s technique with them can be time-consuming.

During the weekdays, working parents only have few hours in the evening after coming back from work to complete all the chores, therefore, parents usually have to shorten the time engaging in or even choose not to engage in the DIR/Floortime[®]-based activities. For example, Mrs. H (working mother) said that during the weekdays, she could only spend time engaging in the DIR/Floortime[®] program with her son for approximately an hour and would spend time longer during the weekends (approximately 2-3 hours) to make up for the lost time. A similar occurrence was reported by Dionne and Martini (2011) where the mother of a 3.5 years old boy diagnosed with ASD reported in her daily journal that she engaged in three DIR/Floortime[®]-based sessions per day, with a shorter session during the weekdays (approximately 10 minutes) and longer session during the weekends (approximately 45 minutes).

Consistent with these findings, a study investigating parental adherence to home therapy regimen prescribed by their children with disabilities’ therapist (either physical, occupational or speech therapists) also reported the same outcome (McConnell et al., 2015). Almost half of the 390 families of children with disabilities (including intellectual disability,

ASD, Cerebral Palsy and Down Syndrome) who were provided with a home program from one of the therapists in the study experienced difficulties in implementing the prescribed regimen. One of the primary contributing factors to this was a shortage of time. The study also found a significant negative relationship between parental adherence to the prescribed home therapy program and the level of difficulty finding dedicated time to implement the intervention.

Other than limited time, working parents also mentioned about having limited energy and being fatigued after getting back from work was one of the factors that contributed to them not always being able to fulfil the DIR/Floortime[®] time requirements. The following quote from one of the fathers further explained this point:

“Initially, it was stress [to engage in DIR/Floortime[®] at home] because we feel like we HAVE to do it. Sometimes, because I’m tired, you know? Just got back from work. When we were tired, then we were forced to play...get easily irritated (when the child exhibited negative behaviours)” (Mr. F).

Following a child’s lead could be challenging and energy consuming especially when the child has difficulty in regulating himself (first stage of the DIR model) as they would be taking part in several activities for very short periods one after the other or just moving around. Therefore, it would be very challenging for parents to follow their leads and gain their attention which can then lead to frustration experienced by both parents and the child with ASD. This posed a challenge for parents to be able to fully dedicate their energy and attention to take part in the DIR/Floortime[®]-based activities, hence not fulfilling the specified time requirement.

Parents working was not the only one faced challenges in fulfilling the time requirements. The non-working mothers also reported that they prioritised taking care of their family’s needs and the household chores thus leaving them with limited time available for

engaging in the DIR/Floortime®-based activities with their children with ASD. Parents usually completed all the daily routine tasks without involving their children as it was usually easier, quicker and more efficient. Although parents had been taught about applying the DIR/Floortime® techniques and principles in all activities including daily life routines as well as play during the training sessions, they still reported having difficulties generalising this into their everyday life activities, routines and environments. This impacted the time available for them to participate in the DIR/Floortime®-based activities at home during the first few weeks of the home-based intervention period.

The time occupied in the DIR/Floortime® program improved after parents discussed the issue during their follow-up sessions with the researcher and received constructive feedback and coaching on how they could incorporate the DIR/Floortime® techniques throughout the day with their child at home. For example, Mrs. B mentioned that she initially could not complete the ten-hour requirement as she was having issues in dividing the time between her household chores, taking care of the family's needs, as well as the DIR/Floortime® program. For the first two weeks, they were engaging in the DIR/Floortime®-based activities for only 340 minutes (5 hours 40 minutes) and 425 minutes (7 hours 5 minutes), respectively. She said that she began to be able to fulfil the time requirements after discussing it with the researcher and being coached on how to incorporate the techniques into her daily schedule. She was then able to apply the DIR/Floortime® techniques during her child's daily activity routine as well as when she was completing her own chores. In the following weeks, she began to fulfil the ten-hour requirement with only one week of short of five minutes from ten hours. Another participant, Case 6's (i.e., Child F) time engaging in the DIR/Floortime® program also increased for approximately an hour during the last two weeks of intervention period when she realised her son liked to take part in baking activities and they started to create more

opportunities for them to engage in the activities and utilise the DIR/Floortime[®]-based techniques during such activities.

It has been suggested that the higher the level of the intervention's contextualisation within the daily life environment and routine of a participant, this would translate into higher levels of uptake of the intervention (Segal & Beyer, 2006). Therefore, with continuous coaching and discussion with parents, this helped them to contextualise the intervention into their daily life routines, and thus improved parents' adherence to the DIR/Floortime[®] program. Support received from therapists has been found to be one of the key factors that increased parental compliance with implementing interventions in home environments (Gajdosik, 1991; Tetreault, Parrot & Trahan, 2003) as it is difficult for parents to integrate the recommended techniques into their own daily activity schedules. Tetreault et al. (2003) evaluated parental compliance and perception on implementing a home activity program provided by their children's therapists. The study involved 41 families of children presenting with global developmental delay (GDD) and found that receiving support from therapists such as follow-up on parents' implementation and issues parents are facing, positively impacted parental compliance to the program.

Parents also indicated during the interviews that they found it was difficult for them to participate in the DIR/Floortime[®]-related sessions because they had other children that they need to attend and take care of. One of the mothers commented that her youngest child sometimes would act out when she was involved in the DIR/Floortime[®]-based activities with her other child with ASD to gain her attention. Meanwhile, another mother, Mrs. H reported this during her interview,

“DIR/Floortime[®] is challenging to implement because [the child with ASD] have other siblings. He have a younger brother, so if I want to focus on him, we have to focus on his younger brother as well. I could do it during the weekend. My husband would focus

on one, and I would focus on one [e.g. the father with the younger sibling, the mother with the child with ASD]”.

Although parents were encouraged to include siblings and other people (e.g., grandparents, uncles, aunts, cousins, friends, other relatives) while participating in the DIR/Floortime[®]-based sessions, it was recommended once parents were familiarised with the techniques and the child had developed shared attention and only have minimal issues in engagement and relating with other people (e.g., the DIR’s model developmental stage 1 and 2, respectively). During the training, parents were given suggestions of activities for them to engage in the DIR/Floortime[®]-based activities with other people involved. Nevertheless, it was not surprising that parents reported that it was challenging since this was their first time implementing the DIR/Floortime[®] program and all children in this study had issues regulating their behaviours and reactions, it was expected that they had limited experiences of shared attention and engaging in activities with their parents.

In previous studies evaluating parents’ compliance with home programs prescribed by therapists indicated that family size was one of the factors that favoured parents to implement the program (Failla & Jones, 1991; Tetreault et al., 2003). With more family members to take care of, parents (especially mothers) often have limited time to focus on implementing the DIR/Floortime[®] approach for child with ASD.

Compared to other studies that evaluated the effectiveness of the DIR/Floortime[®] program, parents in this study engaged in the DIR/Floortime[®]-based activities at home the least, approximately an average of 8.5 hours per week for all participants. Liao et al. (2011) and Solomon et al. (2014) reported that parents engaged in about 10 hours per week, Solomon et al. (2007) reported parents engaged in 10 to 15 hours per week while parents in the study by Pajareya and Nopmaneejumruslers (2011) engaged in approximately 15.2 hours per week. Although time engaged in the intervention was one of the important components of

the DIR/Floortime[®] intervention, the adherence to time requirements was not discussed in any of the studies including the two studies that considered parental employment status.

In this study, parents that were having extreme difficulties in adhering to the time requirement were from both-parents-working families. Although other parents (one-parent working families) also mentioned facing the same difficulty fulfilling the time requirement due to the multiple demands of work, family life and other children, they still managed to at least fulfil more than five hours a week. Several parents actually improved their time after had been oriented and were familiar with the techniques, receiving feedback and coaching during the follow-up visits.

The findings suggested that majority of the parents could adhere to the time requirement and were able to improve their time engaged in the DIR/Floortime[®] program with feedback and coaching provided to them during the intervention phase. Nevertheless, it is a great concern that parents reported experiencing difficulties and stress when trying to fulfil the time requirements although they still managed to comply with the DIR/Floortime[®]-based requirements. The majority of parental stress had increased at the end of the intervention. This was probably due to additional demands placed on the parents to implement the intervention at home for certain hours. Several participants in this study included both parents, however, mothers were the primary implementer of the DIR/Floortime[®] home-based program. Mothers were also the ones who took care of the household tasks in addition to taking care of the children.

In addition, most families in Malaysia are comprised of parents who are both employed outside the home. Since Malaysian families follow a traditional male-leading family structure, fathers are typically responsible for supporting the family's financial needs while mothers usually uphold the responsibilities of childcare including being the main implementer of the DIR/Floortime[®] program at home and completing household chores even

if they are working (Hossain, 2014; Noor, 1999). Hence, mothers already have limited time and energy to complete all those tasks even without the additional demands of the home-based intervention. Therefore, a low-intensity home-based intervention might be more suitable for parents in Malaysia as it has been suggested to be one of the factors of parental compliance to home activity program prescribed for them by the therapists (Gajdosik, 1991; Tetreault et al., 2003).

Furthermore, parents in this study engaged in a less intensive home-based intervention compared to the DIR/Floortime[®]'s recommendation and previous studies but still showed improvement in child-parent interactions. This warrants for a less intensive DIR/Floortime[®] intervention approach as it could still improve child-parent interactions without causing parental stress to increase. Then, perhaps the DIR/Floortime[®] approach would lead to positive changes in both children and parents' outcomes.

6.3.3 Cultural applicability, resources and cost to practice DIR/Floortime[®]

Parents have demonstrated that even with all the challenges they faced and demands on their time, they still implemented the DIR/Floortime[®] intervention program at home with their child with ASD successfully. Some parents expressed their doubts when they started the DIR/Floortime[®] home-based program, however, they became more confident with it once they observed their child's improvement. This increased their efficiency and intensity of the DIR/Floortime[®] sessions at home. As has been discussed, parents faced challenges in implementing the DIR/Floortime[®] program due to their parenting style, beliefs and roles. Another factor that might hinder parents' implementation of the DIR/Floortime[®] approach at home is the absence of an intervention manual or a structured set of activities to work on at home.

An intervention manual or structured home program was not provided to parent participants due to several reasons. First, there is no published intervention manual available

from either the authors of the DIR/Floortime[®] program nor from previous authors who had published studies about the DIR/Floortime[®] intervention program. Second, parents were provided with two three-hour training sessions prior to the home-based intervention period that provided them with the knowledge and skills necessary to plan and implement the DIR/Floortime[®] program at home with their child. Furthermore, the DIR/Floortime[®] intervention approach is highly individualised as one of the foundation premises of the DIR model emphasises individual differences. Each child's intervention would be different from one another depending on their unique characteristics, developmental level, home environment, and child-parent relationship.

Parents with their knowledge and skills about the DIR/Floortime[®] program were assisted by the researcher with planning their DIR/Floortime[®] intervention approach based on all these factors and implementing the intervention activities that best fit their child's routine and were convenient for their family's schedule. However, parents were used to a directive approach from clinicians compared to themselves directing services provided. This issue was also faced by South Asian parents in Divan et al.'s (2015) study.

Divan et al. (2015) evaluated the effectiveness of a parent-mediated social communication therapy referred to as the Parent-mediated intervention for Autism Spectrum Disorders in South Asia (PASS). The PASS was an adapted version of the Preschool Autism Communication Therapy (PACT) that was originally developed in the United Kingdom and was utilised and evaluated with parents of children with ASD in India and Pakistan. Similar to parents in this study, the parent participants in Divan et al.'s study were used to a therapist-lead or directive approach. Parents were having difficulties when they started the program but eventually were able to adapt to the novel approach introduced to them as part of the PASS program (Divan et al., 2015).

Parents mentioned during their interviews that they would have liked to have had access to an intervention manual for them to follow when they implemented the DIR/Floortime[®] program at home. One parent, Mr. E, said that having a manual to refer to would have been helpful to improve their efficiency as they could then follow the written, structured program since sometimes they did not know how to or had difficulties engaging in the activities that best fit their child with ASD. Nevertheless, in the context of this study, parents managed to implement the DIR/Floortime[®] approach as required and with a structured intervention manual, perhaps it could further influenced parents' efficiency in implementing the intervention.

During the course of the study, parent participants were not required to pay any service fees for their child to take part in the DIR/Floortime[®] intervention program regardless of the status of their child with ASD's registration for a disability identification card. In Malaysia, individuals with a known disability who have registered and have a disability identification card are eligible for free medical treatment. This includes therapy services offered in governmental health institutions and some semi-governmental agencies (Department of Social Welfare Malaysia, n.d.; Klinik Terapi Carakerja, n.d.).

This study was conducted at a public university which is a semi-governmental institution and usually children without a disability identification card would be required to pay a small fee for each therapy session they attended (Klinik Terapi Carakerja, n.d.). However, none of the families who took part in this study were charged for the therapy sessions they attended. Parents were also not required to pay any fees for the training, coaching and consultation sessions provided. Hence, the cost of DIR/Floortime[®] intervention program was not a barrier for parents to implement the intervention at home.

None of the parents mentioned any additional financial stress resulting from participating in this study. The DIR/Floortime[®] follow-up sessions were scheduled at the

same time as their usual treatment session at the clinic. For example, for participants who had biweekly appointments scheduled with the occupational therapist at the clinic, had the follow-up sessions that were booked at same session as their usual session. Only the first 15 to 30 minutes of the clinic appointments were allocated specifically to the DIR/Floortime[®] session unless the parents and therapist indicated that they wanted to continue to focus on it. Meanwhile, participants who had weekly sessions with their therapist, attended the follow-up sessions as their pre-booked appointment with the therapist and the same format as previously described was applied.

All materials including the notes from the training sessions and parents' reflective journals were provided at no cost to the parents by the researcher. Therefore, in terms of cost, it did not impose any direct additional financial burden for the parents to implement the DIR/Floortime[®] intervention program since no fees were charged to them and the intervention took place in their home or places that they typically visited (such as the clinics) without being pre-set by the researcher.

6.4 DIR/Floortime[®] in Malaysia: What's next?

In previous two sections, the advantages and practicality of the parent-mediated home-based DIR/Floortime[®] intervention programs were discussed. It was one of the researcher's goals that the current study would promote the adaptation of the DIR/Floortime[®] program for the Malaysian context so that it would become part of occupational therapy practice in Malaysia. In this section, factors associated with the continuation of the provision of the DIR/Floortime[®] intervention approach within the Malaysian context after the study was completed are discussed.

6.4.1 Resources

As mentioned previously, parents were provided with notes and information about the DIR model and the Floortime[®] intervention approach as part of the training they received. However, they were not provided with a formal manual. The resources and notes provided to the parents by the researcher were in the Malay language. There are various books, reading materials (e.g., scholarly articles, online articles) and videos available in printed form and online that are accessible for parents and professionals in Malaysia to access from the web. However, all the materials are only available in the English language since the DIR/Floortime[®] model was developed and predominantly used in Western, English speaking countries up to this point in time.

Malaysia is a multi-ethnic country comprised of three main cultural groups, that are Malay, Chinese and Indian, as well as various indigenous groups. Malaysia's first language is Malay, but the majority of citizens can understand and converse in other languages including English, Mandarin, Tamil and their indigenous languages. All parents involved in this study were of Malay ethnicity, from middle-income families, with at least a high school certificate level of education, but most of them had a bachelor's degree.

Parents in this study did not identify the issue of the language that resources were available in as one of the barriers for them in implementing the DIR/Floortime[®] program at home. This was likely due to the educational backgrounds of the parents and the location of where the families lived. All participants resided in urban areas and they typically used a mix of Malay and English languages in their daily conversations, particularly with their child with ASD. However, the language of the available resources would likely have been a barrier for most Malaysians with lower educational levels or those who lived in rural, less developed regions of Malaysia.

For the parents who took part in the study, there appeared to be a need for them to implement some type of parent-mediated home-based intervention for their children in general. Two potential reasons for this could be the fact that there were no DIR/Floortime[®] providers available to assist parents in the geographical region where the study was conducted and there were very few occupational therapists available to offer the services that the families required.

Parents could conduct the DIR/Floortime[®] program at home after receiving some training sessions and references and resources of reading materials available in the Malay language that they could read and easily understand. Although Malaysian parents might be able to read and understand English, it would be challenging for majority of them to translate the concepts and approaches into practice. For the DIR/Floortime[®] intervention program to be used by Malaysian parents from all ethnic groups, levels of education, and location of residence, the resource materials needed to be made available in the Malay language as well as other languages, in both printed form and online, so they could be much more widely accessible to parents.

The materials could be translated from English into the Malay language by a qualified translator. However, resources and materials directly translated from English to the Malay language would not automatically be culturally and contextually appropriate since they were originally developed for use in the US. Publishing reference materials that could be used by parents in Malaysia should be done by someone who knows, understands and practices the DIR/Floortime[®] program in the Malaysian context. This would ensure that the DIR/Floortime[®]-based resources and materials available to the general public in Malaysia would be relatable and have a better cultural fit.

Therefore, occupational therapists in academic and clinical settings need to start to adapt, utilise and evaluate the efficiency of the DIR/Floortime[®] program in the Malaysian

context on a larger, more coordinated scale. Also, the Malaysian government should fund pilot projects where the DIR/Floortime[®] approach is trialled in a variety of contexts within the country. This would ensure that parents of children with ASD would have access to a range of service options and therapy approaches for their children.

Other than the language of the available materials, another possible barrier for the DIR/Floortime[®] program to be implemented in Malaysia on a larger scale is the type of the educational materials and resources available for parents to access. Parents in this study did raise the issue of needing a manual they could easily refer to. In other words, the parents indicated that they would have liked to have had access to a set of formal guidelines comprised of ‘how to do the DIR/Floortime[®] program’ with their child and a list of activities that could be done with their child while conducting the intervention at home. No intervention manual was provided to parents who took part in the study as there was no published manual available from the model’s authors or from the researchers who had previously completed studies utilising the DIR/Floortime[®] model.

This is partially due to the fact that the DIR/Floortime[®] intervention approach is a highly individualised intervention as it is based on the DIR model and it emphasises unique differences of individuals and unique features of the child-parent relationship. Therefore, no structured intervention manual was developed and made available in the Malay language. The researcher also did not have access to funding that would have facilitated the development and publication of such a resource manual in the Malay language either.

No written, structured program was given to parents as they were provided with training on the DIR/Floortime[®] program with the aim of empowering them to be the planner and implementer of the intervention with their child with ASD at home. This was also done as a way to encourage parents to implement the DIR/Floortime[®] program as they were given the freedom to apply the intervention at a time that best suited both parents and child since it

has been suggested that parents preferred this type of flexible treatment program approach instead of following a structured regimen (Novak, 2011).

On the contrary, parents in Malaysia were used to a directive approach from health care professionals with therapists prescribing intervention programs for their children compared to the approach adopted in this study that encouraged parents to be the main planner and implementer of the DIR/Floortime[®] intervention at home. Therefore, to ensure that the DIR/Floortime[®] model could be more readily carried out by parents in Malaysia, it is suggested that intervention guidelines that include examples of how to conduct the DIR/Floortime[®] intervention with children in the home environments would be more contextually and culturally appropriate for use with Malaysian families.

The DIR/Floortime[®] intervention approach is not readily conducive as a reflective approach to be manualised. However, the DIR/Floortime[®] approach guidelines could be included in a manual format as sets of activities that Malaysians usually engage in and include instructions about how to incorporate DIR/Floortime[®] principles during those activities. Again, to do so, the DIR/Floortime[®] program would need to be adapted and evaluated in the Malaysian context in a study involving larger samples that included representation from all the major ethnicity groups. Therefore, a working version of the DIR/Floortime[®] intervention approach guidelines could be developed based on the findings of the study.

6.4.2 DIR/Floortime[®] intervention provider

At the time when the study initiated and terminated, based on the Interdisciplinary Council on Development and Learning (ICDL) directory and a Google search using the keywords “DIR/Floortime[®] in Malaysia”, there were only five DIR/Floortime[®] providers available in Malaysia. Three of the providers were located in Kuala Lumpur (the federal capital of Malaysia), one was located in Johor (a state in the southern part of Malaysia), and

another in Penang (a state in the northwest part of Malaysia). Of all the five providers, one centre that offered the DIR/Floortime[®] program did not supply the details of the provider's certification, and the other providers had a range of certifications from basic to expert level from the ICDL. Only one of the DIR/Floortime[®] providers had an expert level certificate of DIR/Floortime[®] practitioner (from the ICDL), and a trainer's certificate from Profectum which qualifies them to train other professionals.

All the DIR/Floortime[®]-qualified providers currently located in Malaysia are located in privately run centres where services are available on a fee for service basis only. The location of the centres is limited to only urban areas of two states and one federal territory in Malaysia. To the best of the researcher's knowledge, occupational therapists working in the government public health service do not use the DIR/Floortime[®] intervention approach as part of their practice with families as they are not acquainted with it. Given this situation, parents from upper-middle and high-income families living in the urban area with a child with ASD would likely have fewer challenges in employing a private DIR/Floortime[®] provider compared to parents from the lower income groups, both living in urban and rural areas. However, given that there are only five qualified providers in the whole country, the majority of parents would still find it challenging to access even private services.

It is best for parents to conduct the DIR/Floortime[®] program with their children at home themselves compared to sending their child to a clinical setting for DIR/Floortime[®] sessions with a therapist. Nevertheless, parents still need the assistance and guidance from professionals to monitor and assess the progress of their child as well as coaching to help them improve their skill set. Therefore, for all parents to utilise the DIR/Floortime[®] approach with their child, regardless of their socioeconomic status or geographical location of their residence, occupational therapists in government funded health services should have the

knowledge and skills related to the DIR/Floortime[®] intervention approach to then be able to assist parents with its implementation.

6.4.3 DIR/Floortime[®] intervention approach training

The DIR/Floortime[®] approach was not included as part of the occupational therapy curriculum for both the diploma (occupational therapy assistant) and bachelor's (occupational therapist) degree programs in Malaysia. Furthermore, the evidence base that is currently available about the DIR/Floortime[®] intervention approach is scarce at best. High level evidence about the cross-cultural clinical utility within South East Asia contexts of the DIR/Floortime[®] approach is also very limited. This is one of the potential reasons why occupational therapy education programs in Malaysia have not included it as one of the recommended intervention approaches to be taught to students and subsequently applied by therapists in clinical settings. Recently, the Malaysia Ministry of Health listed the DIR/Floortime[®] intervention approach as one of the recommended intervention strategies that occupational therapist could use for ASD management in clinical practice guidelines published in 2014.

At the time of the study, all occupational therapists working at the clinic where the study was completed were not familiar with the DIR/Floortime[®] approach, so parents only discussed and sought assistance from the researcher if they had any issues with the implementation of the DIR/Floortime[®] program at home. An important factor to ensure that the DIR/Floortime[®] intervention approach continues to be offered within Malaysian contexts after the study ceased is that parents of children with ASD have access to a health care professional who understands the DIR/Floortime[®] program that they can consult with. Therefore, occupational therapists in the government health service need to be able to access the DIR/Floortime[®] intervention approach's training.

The DIR/Floortime®'s training is offered to both professionals and parents by several organisations based in the USA and one is based in Australia (Sensory Connections). The Interdisciplinary Council on Development and Learning (ICDL), Profectum and the Greenspan DIR/Floortime Approach are based in the USA, while Sensory Connections is based in Australia. The ICDL offers various levels of training for parents and professionals starting with an introductory course and the highest level of training being the expert level which is only offered to qualified health care and education professionals. All the training programs incurred some fees and are offered both online and face-to-face. The 12-hour introductory course fee starts from \$109 USD for parents and students, and \$169 USD for professionals while the basic, proficiency and advanced level of training program fees are \$789 USD for each level. Meanwhile, for the expert level for expert and trainer's program, the fee is \$599 USD for each of them.

The training opportunities offered by Profectum are online, starting with the introduction to DIR-FCD. The fees for this course are \$99 USD for parents and \$295 USD for professionals. Professionals can attend the advanced level training including the Professional Certificate training which incurs a fee of \$3000 USD, then they can move forward to get the Fellows Certificate Program that costs \$2050 USD. The highest level of training is the Trainers Certificate Program that incurs a fee of \$2600 USD. Meanwhile, for educators, paraprofessionals or administrators who would like to integrate the model with their school's program can get an Educators Certificate which costs \$2500 USD.

The Greenspan DIR/Floortime Approach also offers training for both parents and professionals. Compared to the other agencies, this organisation's training cost is less costly. Parents can watch a free one-hour overview of the approach online and then they can purchase the DIR/Floortime® manual (available in English only) online ranging from \$65 to \$120 USD which they can access for 30 days and 90 days, respectively. It is also available in

a printed form which costs \$63 USD. The DIR/Floortime[®] manual describes the approach and recommended techniques to be used when implementing the program in more detail. Professionals can also purchase the manual for the same price. Training courses for professionals are also available online for a cost of \$175 USD which includes 11 hours of online course content related to assessing and implementing the DIR/Floortime[®] intervention program or they can purchase the package which includes the online course and the manual for a fee of \$345 USD. Meanwhile, for the certification program, it has two levels which cost \$600 USD for each level.

Of all the organisations that provided the training, Sensory Connections is the only one that provides face-to-face training in Australia and occasionally in Singapore. Both of these sites are located at the south edge of Malaysia geographically. They conduct a one-day training for parents and a two-day two-stage training program for professionals. The fee for stage one training for professional is \$550 AUD which includes an introduction to the basic principles of the DIR model, while the second stage of training costs \$650 AUD which includes an overview of the assessment and implementation principles of the DIR/Floortime[®] intervention approach.

6.4.4 Financial

Given DIR/Floortime[®] training is offered by three organisations online and therefore would be accessible in theory for the majority of parents in Malaysia living in either urban or rural areas. However, the fees for the DIR/Floortime[®] training are expensive by Malaysian standards, especially for those from lower and middle-income families. The introduction level would cost approximately MYR273 to MYR712 and at least MYR3325 (ICDL proficiency level certificate) for the more advanced level certificate that parents could enrol in as well as professionals (e.g., occupational therapists). Occupational therapists could also enrol in the face-to-face training sessions offered by Sensory Connections and this would cost

approximately MYR3960. Although the training is not acknowledged by the ICDL and participants are only awarded a certificate of attendance by the Sensory Connections, they could still learn about the foundation concepts of the DIR model and the principles of the DIR/Floortime® intervention program.

For occupational therapists to be able to be listed as qualified DIR/Floortime® providers, they need to attend the recognised training and get the certificate from the ICDL as the DIR/Floortime® has been trademarked by it. Meanwhile, for therapists to be able to train other professionals and coach parents, they would need to have completed all the certificate levels prior to enrolling in the expert and/or trainer certificate level courses. This would cost approximately MYR9888 provided by ICDL and qualifies practitioners to be listed as the DIR/Floortime® provider and trainer or would cost MYR32,662 for the training provided by Profectum.

Parents could enrol for the introduction level of training which is the least expensive of all the training courses available. This could equip them with the basic knowledge and skills for them to implement DIR/Floortime®-based programs at home with their child. However, it would still add to parents' financial burden especially for parents with lower incomes. The best situation for all families would be for them to be able to access occupational therapy services in the government health service. These trained therapists could provide the required services for families using the DIR/Floortime® intervention approach. However, the government service employer would then need to support therapists to receive the training and education they needed.

Occupational therapists working in the government health service also could enrol for the online training as they could access the videos during after work hours and the face-to-face training as they are eligible to apply for some time off for the training. However, the greatest challenge that therapists face to achieve this goal is the financial cost of the course

fees. The cost of the training will be entirely out of the therapists' own pocket which would still be quite expensive since the income levels of occupational therapists in Malaysia range from the low to middle-income levels.

6.4.5 Organisational support

As aforementioned, the continuation of the DIR/Floortime[®] program in Malaysia after the termination of this study depends on the availability of occupational therapists in the governmental health service as well as in the academia that are equipped with DIR/Floortime[®]-related knowledge and skills. This can be a catalyst for practicing the DIR/Floortime[®] approach both in clinical and home-based settings to promote and implement the DIR/Floortime[®] program more widely. This is attainable if support from the government particularly the Ministry of Health and Ministry of Higher Education is made available.

The Ministry of Health has already taken the first step towards making the DIR/Floortime[®] intervention program more accessible in Malaysia by recommending that healthcare practitioners including occupational therapists to utilise it among other approaches when working with families who have a child with ASD (Malaysia Ministry of Health, 2014). Another suggestion is that the ministry could provide training for occupational therapists about the appropriate knowledge and skills related to the DIR/Floortime[®] approach so they can provide those services to parents of children with ASD. For this purpose, the ministry could provide occupational therapists working in the government health service with financial support to undertake the DIR/Floortime[®] training to the highest certification level which would provide them not only the knowledge and skills to practice, but also the ability to train other occupational therapists and parents of children with ASD.

However, both therapists and parents of children with ASD might face some challenges in accepting the DIR/Floortime[®] approach with it being adapted to fit the Malaysian sociocultural context. For example, some parents in this study mentioned about the fear of

losing their child's respect when implementing the basic principle of the DIR/Floortime[®] intervention approach – following the child's lead. In other words, the child took the lead and parents had to give up power and hand it over to their child. The same sentiment is highly likely to be shared by other therapists and parents in Malaysia. Therefore, to ensure the DIR/Floortime[®] program is culturally appropriate, acceptable and practical for Malaysians, it would be important for it to be formally trialled, evaluated and revised prior to disseminating the program more widely within Malaysia. To do so, the Ministry of Higher Education Malaysia could collaborate with the Ministry of Health Malaysia to fund and develop a team of researchers and clinicians to adapt and evaluate the DIR/Floortime[®] intervention in the Malaysian context.

Occupational therapists working in academia are usually funded by the Ministry of Higher Education when they complete their advanced higher degrees. They could complete the evaluation study as part of their postgraduate studies. Similarly, occupational therapists working in clinical settings, could also enrol and obtain the highest level of the DIR/Floortime[®] provider certification prior to commencing the proposed study. This would ensure both occupational therapists in academic and clinical settings understand the approach. This would help them to design the study and evaluate the adaptation needed for the Malaysian context. Occupational therapists in academia work closely with those working in clinical settings, hence they could train parents and measure its impact as well as parents' perceptions to develop the adapted version of DIR/Floortime[®] intervention for the Malaysian context.

6.4.6 Sociocultural appropriateness of the DIR/Floortime[®] intervention

The DIR/Floortime[®] intervention approach was developed and primarily used in Westernised countries. The core concept of the DIR/Floortime[®] intervention approach is 'following the child's lead' no matter what the child is doing with the purpose of gaining the

child's attention which then would develop the child's interest to start engaging with other people. Parents in the current study reported that implementing this particular technique was quite challenging for them as they were afraid that if they followed their child's lead then they would lose their child's respect for them. This is because in the Malay culture, it is deemed inappropriate for parents to follow what their children want after a certain age since it seems as if the parents have less to no authority over the child.

However, this was mentioned by only a few parents and is possibly a cultural issue or parental preference issue. Furthermore, the parents who participated in the study were only from the Malay ethnicity group while Malaysia is comprised of two other major ethnicities, Chinese and Indian as well as various indigenous groups. Hence, for the DIR/Floortime[®] approach to be utilised by parents in Malaysia from all ethnicity groups, the approach needs to be adapted and evaluated further by including participants representing all ethnic groups within Malaysia.

To best achieve this goal, a project team comprised of occupational therapists working in academic and clinical settings should collaborate to adapt the DIR/Floortime[®] intervention approach so that it is culturally appropriate for use in a wide variety of Malaysian context. The research team should conduct trial studies utilising an adapted version of the DIR/Floortime[®] program in Malaysia with parents of children with ASD and other disabilities from all ethnic groups and locations across the country and formally evaluate it.

6.5 *Conclusion*

Implementation of the parent-mediated home-based DIR/Floortime[®] program by parents of children with ASD showed positive impacts on both parents and children's skills and capabilities. This included increased child-parent interactions, improved children with ASD's language, better social interaction abilities and enhanced play skills. Parents and children with ASD's quality of life and wellbeing also exhibited positive improvements as

parents' QoLA scale scores increased, and depression and anxiety subscales' scores decreased after the implementation of the DIR/Floortime[®] program. Based on parents' reports, children with ASD also exhibited signs of positive emotions such as smiling and laughing more frequently.

However, parents who implemented the DIR/Floortime[®] program also faced challenges in implementing it due to several behavioural, environmental, beliefs and cultural factors. The findings from both quantitative measures and qualitative reports from parents showed that the DIR/Floortime[®] approach that is largely based on Western-cultural values could be implemented in a South-East Asia cultural context and is therapeutically advantageous for both parents and children with ASD. Nevertheless, given the study was a small-scale study, the effectiveness, acceptability, practicality and cultural appropriateness of the DIR/Floortime[®] program in the Malaysian context cannot be generalisable as it is only involved eight Malay child-parent dyads who lived in urban areas of Kuala Lumpur. With further adaptation to suit Malaysian socio-cultural context, it is possible that Malaysian parents could incorporate the DIR/Floortime[®] program more easily which in turn might lead to better outcomes for both parents and children with ASD.

Following this detailed discussion chapter, a chapter concluding the study by reviewing the strengths and limitations of the study accompanied with recommendations for future research is presented.

Chapter 7

Conclusion

7.1 Introduction

This last chapter concludes the study as well as outlines the study's strengths and limitations, recommendations for future research, its implication to occupational therapy practice in general as well as specifically for the Malaysian context.

7.2 Strengths and limitations of the study

The strength of this study lies in its research design that included both quantitative and qualitative approaches to data collection and analyses. This provided the basis for a more comprehensive understanding of the DIR/Floortime[®] program's impacts and applicability for use in the Malaysian context. Since this study is the first to examine a parent-mediated home-based intervention based on a naturalistic, developmental approach (e.g., the DIR/Floortime[®] intervention approach), it is important to capture the in-depth description of its effectiveness, appropriateness, feasibility, cross-cultural suitability, and practicality.

Through parental interviews, the changes in their child with ASD's social interaction and communication as well as play skills in their natural environment (e.g., home) were explored. This provided information about the generalisation of the children's skills that developed across settings and people (e.g., children with ASD's social interactions with family members improved as well). Furthermore, the nature of parental changes in their quality of life, psychological wellbeing and parenting competence was described in detail during interviews completed with the parents. Similarly, parents also described how they implemented the DIR/Floortime[®] program as well as the challenges and issues faced when implementing the DIR/Floortime[®] intervention in the home environment. Insights gained

about the practicality and cultural appropriateness of the DIR/Floortime[®] intervention (that was initially developed and predominantly used in Western-cultural contexts) was also made possible from the data gathered from interviews with the parents. This study also provided preliminary evidence of the DIR/Floortime[®] program's applicability and effectiveness in the Malaysian context. This in turn also supported the Ministry of Health Malaysia's (MoH) recommendations.

Furthermore, quantitative measures for both children with ASD and their parents were collected at multiple time points. This allowed the monitoring of participants' progress throughout the duration of the study. Another strength of this study was the exploration of the DIR/Floortime[®] program's impacts on children with ASD's skills as well as their parents' quality of life, psychological wellbeing and parenting competence compared to other similar studies that just evaluated the effectiveness of the DIR/Floortime[®] approach. Previously completed investigations of the DIR/Floortime[®] typically focused on the child with ASD's performance without considering its impacts on parents, which in some studies were the intervention's main and sole implementer (Dionne & Martini, 2011; Pajareya & Nopmaneejumrulers, 2011, 2012; Solomon et al., 2007). With multiple measures collected from both children and parents' participants, it allows this current study to evaluate the impact of the DIR/Floortime[®] intervention approach on improving children with ASD's social interaction and communication as well as to scrutinise its impact on parents with its implementation given the fact that the parents were the main implementation agents.

In this study, the multiple single-subject design was used, describing that the study involved multiple participants assessed within the same condition (e.g., using the same intervention), for the same behaviour (e.g., child-parent interactions). This type of design is predominantly employed in studies investigating naturalistic and parent-implemented interventions (Wong et al., 2014). Multiple participant involvement enables the generalisation

of the intervention's impacts and effectiveness to be assessed as performance changes are replicable across a number of participants (Smith et al., 2007). However, generalisation of the findings to the general population is not possible due to the small number of participants and lack of representativeness of the Malaysian population as well as the group of Malaysian children diagnosed with ASD. The study's participants were only from families of Malay ethnicity, whereas Malaysia is a multi-ethnic country comprised of three major ethnic groups – Malay, Chinese and Indian as well as various indigenous groups.

Although the findings suggested that the implementation of the DIR/Floortime® program promoted child-parent interactions, facilitated children with ASD's pretend play, increased parental quality of life and parenting competence while decreasing their depression and anxiety, the true overall effectiveness of the intervention is difficult to determine. This is partially due to the fact that the study is not a true experimental study and it was unethical to block participants from receiving other interventions during the course of the study or after the intervention period to assess the effect of the DIR/Floortime® intervention in isolation of other interventions. Likewise, the results of the visual and statistical analysis of the child-parent interactions were not fully consistent with one another or with the parents' reports. Sometimes, parents reported positive changes in their children with ASD's interaction and communication that were not able to be confirmed from the video-taped observations. In other words, there was a lack of consistency between what the children's parents reported and what behavioural observation ratings were obtained from the video-tapes of the children. This is likely due to the environment where the video-tapes of the children took place, the occupational therapy clinic. The clinic setting was not a natural environment for the child and no observation was done in the children's home to corroborate the parents' claims and compliment the observation videos. Nevertheless, some of these acknowledged limitations

could be overcome in future research if the recommendations provided in the next section were followed.

7.2.1 Methodological quality issues consideration related to single-subject design (SSD)

The single-subject design (SSD) approach used in this study has inherent the strengths and limitations that impact the current study's results and their interpretation. Taking into consideration the quality of the SSD used in this study will inform the rigour of the findings as well as facilitate clinical and methodological comparisons to determine clients' outcomes to intervention when it is implemented in clinical settings or in future investigations (Romeiser-Logan, Slaughter, & Hickman, 2017). The quality of the SSD was examined using 14 criteria outlined by Romeise-Logan, Hickman, Harris and Heriza (2008). Romeiser-Logan et al. (2008) listed 14 yes-no questions that can be used to evaluate the elements of an SSD including the description of participants and settings, the independent and dependent variables, the specific type of SSD design used, and the analysis of data. In Table 7.1 below, the SSD evaluation criteria proposed by Romeiser-Logan et al. (2008) are listed. They are also applied to the SSD used in the current study by answering each item with a yes or no.

The quality of the SSD proposed by Romeiser-Logan et al. (2008) is based on a total score. A score of lower than 7 indicates that the SSD used in a study is weak, 7 to 10 indicates that the SSD of a prospective study is moderate, while a total score between 11 to 14 is indicative of a SSD that is rigorous and strong. As indicated in Table 7.1, the SSD utilised in this doctoral project received a score of 11 / 14 which indicates a high level of quality.

The participants as well as independent and dependent variables were clearly described in this thesis. This is the strength of this study since providing detailed and clear overview of how the study was conducted allows the study to be replicated by others to evaluate the effectiveness of an intervention.

Table 7.1

Romeiser-Logan et al.'s (2008) single subject design review criteria applied to the current study

Criteria	Yes (1)	No (0)
Description of participants and settings		
1. Participants were sufficiently described to allow comparison with other studies or patient population (for clinicians)	√	
Independent variable		
2. Independent variables were operationally defined to allow replication	√	
3. Intervention conditions were operationally defined to allow replication	√	
Dependent variable		
4. Dependent variables were operationally defined as dependent measures	√	
5. Interrater or intrarater reliability of the dependent measures were assessed prior and during each phase of the study	√	
6. The outcome assessor was unaware of the phase of the study	√	
7. The stability of the data was demonstrated in the baseline phase – lack of variability or a trend opposite to the direction expected after application of intervention		√
Design		
8. The type of SSRD was clearly and correctly stated	√	
9. There was an adequate number of data points in each phase (e.g., minimum of five data points) for each participant		√
10. The effects of the intervention were replicated across three or more participants	√	
Analysis		
11. The authors conducted and reported appropriate visual analysis such as level, trend and variability	√	
12. The graphs used for visual analysis followed the standard conventions (e.g., x- and y-axed were labelled clearly, the phases separated by a vertical line, data paths separated between phases)	√	
13. The authors reported tests of statistical analysis such as celeration line approach, two-standard deviation band, or other statistical analysis	√	
14. All criteria for the statistical analyses used were met		N/A
	Total score	11

Furthermore, graphs of the data points were presented in a clear and logical manner that allowed other people to examine the impacts of the intervention. The results of the SSD were presented in several different modes including graphs for visual analysis and statistical analyses results (including two standard deviation bands analysis, percentage of nonoverlapping data (PND) and piecewise regression) as recommended in the SSD methodological literature (Lane & Gast, 2014; Manolov & Moeyaert, 2017; Romeiser-Logan et al., 2017).

The effects of the intervention were replicated across more than three participants; however, the true impacts could be argued due to two factors. First, as depicted in criteria 9, the number of data collection points that occurred during the baseline phase were not adequate as it consisted of only two data collection points. For this reason, a stable baseline data point was not established. Although it was recommended to have at least three to five observations in the baseline phase to obtain a stable set of data points before introducing an intervention (Horner et al., 2005; Lane & Gast, 2014), it was not done in the context of the current study due to time constraints and resource limitations.

Children with ASD often present with issues related to their communication and interaction skills with other people and this is highly influenced by other factors including environmental factors and children's emotional state during the observation. Given these facts, it was difficult to establish a stable baseline of data points. To achieve the suggested number of three to five baseline data points in the context of the current study would have required the interactions between the parent and child to occur for longer and more frequent periods of time (Lane & Gast, 2014; Wolery & Harris, 1982). This is an acknowledged limitation of the current study.

Although the study did not collect adequate baseline data points and demonstrate a stable baseline, the findings were interpreted with the assistance of not only visual analysis

but also three other statistical analysis techniques, as mentioned above. Since majority of the participants' observed interactions demonstrated changes in the therapeutic direction, the findings were interpreted with caution that the implementation of the parent-mediated home-based DIR/Floortime[®] intervention approach truly promotes effective child-parent interactions.

Since this study used a non-randomised controlled AB design of SSD and the findings were replicated in more than three participants, this indicated that the level of evidence of the single-subject research design utilised in this study was at Level V. This level of evidence suggested causal inferences between the changes in behaviours and implementation of intervention that allowed for testing of ideas in future study (Romeiser-Logan et al., 2008, 2017).

7.3 Recommendations for future research

This study's findings cannot be generalised to the general population of Malaysia, due to the limited number and representativeness of the Malaysian population, hence, the number of participants in future research should be increased to include all three major ethnic groups. A more robust research design could be adopted to ensure the findings validity and reliable to be generalised to the population. This study also did not evaluate the fidelity of the treatment formally or through a standardised assessment, hence, it is recommended that a structured or a format of evaluating parent-mediated home-based intervention based on the DIR/Floortime[®] approach's fidelity be established and evaluated in future research. In addition, the study's data collection site (e.g., the clinic) limited the performance of participants at some extent, therefore, it could be beneficial if multiple sites were included during data collection of skills that typically took place in a more natural environment such as the home setting of participants.

Another suggestion that could be addressed by the future researchers is to develop a semi-structured intervention manual or home-program that could be provided to parents to assist them to implement the DIR/Floortime® intervention program more efficiently. In the results and discussion chapters, the need of this manual guide was voiced by the parents as they were accustomed to a more therapist-led approach and at times felt a lost in relation to what to do when on their own with their child.

However, the manual should be developed in the Malay language as it is Malaysians' first language and there were no such resources available in the Malay language at the time. The content should also be culturally-appropriate for use in the Malaysian context by the three primary ethnic groups. One way this could be realised is via a research project that involves the translation and adaptation of the DIR/Floortime® program in the Malaysian context with a larger Malaysian population than what had been done in the current study. It is suggested that such project be funded by the government to ensure that researchers have ample time, human and financial resources to develop and test its practicality so it could be disseminated to all families of children with disabilities, especially ASD throughout the nation.

The study resulted in findings suggesting the DIR/Floortime® program is beneficial and practical for families of children with ASD in Malaysia. However, this project was not planned according to the knowledge translation model. Furthermore, the findings are still preliminary for it to greatly impact the current occupational therapy practice with children with ASD. A well-planned study with the goal of knowledge translation of the DIR/Floortime® program and parent-mediated intervention implementation for families of children with ASD is highly recommended since there is a wide gap between the evidence of the intervention's effectiveness shown in research studies and its impact on occupational therapy practice. Future studies could be conducted to translate, adapt, trial and disseminate

the use of the parent-mediated DIR/Floortime[®] approach following a formal knowledge translation framework such as the knowledge-to-action process framework proposed by Graham et al. (2006) or the Promoting Action on Research Implementation in Health Services (PARIHS; Kitson, Harvey, & McCormack, 1998; Rycroft-Malone, 2004; Rycroft-Malone et al., 2002).

7.4 *Implications for occupational therapy practice*

Generally, this study adds to the body of occupational therapy intervention strategies appropriate for use with children with ASD in Malaysia. It could be offered as one of the interventions that parents could implement by themselves at home or any place that they deem beneficial for their children with ASD instead of attending scheduled therapy sessions in clinical settings, which are not children's natural daily living environments. The findings provide occupational therapists working with children with ASD with preliminary evidence of the impacts of the DIR/Floortime[®] intervention's through parent-mediated home-based intervention on both children and their parents. Occupational therapists, especially in Malaysia, could use the findings of the current study to recommend the DIR/Floortime[®] approach to families of children with ASD. This also concurs with the recommendations put forward by MoH in the CPG for autism intervention (Ministry of Health Malaysia, 2014). They could add parent-mediated home-based intervention based on the DIR/Floortime[®] approach as an additional intervention approach that encourages parents to implement activities at home with their children while waiting to attend the therapy sessions in clinical settings.

This could also encourage the MoH in skilling-up occupational therapist working in public healthcare services with training about the principles of the DIR/Floortime[®] approach, and assuring the Ministry of Higher Education (MoHE) to promote researchers to conduct studies to adapt it into a culturally-appropriate format for use in the Malaysian context. Both

agencies could collaborate to develop this program that could be disseminated to families of children with disabilities throughout the nation which positively impacting the healthcare and education services that children with ASD and their families receive.

In conclusion, the findings of this study provide promising preliminary evidence of the effectiveness and usefulness of a parent-mediated home-based intervention based on the DIR/Floortime[®] approach in promoting child-parent interactions and pretend play as well as its positive impacts on parental quality of life, psychological wellbeing and parenting competence in a Malay cultural context. It also provides the foundation for future research efforts aimed at further evaluation of the use the DIR/Floortime[®] program in Malaysian contexts.

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Appendices

Appendix 1

Monash University Human Research Ethics Committee Certificate of Approval



Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number: CF15/3839 - 2015001678

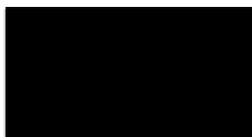
Project Title: Impact of DIR/Floortime home-based intervention program on parents and children with Autism Spectrum Disorder (ASD)

Chief Investigator: Assoc Prof Ted Brown

Approved: **From:** 07 December 2015 **To:** 07 December 2020

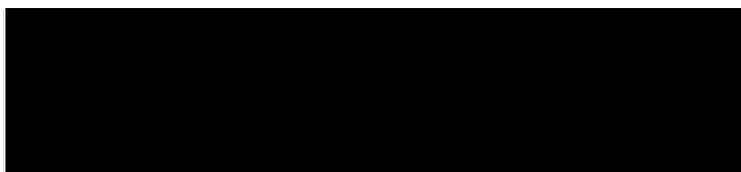
Terms of approval - Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must include your project number.
6. **Amendments to the approved project (including changes in personnel):** Require the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



Professor Nip Thomson
Chair, MUHREC

cc: Dr Mong-Lin Yu, Ms Iylia Dayana Shamsudin



Appendix 2

Malaysia Economic Planning Unit



UNIT PERANCANG EKONOMI
Economic Planning Unit
Jabatan Perdana Menteri
Prime Minister's Department



MALAYSIA



EPU

ECONOMIC PLANNING UNIT
PRIME MINISTER'S DEPARTMENT

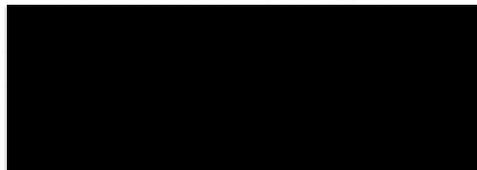
Telefon : 603-8000 8000

Ruj. Tuan:
Your Ref.:

Ruj. Kami: UPE 40/200/19/3281
Our Ref.: (5)

Tarikh: 25 NOVEMBER 2015
Date:

YLIA DAYANA BINTI SHAMSUDIN



APPLICATION TO CONDUCT RESEARCH IN MALAYSIA

With reference to your application, I am pleased to inform you that your application to conduct research in Malaysia has been approved by the **Research Promotion and Co-Ordination Committee, Economic Planning Unit, Prime Minister's Department**. The details of the approval are as follows:

Researcher's name : **YLIA DAYANA BINTI SHAMSUDIN**

Passport No./ I.C No : **870509-10-5366**

Nationality : **MALAYSIA**

Title of Research : **"IMPACT OF DEVELOPMENTAL, INDIVIDUAL-DIFFERENCE, RELATIONSHIP BASED (DIR)/ FLOORTIME HOME-BASED INTERVENTION PROGRAM ON PARENTS AND CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD)"**

Period of Research Approved : **6 MONTHS**

"Merancang Ke Arah Kecemerlangan"

2. Please collect your Research Pass in person from the Economic Planning Unit, Prime Minister's Department, Parcel B, Level 4 Block B5, Federal Government Administrative Centre, 62502 Putrajaya, Malaysia. Bring along **two (2) colour passport size photographs**. Kindly, **get an appointment date from us before you come to collect your research pass**.

3. Please take note that the study should avoid sensitive issues pertaining to local values and norms as well as political elements while undertaking your research project in Malaysia. You have to adhere to the conditions stated by the code of conduct for foreign researchers. You are also required to comply with the rules and regulations stipulated from time to time by the agencies with which you have dealings in the conduct of your research.

4. I would like to draw your attention to the undertaking signed by you that you will submit without cost to the Economic Planning Unit the following documents:

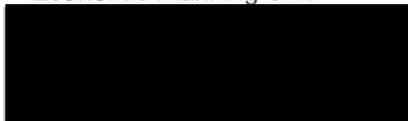
- a) A brief summary of your research findings on completion of your research and before you leave Malaysia; and
- b) Three (3) copies of your final dissertation/publication.

5. Lastly, please submit a copy of your preliminary and final report directly to the State Government where you carried out your research. Thank you.

Yours sincerely,



(MUNIRAH BT. ABD MANAN)
For Director General
Economic Planning Unit



ATTENTION

This letter is only to inform you the status of your application and **cannot be used as a research pass**.

Appendix 3

Research Ethics Committee Universiti Kebangsaan Malaysia Approval


UNIVERSITI KEBANGSAAN MALAYSIA
The National University of Malaysia

Fakulti Sains Kesihatan *Faculty of Health Sciences*

Rujukan
Tarikh

UKM1.21.3/244/NN-2016-036
30 Jun 2016
PPSR

Dr. Masne Kadar
Program Terapi carakerja
Pusat Pengajian Sains Rehabilitasi, FSK

Puan,

KELULUSAN MENJALANKAN PENYELIDIKAN

Kod Geran	:	NN-2016-036
Ketua Penyelidik	:	Dr. Masne Kadar (K006350)
Penyelidik Bersama	:	Nur Dalila Kamilan (K020539)
	:	Mohd Wafi Mohammad (K015120)
	:	Maziyah Che Ya (K018917)
	:	Mohamad Shahrul Hafezz Abdul Latif (K020482)
	:	Nur Rafidah Mohamed (K014430)
	:	Dr. Nor Afifi Razaob (K015223)
	:	Nur Idayu Abd Rahman (A144713)
	:	Nur Iylia Dayana Shamsudin (Monash University)
Tajuk	:	Impact of the DIR/ Floortime home-based intervention program on parents and children with Autism Spectrum Disorder (ASD)
Geran Luar	:	Tiada

2. Berhubung perkara di atas, sukacita dimaklumkan bahawa Jawatankuasa Penyelidikan Fakulti telah bersetuju meluluskan permohonan puan dengan syarat-syarat berikut:

- Jangkamasa Kajian** : 28 April 2016 – 27 Oktober 2016
- Bantuan Kewangan** : *Tiada*
- Bantuan Lain** : *Tiada*
- Mengemukakan laporan akhir** sebaik sahaja penyelidikan tamat kepada Jawatankuasa Penyelidikan Fakulti melalui mel-e (*email*).

Sekian, terima kasih.

Mengilham Harapan, Mencipta Masa Depan • *Inspiring Futures, Nurturing Possibilities* www.ukm.my

Yang benar,

PROF. MADYA DR. KHAIRUL OSMAN
Timbalan Dekan (Penyelidikan & Inovasi)
Fakulti Sains Kesihatan

- Pengarah
Pusat Pengurusan Penyelidikan & Instrumentasi (CRIM)
UKM Bangi
- Prof. Madya Dr. Devinder Kaur
Pengerusi
Pusat Pengajian Sains Rehabilitasi, FSK
- Nur Dalila Kamilan
- Mohd Wafi Mohammad
- Puan Maziyah Che Ya
- Mohamad Shahrul Hafezz Abdul Latif
- Dr. Nor Afifi Razaob
- Nur Rafidah Mohamed
- Nur Idayu Abd Rahman (A144713)
Program Terapi Carakerja
Pusat Pengajian Sains Rehabilitasi, FSK
- Nur Iylia Dayana Shamsudin
Department of Occupational Therapy
School of Primary Health Care
Faculty of Medicine, Nursing and Health Sciences
Monash University

Pejabat Dekan, Fakulti Sains Kesihatan, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur Malaysia
Telefon: +603-9289 7602 Faksimili: +603-2691 4304 E-mel: dkfsk@ukm.edu.my Laman Web: <http://www.fsk.ukm.my>

Mengilham Harapan, Mencipta Masa Depan • *Inspiring Futures, Nurturing Possibilities*

www.ukm.my

Rujukan : UKM PPI/1118/JER-2016/02
Tarikh : 29 April 2016



Dr. Masne Kadar
Program Terapi Carakerja
Pusat Pengajian Sains Rehabilitasi
Fakulti Sains Kesihatan
Universiti Kebangsaan Malaysia

Y.bhg. Profesor/Datuk/Dato'/Datin/Tuan/Puan,

Kelulusan Etika Menjalankan Penyelidikan di UKM

Tajuk : *Impact Of The DIR/Floortime® Home-Based Intervention Program On Parents And Children With Autism Spectrum Disorder (ASD)*

Perkara yang tersebut di atas adalah dirujuk.

Sukacita dimaklumkan, Jawatankuasa Etika Penyelidikan UKM meluluskan permohonan penyelidikan Y. Bhg. Profesor/Datuk/Dato'/Datin/Tuan/Puan bagi tajuk diatas. Tempoh kelulusan penyelidikan adalah daripada **28 April 2016 - 27 Oktober 2016**. Sila kemukakan sebarang Laporan Kesan Sampingan, Laporan Kemajuan Setiap 6 Bulan dan Laporan Akhir sebaik sahaja penyelidikan tamat kepada Jawatankuasa Etika Penyelidikan UKM.

Sukacita diingatkan projek penyelidikan ini hanya boleh dijalankan setelah mendapat surat kelulusan menjalankan penyelidikan dari Timbalan Dekan Penyelidikan Fakulti.

Sekian, terima kasih.

Yang benar

PROFESOR MUDA (N) DATO' DR. FUAD ISMAIL
Pengerusi
Jawatankuasa Etika Penyelidikan
Universiti Kebangsaan Malaysia

- s.k.
- **Pengarah**
Pusat Pengurusan Penyelidikan dan Instrumentasi (CRIM)
Universiti Kebangsaan Malaysia
 - **Timbalan Dekan (Penyelidikan & Inovasi)**
Fakulti Sains Kesihatan
Universiti Kebangsaan Malaysia

- **Ketua Program Terapi Carakerja**
Pusat Pengajian Sains Rehabilitasi
Fakulti Sains Kesihatan
Universiti Kebangsaan Malaysia
- **Puan Nur Dalila Kamilan**
- **Encik Mohd Wafi Mohammad**
- **Puan Maziyah Che Ya**
- **Encik Mohamad Shahrul Hafezz Abdul Latif**
Program Terapi Carakerja
Pusat Pengajian Sains Rehabilitasi
Fakulti Sains Kesihatan
Universiti Kebangsaan Malaysia
- **Cik Ilya Dayana Shamsudin**
Jabatan Pendidikan Awal Kanak-kanak
Fakulti Pendidikan dan Pembangunan Manusia
Kampus Sultan Azlan Shah
Universiti Pendidikan Sultan Idris
35900 Tanjong Malim
Perak Darul Ridzuan
- Fail JEP-2016-102
- Fail Surat Kelulusan 2016

File:JEP-2016-102

NAME OF ETHICS COMMITTEE/IRB: Research Ethics Committee, The National University of Malaysia	ETHICS COMMITTEE/IRB REF NO : UKM PPI/111/8/JEP-2016-102
PROTOCOL TITLE : Impact Of The DIR/Floortime® Home-Based Intervention Program On Parents And Children With Autism Spectrum Disorder (ASD)	
PRINCIPAL INVESTIGATOR : Dr. Masne Kadar Occupational Therapy Programme School of Rehabilitation Sciences Faculty of Health Science The National University of Malaysia	

The following items (/) have been received and reviewed in connection with the above study to be conducted by the above investigator.

Documents

- (/) Research Application Form
- (/) Research Proposal
- (/) Non-Disclosure Agreement
- (/) Project Agreement
- (/) Publication Policy
- (/) Information Sheet (Malay & English) & Consent Form: (Malay & English)
- (/) Questionnaire (Malay & English)
- (/) Curriculum Vitae of Researcher

The Research Ethics Committee, The National University of Malaysia operates in accordance to the International Conference of Harmonization Good Clinical Practice Guidelines.

Comments (if any): _____

Date of Approval: 28 April 2016


 Associate Professor (Clinical) Dato' Dr. Fuad Ismail
 Chairman
 Research Ethics Committee
 The National University of Malaysia

Appendix 4

Malaysia Department of Social Welfare



JABATAN KEBAJIKAN MASYARAKAT

Department of Social Welfare
Aras 6, 9-18, No. 55 Persiaran Perdana,
Presint 4,
62100 PUTRAJAYA.



JKMM 100/12/5/2 : 2015 / 314
28 Disember 2015

IYLIA DAYANA BINTI SHAMSUDIN
MONASH UNIVERSITY
VICTORIA
3800
JOHOR

Tuan/Puan,

KELULUSAN MENJALANKAN KAJIAN/PENYELIDIKAN DI JABATAN KEBAJIKAN MASYARAKAT

Dengan hormatnya saya merujuk kepada perkara di atas.

2. Sukacita dimaklumkan permohonan tuan/puan untuk menjalankan kajian/penyelidikan bertajuk **Impact of DIR/Floortime home-based intervention program on parents and children with Autism Spectrum Disorder (ASD)** dan tempat kajian/penyelidikan seperti di **Lampiran** telah **DILULUSKAN**. Tempoh kelulusan bagi melaksanakan kajian /penyelidikan di tempat yang dipilih adalah selama **ENAM (6) bulan** mulai **28 Disember 2015** hingga **28 Jun 2016**.

3. Sehubungan itu, tuan/puan diminta untuk menyerahkan **DUA (2) salinan tesis/laporan/penerbitan** dan berjilid kepada Jabatan ini sebelum atau selewat-lewatnya pada **28 September 2016**. Sebarang maklumat lanjut, tuan/puan boleh menghubungi Bahagian Perancangan dan Pembangunan, Jabatan Kebajikan Masyarakat di talian 03-83231935 atau emel mnadzri@jkm.gov.my.

Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA"
"BERKAT BERJASA"

Saya yang menurut perintah,

DR. ZAITOL BINTI SALLEH
Bahagian Perancangan dan Pembangunan
b.p. Ketua Pengarah Kebajikan Masyarakat
Malaysia

s.k Ketua Pengarah Kebajikan Masyarakat
Timbalan Ketua Pengarah (Strategik)

Surat ini adalah janaan komputer, tandatangan tidak diperlukan.



Appendix 5

Invitation Fliers in Malay and English language



HOME-BASED INTERVENTION PROGRAM
FOR
CHILDREN WITH AUTISM SPECTRUM DISORDER



MONASH University

Join the 12 week home-based intervention program study for children with Autism Spectrum Disorder (ASD). The intervention program is based on the DIR/Floortime approach. Parents will be provided training to conduct the intervention at home with your child with ASD.

The program involves:

- 2 sessions of parents training on DIR/Floortime intervention approach
- Home-based intervention by parents for 8 weeks
- Follow up sessions every two weeks
- Parents completing self-report questionnaires and play with you child with ASD
- Observations of child with ASD's pretend play

Join us in this program if you are:

- Parents of a child diagnosed as having ASD
- Your child with ASD aged 3-6 years old
- Can speak and understand Malay language
- Interested in conducting home-based intervention with your child with ASD at home'
- Committed to conduct intensive intervention sessions daily with your child with ASD at home

Interested in being part of this study? Contact lylia Dayana Shamsudin email to idsha1@student.monash.edu or just leave your contact details here, you will soon be contacted.

Name: _____ Telephone: _____
Email: _____ Time to be contacted: _____ Way of contacting: _____



PROGRAM INTERVENSI DI RUMAH
UNTUK
KANAK-KANAK AUTISM SPECTRUM DISORDER



MONASH University

Sertai kajian program 12 minggu intervensi di rumah untuk kanak-kanak Autism Spectrum Disorder (ASD). Program intervensi adalah berdasarkan pendekatan DIR/Floortime. Ibu bapa akan diberi latihan untuk menjalankan intervensi di rumah dengan anak ASD anda.

Program ini akan melibatkan:

- 2 sesi latihan kepada ibubapa berkenaan pendekatan intervensi DIR/Floortime
- Intervensi di rumah dikendalikan oleh ibubapa selama 8 minggu
- Sesi lawatan susulan setiap 2 minggu
- Ibubapa melengkapkan soal selidik laporan sendiri dan bermain dengan anak ASD anda
- Pemerhatian anak ASD bermain olok-olok (pretend play)

Sertai program ini sekiranya anda:

- Ibu bapa yang mempunyai anak didiagnos ASD
- Anak ASD anda berumur 3-6 tahun
- Boleh memahami dan bertutur dalam Bahasa Melayu
- Berminat dalam menjalankan intervensi di rumah dengan anak ASD anda
- Komited untuk menjalankan sesi intervensi di rumah setiap hari dengan anak ASD anda

Berminat untuk menyertai kajian ini? Emel maklumat perhubungan kepada lylia Dayana Shamsudin ke idsha1@student.monash.edu atau tinggalkan maklumat anda di sini, dan anda akan dihubungi

Nama: _____ Telefon: _____
Emel : _____ Waktu untuk dihubungi: _____ Kaedah menghubungi: _____

EXPLANATORY STATEMENT

(Parents of children with ASD)

Project: Impact of DIR/Floortime home-based intervention program on parents and children with Autism Spectrum Disorder (ASD)

Chief Investigator: Ted Brown

Department of Occupational Therapy

[REDACTED]

[REDACTED]

Co-Investigator: Mong-Lin Yu

Department of Occupational Therapy

[REDACTED]

[REDACTED]

Student researcher: Iylia Dayana Shamsudin

[REDACTED]

[REDACTED]

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researchers via the phone numbers or email addresses listed above.

The aim of the research

The aims of the study are:

1. To investigate the effectiveness of the DIR/Floortime home-based intervention program among children with ASD
2. To determine the impact of the DIR/Floortime home-based intervention program has on parents of children with ASD's quality of life.
3. To identify the impact of the DIR/Floortime home-based intervention program has on parents of children with ASD's psychological wellbeing.
4. To investigate the influence of the DIR/Floortime home-based intervention program has on parents of children with ASD's sense of competence
5. To explore the effect of the DIR/Floortime home-based intervention program has on the pretend play of children with ASD.

What does the research involve?

The research project involves 14 weeks from the initial pre-intervention phase to the post-intervention phase, divided into three phases: pre-intervention, intervention and post-intervention phase.

- (i) The pre-intervention phase involves parents and their children with ASD. Parents will complete three self-report scales: the Malay translated Quality of Life in Autism (QoLA), the Malay translated Parental Sense of Competence Scale (PSOC) and the Bahasa Malaysia

Depression Anxiety Stress Scale-21 (BM DASS-21). Children with ASD's pretend play will be assessed using the Test of Pretend Play (ToPP) by the student researcher with help from parents (if needed). Participating parent-child dyads will involve in free play while being video recorded by the student researcher (assessment of parent-child interaction for DIR/Floortime effectiveness).

- (ii) The intervention phase is divided into two stages: training of parents and home-based intervention program. Training of parents will be conducted in two separated 3-hours sessions where parents will be provided training on the DIR Model and Floortime techniques. Upon completing the training stage, parents will conduct home-based intervention based on DIR/Floortime approach with their children with ASD for the period of 8 weeks. Parents will be asked to conduct Floortime sessions every day for a at least 10 hours per week with 20-30 minutes per session which can be can flexibly arranged by parents to their convenience.

Parents will be provided with a reflective journal for them to fill in information such as session, activities and note or comments related to the implementation of intervention at home. Parents' reflective journals will be collected every two weeks during the follow-up visits and a new one will be provided at the end of the session. Every two weeks, there will be a follow-up session (at Week 2, 4, 6, 8) at the recruitment sites (CBR centre and OT Clinic, Universiti Kebangsaan Malaysia). During the follow-up session, parents will be asked to play with their child with ASD while being video-recorded by the student researcher. Parents will receive coaching provided by the student researcher relating to their Floortime techniques and can discuss any issues they have or are facing while implementing the intervention at home with student researcher. In one of the follow-up sessions (Week-4), parents will be asked to complete the three self-report scales, play with their child while being recorded, receive coaching from the student researcher as well as discuss any related issues. Children with ASD's pretend play will be assessed using the ToPP by the student researcher with help from parents (if needed).

- (iii) The post-intervention phase session will be conducted one week apart from the last week of intervention phase. Parents will be asked to complete the three self-report scales, play with their child while being recorded by the student researcher. Children with ASD's pretend play will be assessed using the ToPP by the student researcher with help from parents (if needed). After all the scales have been completed, the ToPP and free play recording session are completed, an interview will be conducted with the parents of children with ASD. Parents will be given two sets of test scores for both the child with ASD's pretend play and parents' self-report scale. A general discussion of the test scores will be delivered to parents. A recommendation for referral letter will be provided to parents when necessary or if requested that can be used for participants to seek or get professional service. A list of related professional services will be provided to parents at that time.

How much time will the research take?

The research project will take approximately 14 weeks from the beginning of the pre-intervention phase to the post-intervention phase. The details for each phase are as follow:

- (i) Pre-intervention phase: one-hour session per week for 2 weeks for pre-intervention measurements
- (ii) Training of parents' stage: three-hour session per week (on Saturdays) for 2 weeks
- (iii) Home-based intervention stage: Parents are expected to conduct 4-6 Floortime sessions daily, 20-30 minutes per session, which can provide equivalent to 10 hours of Floortime session per week, or approximately 80 hours across the 8 weeks.
- (iv) Follow-up session: every two weeks of 8 weeks home based intervention phase, 4 sessions, approximately one hour for follow-up session during Week 2, 6, and 8 and 75 minutes for Week 4
- (v) Post-intervention phase: one session, approximately an hour for completing self-report questionnaires/survey, parents-child free play, and ToPP assessment and an hour for interview with parents

Consenting to participate in the project

An introductory letter, explanatory statement and consent form will be given to you via email or posted mail based on your contact details that you provided during the recruitment process. If you agree to participate in this research, please complete the consent form and return it to the student researcher via email or posted it using the stamped self-addressed envelope provided. You can also leave the details in the designated box at health centre or clinic.

Withdrawing from the research

Participation in the study is voluntary, and you are under no obligation to consent to take part. However, if you do consent to participate, no personal information will be identifiable. If you find any questions on the scales too personal or intrusive, you do not have to answer them. You may withdraw from the research study at any time without negative consequences for you and your child with ASD. The services provided to you by the CBR centre or OT Clinic, Universiti Kebangsaan Malaysia will not be affected if you withdraw from the research. However, it will not be possible to withdraw from the research once the information you provide or obtain from you has been analysed.

Payment

There will be no payment given and your participation is on a voluntary basis.

Possible benefits

There are no immediate benefits for participants. However, it is anticipated that your participation in the study could provide some indirect benefits by learning about the DIR/Floortime approach training provided where you could obtain knowledge about an intervention approach that can be applied to your child with ASD; develop your skills and techniques as well as confidence in implementing the DIR/Floortime® intervention approach with your child. It is our hope that information gained through this study will provide valuable information for parents of children with ASD, occupational therapy practitioners, and parents of children with special needs in planning and providing intervention that best suited a child's unique characteristic while empowering parents to be actively involved in their child's therapy. It is also our hope the findings will provide valuable information for evidence-based practice for DIR/Floortime intervention® approach and occupational therapy practice.

Inconvenience/discomfort

There is minimal inconvenience and/or discomfort for the study participants. The scale may potentially make you feel slightly uncomfortable because it is asking questions regarding your personal life, feeling and your child with ASD. The study also demands an extra time allocation from your daily routines to attend the sessions arranged as well as conducting the intervention sessions at home. However, the physical/psychological inconveniences or discomfort anticipated from participating in this study will be short term and transitory. No personal information of participants will be made available or identifiable by other parties other than the student researcher.

Services available to participants if adverse effects are experienced

If in any circumstances, if you feel distressed or overly discomfort and need to talk about this, you may want to:

- Consult with your General Practitioner or your family doctor
- Contact the nearest publicly funded counselling services to you.

The list of publicly funded counselling services provided are:

Bahagian Kaunseling & Psikologi, Jabatan Kebajikan Masyarakat Wilayah Persekutuan Kuala Lumpur ████████████████████ ████████████████████ ████████████████████ ████████████████████	Government Available in Malay and English
Counselling Unit, Ministry of Women, Family and Community Development ████████████████████ ████████████████████ ████████████████████ ████████████████████ ████████████████████	Government Available in Malay and English
Community Counselling Clinic, Jabatan Pendidikan Kaunselor dan Psikologi Kaunseling Fakulti Pengajian Pendidikan, ████████████████████ ████████████████████	Free and open to public Available in all 3 languages (Malay, English, Mandarin)
Pusat Telekaunseling DBKL Tingkat 1, Bangunan DBKL ████████████████████ ████████████████████ ████████████████████ ████████████████████	24 hours Face-to-face / phone/ internet counselling

Confidentiality

Any information you share in this research project is confidential. You will only be addressed by your formal title (i.e. Miss, Mrs., Mr. etc.) in any recordings (video and audio). Once data is collected (written and digital), it will be coded with numerical codes and thus become de-identified. A report of the study may be submitted for publication or may be presented at a conference. The information

	<p>[REDACTED] Kuala Lumpur</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
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Thank you,

Dr. Ted Brown
Associate Professor

Dr. Mong-Lin Yu
Lecturer

Iylia Dayana Shamsudin
PhD candidate

KENYATAAN PENERANGAN

(Ibubapa kanak-kanak Autism Spectrum Disorder)

Projek: Impak program intervensi di rumah DIR/Floortime terhadap ibu bapa dan kanak-kanak Autism Spectrum Disorder (ASD)

Ketua Penyelidik: Ted Brown

Jabatan Terapi Carakerja

[REDACTED]
[REDACTED]

Penyelidik bersama: Mong-Lin Yu

Jabatan Terapi Carakerja

[REDACTED]
[REDACTED]

Pelajar: Iylia Dayana Shamsudin

[REDACTED]
[REDACTED]

Anda dijemput untuk mengambil bahagian di dalam kajian ini. Sila baca Kenyataan Penerangan ini sepenuhnya sebelum membuat keputusan untuk mengambil bahagian ataupun tidak dalam kajian ini. Jika anda ingin mengetahui maklumat berkenaan mana-mana aspek projek ini dengan lebih lanjut, anda digalakkan untuk menghubungi penyelidik melalui nombor telefon atau alamat emel yang disenaraikan di atas.

Tujuan penyelidikan

Tujuan kajian adalah:

- i) Mengkaji keberkesanan intervensi DIR/Floortime dalam kalangan ibubapa dan kanak-kanak ASD
- ii) Menentukan impak intervensi DIR/Floortime ke atas kualiti kehidupan ibubapa kanak-kanak ASD
- iii) Mengenalpasti impak intervensi DIR/Floortime ke atas kesejahteraan psikologi ibubapa kanak-kanak ASD.
- iv) Mengenalpasti pengaruh intervensi DIR/Floortime ke atas kecekapan keibubapaan ibubapa kanak-kanak ASD.
- v) Meninjau kesan intervensi DIR/Floortime ke atas kemahiran main simbolik (main olok-olok) kanak-kanak ASD.

Apa yang terlibat dalam penyelidikan ini?

Projek penyelidikan ini melibatkan 14 minggu daripada permulaan fasa pra-intervensi sehingga fasa pasca-intervensi, yang terbahagi kepada tiga fasa – fasa pra-intervensi, fasa intervensi dan fasa pasca-intervensi.

- (i) Fasa pra-intervensi melibatkan ibubapa dan kanak-kanak ASD. Ibu bapa akan melengkapkan tiga borang soal selidik / survei laporan sendiri terjemahan Bahasa Melayu: Soal Selidik Kualiti Kehidupan dengan Autisme (Malay-QoLA), Skala Kecekapan Keibubapaan dan Bahasa Malaysia Depression Anxiety Stress Scale-21. Kemahiran bermain simbolik (main olok-olok)

kanak-kanak ASD akan dinilai menggunakan Test of Pretend Play (ToPP) dengan bantuan ibubapa (jika perlu). Pasangan ibubapa-kanak-kanak ASD akan terlibat dalam sesi bermain bebas yang akan dirakam (video) oleh penyelidik pelajar (bagi tujuan penilaian interaksi ibubapa-anak dan keberkesanan DIR/Floortime).

- (ii) Fasa intervensi dibahagikan kepada dua tahap – latihan ibubapa dan program intervensi di rumah.

Latihan ibubapa akan dijalankan dalam dua sesi latihan berasingan selama 3 jam setiap sesi, di mana ibubapa akan diberikan latihan berkenaan Model DIR dan teknik Floortime. Setelah selesai menjalani latihan, ibubapa akan mengendalikan intervensi berdasarkan pendekatan DIR/Floortime di rumah dengan anak ASD mereka selama 8 minggu. Ibubapa diminta menjalankan sesi Floortime setiap hari sekurang-kurangnya 10 jam/minggu, 20-30 minit untuk setiap sesi di mana sesi boleh dijalankan secara fleksibel mengikut kesesuaian ibubapa. Ibubapa akan diberikan diari reflektif untuk diisi dengan maklumat seperti bilangan sesi, aktiviti dan nota atau komen berkenaan dengan pelaksanaan intervensi di rumah. Diari reflektif akan dikutip setiap dua minggu semasa sesi susulan (Minggu 2, 4, 6, 8) di tempat merekrut (Klinik OT, Universiti Kebangsaan Malaysia). Semasa sesi susulan, ibubapa akan diminta untuk bermain dengan anak ASD mereka dan ia akan dirakam oleh penyelidik pelajar. Ibubapa akan menerima bimbingan daripada penyelidik pelajar berkaitan dengan teknik Floortime dan akan membincangkan apa-apa isu yang dihadapi oleh ibu bapa dalam pelaksanaan intervensi di rumah. Semasa sesi susulan (Minggu 4), ibubapa akan diminta untuk melengkapkan tiga soal selidik laporan sendiri, bermain dengan anak mereka dan dirakam oleh penyelidik pelajar, menerima bimbingan daripada penyelidik pelajar serta membincangkan apa-apa isu berkaitan. Kanak-kanak ASD akan dinilai menggunakan ToPP oleh penyelidik pelajar dengan bantuan ibubapa (jika perlu). Ibu bapa akan diberi pilihan untuk meminta penyelidik pelajar untuk menjalankan sesi Floortime bersama dengan anak ASD di PDK atau klinik OT (tempat peserta direkrut) selepas tamat kajian (selepas sesi pasca-intervensi).

- (iii) Sesi fasa pasca-intervensi akan dijalankan satu minggu selepas minggu terakhir fasa intervensi. Ibubapa akan diminta melengkapkan tiga soal selidik laporan sendiri, bermain dengan anak dan dirakam oleh penyelidik pelajar. Kemahiran bermain simbolik (main olok-olok) kanak-kanak ASD akan dinilai menggunakan ToPP oleh penyelidik pelajar dengan bantuan ibubapa (jika perlu). Setelah tiga soal selidik laporan sendiri dan sesi bermain dengan kanak-kanak ASD dilengkapkan, satu sesi temubual akan dijalankan dengan ibubapa. Ibubapa akan diberikan dua set skor ujian bagi ketiga-tiga soal selidik laporan sendiri yang dilengkapkan ibubapa serta skor kemahiran bermain olok-olok bagi kanak-kanak ASD. Penyelidiki pelajar akan menjalankan perbincangan umum berkenaan dengan skor ujian dengan ibubapa. Surat cadangan rujukan akan diberikan kepada ibubapa sekiranya perlu atau seperti diminta oleh ibubapa, dan boleh digunakan oleh peserta kajian bagi mendapatkan perkhidmatan profesional. Satu senarai perkhidmatan profesional akan dibekalkan kepada ibubapa ketika proses perbincangan.

Berapa lamakah masa yang diambil untuk kajian penyelidikan ini?

Kajian ini akan mengambil masa lebih kurang 14 minggu bermula dari bermulanya fasa pra-intervensi sehingga tamat fasa pasca-intervensi. Butiran bagi setiap fasa adalah seperti berikut:

- (i) Fasa pra-intervensi: dua minggu, sesi satu jam, sekali untuk setiap minggu
- (ii) Latihan ibubapa: dua minggu, sesi latihan tiga jam untuk setiap minggu (pada hari Sabtu)
- (iii) Intervensi di rumah: 8 minggu, 6-10 sesi Floortime setiap hari, sekurang-kurangnya 20-30 minit setiap sesi, 10 jam kumulatif sesi Floortime setiap minggu, anggaran jumlah jam 80 jam/8 minggu
- (iv) Sesi susulan: setiap dua minggu sepanjang 8 minggu fasa intervensi di rumah, 4 sesi, anggaran 1 jam bagi setiap sesi susulan untuk minggu 2, 6 dan 8; anggaran 75 minit bagi sesi susulan minggu 4
- (v) Fasa pasca-intervensi: satu sesi, anggaran satu jam untuk melengkapkan soal selidik/servei laporan sendiri, sesi bermain ibubapa-kanak-kanak, penilaian ToPP; serta satu jam untuk temubual bersama ibubapa

Memberi persetujuan untuk menyertai kajian ini

Surat pengenalan, kenyataan penerangan dan borang kebenaran akan diberikan kepada anda melalui emel atau akan dipos kepada anda berdasarkan maklumat perhubungan yang anda berikan semasa proses merekrut peserta kajian. Sekiranya anda bersetuju untuk mengambil bahagian di dalam kajian ini, sila lengkapkan borang kebenaran dan kembalikan borang tersebut kepada penyelidik pelajar melalui emel atau pos menggunakan sampul surat berselem dan beralamat pelajar penyelidik yang dibekalkan. Anda juga boleh meninggalkan butiran anda di dalam kotak khas yang disediakan di pusat PDK atau Klinik OT.

Menarik diri daripada kajian

Penyertaan di dalam kajian ini adalah secara sukarela, dan anda tidak diwajibkan untuk memberi persetujuan untuk menyertai kajian ini. Walau bagaimanapun, jika anda memberi persetujuan untuk menyertai kajian ini, tiada maklumat peribadi anda yang boleh dikenalpasti oleh orang lain. Sekiranya anda merasakan apa-apa soalan di dalam borang soal selidik/survei itu terlalu peribadi atau intrusif (terlalu mengganggu), anda tidak perlu menjawab soalan tersebut. Anda boleh menarik diri daripada kajian ini pada bila-bila masa tanpa dikenakan akibat negatif pada anda dan anak ASD anda. Perkhidmatan yang diberikan kepada anda oleh pusat PDK dan Klinik OT, Universiti Kebangsaan Malaysia tidak akan terjejas sekiranya anda menarik diri daripada kajian ini. Walau bagaimanapun, anda tidak boleh menarik diri dari kajian ini apabila maklumat yang anda berikan telah dianalisis.

Bayaran

Tiada bayaran yang akan diberikan dan penyertaan anda adalah sukarela.

Manfaat yang mungkin ada

Tiada manfaat secara langsung yang anda perolehi apabila menyertai kajian ini. Walau bagaimanapun, penyertaan dalam kajian ini dijangkakan dapat memberi manfaat secara tidak langsung kepada anda melalui latihan pendekatan intervensi DIR/Floortime yang diberikan di mana anda boleh memperoleh pengetahuan tentang satu pendekatan intervensi yang boleh digunakan untuk anak ASD anda, mengembangkan kemahiran dan teknik, serta keyakinan dalam menjalankan intervensi DIR/Floortime dengan anak anda. Kami berharap maklumat yang diperolehi melalui kajian ini boleh memberikan maklumat yang berguna untuk ibubapa kanak-kanak ASD, terapis carakaerja, pendidik, pengkaji serta ibubapa kanak-kanak bekeperluan khas dalam merancang dan memberikan intervensi yang paling sesuai dengan ciri unik anak mereka; di samping memperkasakan ibubapa

untuk terlibat secara aktif dalam terapi anak mereka. Kami juga berharap dapatan kajian dapat menyumbang kepada maklumat yang berguna bagi amalan berasaskan bukti untuk pendekatan intervensi DIR/Floortime dan terapi carakerja.

Kesulitan / Ketidakselesaian

Peserta kajian akan menghadapi kesulitan/ketidakselesaian yang minimal. Borang soal selidik/survey mungkin membuatkan anda tidak selesa kerana terdapat soalan yang berkaitan dengan kehidupan peribadi, perasaan dan anak ASD anda. Kajian ini juga menuntut anda memberi peruntukan masa tambahan daripada rutin harian anda untuk menghadiri sesi yang diatitkan serta menjalankan intervensi di rumah. Walau bagaimanapun, kesulitan atau ketidakselesaian fizikal / psikologi yang dijangkakan daripada menyertai kajian ini adalah sementara dan tidak akan berlarutan. Tiada maklumat peribadi peserta kajian yang akan dibuat sedia ada atau boleh dikenalpasti oleh pihak lain selain daripada penyelidik pelajar.

Jika dalam apa jua keadaan, anda berasa tertekan atau sangat tidak selesa dan perlu berbincang berkenaan hal ini, anda boleh:

- Berbincang dengan Pengamal Perubatan Umum atau doktor keluarga anda
- Hubungi pusat servis kaunseling yang menawarkan perkhidmatan mereka kepada umum berdekatan dengan anda

Senarai pusat servis kaunseling adalah seperti berikut:

Bahagian Kaunseling & Psikologi, Jabatan Kebajikan Masyarakat Wilayah Persekutuan Kuala Lumpur [Redacted] [Redacted] [Redacted] [Redacted]	Kerajaan Disediakan dalam Bahasa Melayu dan Bahasa Inggeris
Unit Kaunseling, Kementerian Wanita, Keluarga dan Pembangunan Masyarakat [Redacted] [Redacted] [Redacted] [Redacted]	Kerajaan Disediakan dalam Bahasa Melayu dan Bahasa Inggeris
Klinik Kaunseling Komuniti, Jabatan Pendidikan Kaunselor dan Psikologi Kaunseling Fakulti Pengajian Pendidikan, [Redacted] [Redacted]	Percuma dan dibuka untuk umum Disediakan dalam 3 bahasa (Bahasa Melayu, Bahasa Inggeris dan Mandarin)
Pusat Telekaunseling DBKL [Redacted] [Redacted] [Redacted] [Redacted]	24 jam Kaunseling bersemuka / melalui telefon / internet

Kerahsiaan

Sebarang maklumat yang anda kongsi di dalam kajian ini adalah rahsia. Di dalam apa-apa rakaman (video dan audio), anda hanya akan dipanggil menggunakan panggilan formal anda (Cik, Puan, Encik, adik, dll.). Sebaik sahaja data dikumpulkan (bertulis atau digital), data akan dikod ke dalam kod nombor menjadikannya tidak boleh dikenalpasti identiti. Laporan kajian mungkin akan dihantar untuk diterbitkan atau dibentangkan di konferens. Maklumat yang diberikan atau diperolehi daripada anda hanya akan diterbitkan/dilaporkan/dibentangkan di dalam tesis atau artikel atau di konferens menggunakan kod nombor dan nama samaran.

Penyimpanan data

Penyimpanan data yang dikutip semasa kajian ini akan mematuhi peraturan Monash University. Tiada data dalam bentuk fizikal (borang soal selidik bertulis yang telah lengkap, transkrip temubual) atau data digital akan dibawa daripada Malaysia ke Australia. Data dalam bentuk fizikal akan disimpan di dalam kabinet pejabat yang berkunci di Malaysia sekurang-kurangnya lima tahun dan hanya boleh diakses oleh penyelidik pelajar sahaja. Data dalam bentuk digital (rakaman video dan audio) akan disimpan dan dilindungi dengan kata laluan yang hanya boleh diakses oleh penyelidik pelajar. Data akan disimpan di dalam ruang penyimpanan atas talian (cloud storage) emel Monash. Data dalam bentuk fizikal dan digital akan dimusnahkan selepas tamat tempoh minimum penyimpanan data. Data dalam bentuk fizikal akan dicarik dan dihantar ke pusat kitar semula dan data digital akan dipadam beserta dengan akaun emel penyimpanan.

Penggunaan data untuk tujuan lain

Data yang dikutip di dalam kajian ini tidak akan digunakan untuk sebarang tujuan lain kecuali untuk laporan tesis, pembentangan konferens atau penerbitan artikel jurnal. Data hanya akan diterbitkan/dilaporkan/dibentangkan menggunakan kod dan nama samaran.

Keputusan

Sekiranya anda ingin dimaklumkan tentang dapatan penyelidikan secara keseluruhan, sila hubungi Cik Iylia Dayana Shamsudin di talian +614 5163 7663 atau emel ke idsha1@student.monash.edu

Maklumat perhubungan

Sekiranya anda ingin menghubungi penyelidik berkenaan sebarang aspek kajian ini, sila hubungi Ketua Penyelidik:	Sekiranya anda mempunyai sebarang aduan berkaitan dengan cara penyelidikan dijalankan, sila hubungi:
Iylia Dayana Shamsudin Calon PhD Department of Occupational Therapy School of Primary Health Care Faculty of Medicine, Nursing and Health Sciences Monash University – Peninsula Campus [Redacted] [Redacted] [Redacted]	Pegawai Eksekutif Monash University Human Research Ethics Committee (MUHREC) [Redacted] [Redacted] Monash University VIC 3800 [Redacted] [Redacted] [Redacted] Pegawai setempat untuk dihubungi bagi peserta di Malaysia:

	<p>Dr. Masne Kadar Ketua Program Terapi Carakerja Sekolah Sains Rehabilitasi Fakulti Sains Kesihatan Universiti Kebangsaan Malaysia Tingkat 5, Bangunan Yayasan Selangor Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur</p> <p>[REDACTED] [REDACTED] [REDACTED]</p>
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Terima kasih,

Dr. Ted Brown
Professor Madya

Dr. Mong-Lin Yu
Pensyarah

Iylia Dayana Shamsudin
Calon PhD

Appendix 7

Consent Form in English and Malay

CONSENT FORM

(Parents of children with ASD)

Project: Impact of DIR/Floortime home-based intervention program on parents and children with Autism Spectrum Disorder (ASD)

Chief Investigator: Associate Professor Ted Brown

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Complete the self-report questionnaires/surveys	<input type="checkbox"/>	<input type="checkbox"/>
Take part in the study with my child with ASD	<input type="checkbox"/>	<input type="checkbox"/>
Let my child with ASD take part in the study	<input type="checkbox"/>	<input type="checkbox"/>
Being observed while playing with child with ASD	<input type="checkbox"/>	<input type="checkbox"/>
Video recording during the play session	<input type="checkbox"/>	<input type="checkbox"/>
Attend and complete parents training sessions (two 3-hours training sessions)	<input type="checkbox"/>	<input type="checkbox"/>
Conduct Floortime session at home with my child with ASD	<input type="checkbox"/>	<input type="checkbox"/>
Fill in the reflective journal that been provided every day	<input type="checkbox"/>	<input type="checkbox"/>
Attend the follow-up visits every two weeks	<input type="checkbox"/>	<input type="checkbox"/>
Take part in the key informant interview	<input type="checkbox"/>	<input type="checkbox"/>
Audio recording during the interview	<input type="checkbox"/>	<input type="checkbox"/>
Data I provided during this research may be used by the research team to be publish	<input type="checkbox"/>	<input type="checkbox"/>

Name of Participant

Participant Signature

Date

BORANG KEBENARAN

(Ibubapa kanak-kanak Autism Spectrum Disorder)

Projek: Impak program intervensi di rumah DIR/Floortime terhadap ibubapa dan kanak-kanak Autism Spectrum Disorder (ASD)

Ketua Penyelidik: Professor Madya Ted Brown

Saya telah diminta untuk mengambil bahagian di dalam projek kajian Monash University yang dinyatakan di atas. Saya telah membaca dan memahami Kenyataan Penerangan yang diberi dan dengan ini saya bersetuju untuk mengambil bahagian dalam projek ini.

Saya bersetuju untuk:	Ya	Tidak
Melengkapkan borang-borang soal selidik/survei	<input type="checkbox"/>	<input type="checkbox"/>
Mengambil bahagian dalam kajian dengan anak ASD	<input type="checkbox"/>	<input type="checkbox"/>
Diperhatikan semasa bermain dengan anak ASD	<input type="checkbox"/>	<input type="checkbox"/>
Dirakam (video) semasa sesi bermain dengan anak ASD	<input type="checkbox"/>	<input type="checkbox"/>
Menghadiri dan melengkapkan sesi latihan ibubapa (dua sesi 3-jam latihan)	<input type="checkbox"/>	<input type="checkbox"/>
Menjalankan sesi Floortime di rumah dengan anak ASD	<input type="checkbox"/>	<input type="checkbox"/>
Menghadiri lawatan susulan setiap dua minggu	<input type="checkbox"/>	<input type="checkbox"/>
Mengambil bahagian dalam sesi temubual	<input type="checkbox"/>	<input type="checkbox"/>
Dirakam (audio) semasa sesi temubual	<input type="checkbox"/>	<input type="checkbox"/>
Data yang saya berikan semasa kajian ini boleh digunakan oleh kumpulan pengkaji untuk diterbitkan	<input type="checkbox"/>	<input type="checkbox"/>

Nama Peserta

Tandatangan peserta

Tarikh

Appendix 8

Permission from American Psychiatric Association (APA) to reproduce ASD severity level table from DSM-5



Iylia Shamsudin <iylia.shamsudin@monash.edu>

Request to Obtain Permission from APA/APP. Permission Request Reference ID: PL14828

23 March 2018 at 23:43

Dear Dayana,

Permission is granted for use of the material as outlined in the request below for your dissertation only. Permission is granted under the following conditions:

- Material must be reproduced without modification, with the exception of style and format changes
- Permission is nonexclusive and limited to this one-time use
- Use is limited to English language only; print and website use only
- Permission must be requested for additional uses (including subsequent editions, revisions, and any electronic use)
- No commercial use is granted

In all instances, the source and copyright status of the reprinted material must appear with the reproduced text. The following notice should be used:

Reprinted with permission from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (Copyright 2013). American Psychiatric Association.

Sincerely,

Efrem Tuquabo

American Psychiatric Association Publishing

800 Maine Avenue, SW, Suite 900

Washington, DC 20024



Appendix 9

Permission to use and translate QoLA and PSOC



Ilyia Shamsudin <ilyia.shamsudin@monash.edu>

Translating the QoLA into Malay

2 messages

2 July 2015 at 07:59

Dear Ilyia,

I work with Professor Eapen on the QoLA. Thank for your interest in using this tool as part of your PhD research at Monash and for your question about translation into Malay. This will certainly be possible and we welcome cross-cultural use of the scale.

Our only requirement would be a process that involved back translation into English to ensure the validity and accuracy of the translated items. That is, the scale is first translated into Malay. Next the scale is independently translated back into English (i.e. not by the same person who did the first translation and also not by someone who has access to the English QoLA items – essentially by a Malay-English speaking person who isn't aware of the QoLA) to ensure meanings haven't changed substantially.

We would also ask to see this English back-translation and to have a copy of the final translated version for our own records. Sometimes this process can involve more than one run of translations if there are items which seem to have changed in meaning quite a bit.

Please confirm whether this makes sense and whether this process is OK for you. We are happy to respond to any questions you may have.

We would be less comfortable with items being changed/adapted - although if there are strong cultural reasons why you feel this to be important in the Malaysian context, please do contact us to discuss this.

Kind regards,

Rudi

Dr Rudi Črnčec

BPsych (Hons), DPsych, MACPA

Clinical Psychologist

Conjoint Senior Lecturer, School of Psychiatry, UNSW





Iylia Shamsudin <iylia.shamsudin@monash.edu>

Permission to translate and use PSOC

2 messages

30 June 2015 at 09:42

Dear Dr. Wandersman,

I'm Iylia Dayana, currently doing my PhD in occupational therapy at Monash University, Australia. My proposed study involving parents conducting home-based intervention with their children with ASD and I'm planning on using the Parental Sense of Competence Scale (PSOC) with parents.

Since the study will take place in Malaysia, English is not the first language for participants. Their first language is Malay, hence I'm planning to translate the scale into Malay language. The study's intended number of participant is 6 - 8 participants (multiple single case subject study). Using translated Malay version of PSOC would make it easier for participant to understand and provide their response as accurate as it can be.

I would like to ask for your permission to translate the PSOC into Malay language and use it in my PhD study.

Thank you.

Kind regards,
iylia dayana binti shamsudin
PhD candidate
Department of Occupational Therapy
School of Primary Health Care
Faculty of Medicine, Nursing and Health Sciences
Monash University

3 July 2015 at 03:33

Dear Iylia,
You have my permission to use PSOC in your research and to translate it into Malay. I hope your research goes well.
Sincerely, Lois Wandersman
[Quoted text hidden]

Appendix 10

Bahasa Malaysia translated version of Quality of Life in Autism (BM QoLA)

SOAL SELIDIK KUALITI KEHIDUPAN DENGAN AUTISME (QoLA) – VERSI IBU BAPA

Kaji selidik ini menilai kualiti kehidupan ibu bapa yang mempunyai anak yang menghidap Gangguan Spektrum Autisme (ASD).

Tarikh hari ini: _____

Umur anda: _____ Jantina anda (bulatkan): Lelaki / Perempuan

Umur kanak-kanak yang menghidap ASD: _____

Jantina kanak-kanak yang menghidap ASD (bulatkan): Lelaki / Perempuan

Hubungan dengan kanak-kanak tersebut (bulatkan): Ibu / Bapa / Lain-lain (nyatakan):

Bahagian A

Apabila menjawab soalan berikut, sila tandakan pada kotak yang paling tepat menunjukkan perasaan anda **sepanjang 4 minggu yang lepas**.

		Tiada langsung	Sedikit	Sederhana	Agak banyak	Sangat banyak		Tidak berkenaan		Komen
1.	Saya berpuas hati dengan kehidupan saya									
2.	Saya berasa tertekan									
3.	Saya berasa gembira dan puas hati									

4.	Saya berasa murung atau bimbang									
5.	Saya berasa senang dengan diri saya									
6.	Saya berpuas hati dengan hubungan rapat saya									
7.	Orang lain berada di sisi saya apabila saya memerlukan mereka									
8.	Saya berpuas hati dengan kehidupan sosial saya									
9.	Saya berpuas hati dengan kehidupan berkeluarga									
10.	Saya berpuas hati dengan situasi kewangan saya									
11.	Saya berpuas hati dengan tempat tinggal saya									
12.	Saya mempunyai wang yang cukup untuk memenuhi keperluan saya									

13.	Saya berpuas hati dengan pencapaian-pencapaian saya									
14.	Saya berpuas hati dengan kesihatan umum saya									
15.	Saya mempunyai gaya hidup yang sihat									
16.	Saya berpuas hati dengan aktiviti masa lapang saya									
17.	Masalah kesihatan menghalang saya daripada melakukan perkara yang ingin saya lakukan									
18.	Saya rasa dapat menguasai hidup saya									
19.	Saya menetapkan matlamat saya dan mencapainya									
20.	Saya boleh merancang tindakan saya dan mengikutinya									

21.	Saya membuat keputusan saya sendiri									
22.	Saya berasa bersalah									
23.	Saya sebahagian daripada masyarakat									
24.	Saya boleh mendapatkan sokongan yang saya perlukan daripada masyarakat									
25.	Saya mampu pergi ke tempat yang saya perlu pergi									
26.	Saya berasa selamat dalam kehidupan sehari-hari saya									
27.	Saya berasa dihormati dalam kehidupan seharian saya									
28.	Saya berpuas hati dengan perkhidmatan kesihatan yang disediakan									

Bahagian B

Kanak-kanak yang menghidap ASD mungkin mengalami berbagai kesulitan. Kami ingin tahu **setakat mana anda menghadapi kesulitan ini sepanjang 4 minggu yang lepas.**

Contohnya, jika anda tandakan “*sedikit bermasalah untuk saya*” bagi perkara 1, ini bermaksud “*Kesulitan anak saya dalam berinteraksi dengan orang lain memberikan sedikit masalah kepada saya sepanjang 4 minggu yang lepas*”.

		Setakat manakah anda menghadapi kesulitan sepanjang 4 minggu yang lepas?						
	Kesulitan yang mungkin dialami oleh kanak-kanak yang menghidap ASD	Tidak terlalu bermasalah	Sedikit masalah	Masalah sederhana	Agak banyak masalah	Sangat banyak masalah	Tidak berkenaan	Komen
1	Berinteraksi dengan orang lain							
2	Mempunyai kawan-kawan							
3	Memahami perasaan orang lain							
4	Berbual							
5	Menyampaikan keperluan							
6	Memahami komen secara literal (tanpa berkias)							
7	Menyebut perkara yang							

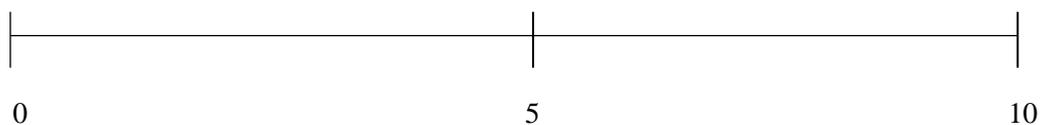
	memalukan dari segi sosial							
8	Sentiasa mengikut rutin							
9	Menjadi terlalu berminat dengan topik tertentu							
10	Berasa bimbang ketika dalam situasi tertentu atau menghadapi perubahan							
11	Sensitif terhadap deria tertentu							
12	Memahami peraturan dalam interaksi sosial							
13	Mengawal tindak balas emosi							
14	Sentiasa ingin melakukan sesuatu perkara dengan cara tertentu							
15	Tingkah laku bermasalah termasuk marah & agresif							
16	Menunjukkan tindak balas emosi yang tidak sesuai							

17	Tingkah laku pengulangan atau pergerakan badan yang luar biasa							
18	Melibatkan diri dalam tingkah laku yang melulu atau kurang bijak							
19	Berdikari melakukan tugas dalam kehidupan harian							
20	Memberikan respons apabila didekati secara sosial							

Secara keseluruhannya, bagaimanakah anda menilai kualiti kehidupan anda? (Sila tandakan pangkah pada garisan di bawah)

Tidak berpuas hati langsung

Teramat berpuas hati



Adakah terdapat perkara lain yang anda percaya mempunyai pengaruh penting terhadap kualiti kehidupan anda?

(sila jelaskan perkara tersebut):

Terima kasih kerana melengkapkan soal selidik ini.

Appendix 11

Bahasa Malaysia translated version of Parental Sense of Competence

Skala Penilaian Kecekapan Keibubapaan

(Gibaud-Wallston & Wandersman, 1978)

Sila nyatakan tahap persetujuan anda bagi setiap pernyataan berikut.

Sangat Tidak Bersetuju Kurang Bersetuju Tidak Bersetuju Bersetuju Agak kurang Bersetuju Sangat Bersetuju

Contoh:

No.	Pernyataan	Tahap Persetujuan						Jumlah Skor (Untuk kegunaan pejabat sahaja)
		Sila bulatkan tahap persetujuan anda bagi setiap pernyataan						
1.	Mengikut pemahaman saya, masalah menjaga anak mudah diselesaikan jika anda tahu bagaimana tindakan anda boleh mempengaruhi anak anda.	1	2	3	4	5	6	

Tarikh: _____

Umur koresponden (tahun): _____ Jantina Koresponden: _____

Umur kanak-kanak yang menghidap Autisme Spectrum Disorder (ASD) (tahun): _____

Jantina kanak-kanak yang menghidap Autisme Spectrum Disorder (ASD): _____

Hubungan koresponden dengan kanak-kanak yang menghidap Autisme Spectrum Disorder (ASD) :

No.	Pernyataan	Tahap Persetujuan					Jumlah skor (Untuk kegunaan pejabat sahaja)
		Sila bulatkan tahap persetujuan anda bagi setiap pernyataan					
1.	Mengikut pemahaman saya, masalah menjaga seorang anak akan jadi mudah diselesaikan jika anda tahu bagaimana tindakan anda boleh mempengaruhi anak anda.						
2.	Walaupun menjadi ibubapa boleh memberikan kepuasan, saya kini berasa kecewa dengan anak saya pada umurnya sekarang						
3.	Saya rasa sama sahaja apabila hendak tidur dan bangun pada waktu pagi, masih banyak perkara yang tidak dapat dilaksanakan.						
4.	Saya tidak tahu mengapa, tetapi kadang kala apabila saya sepatutnya sudah boleh menguasai keadaan, saya rasa saya telah dimanipulasi.						
5.	Ibubapa saya lebih bersedia untuk menjadi ibubapa yang baik berbanding dengan saya.						
6.	Saya boleh menjadi contoh yang baik kepada ibubapa muda untuk mempelajari apa yang perlu diketahui untuk menjadi ibubapa yang baik.						
7.	Menjadi ibubapa suatu perkara yang mudah diuruskan dan apa-apa masalah mudah diselesaikan.						
8.	Masalah yang sukar diatasi dalam menjadi seorang ibu adalah anda tidak tahu sama ada anda dapat menjalankan tugas anda dengan baik atau tidak baik.						
9.	Kadang kala saya berasa saya tidak dapat menyudahkan sebarang kerja pun.						
10.	Saya memenuhi jangkaan saya bagi kemahiran menjaga anak saya.						
11.	Saya tahu jawapan tentang apa yang mengganggu anak saya.						

12.	Bakat dan minat saya adalah dalam bidang lain, bukannya menjadi seorang ibubapa.							
13.	Setelah sekian lama menjadi seorang ibubapa, saya sangat memahami peranan ini.							
14.	Jika menjadi ibubapa kepada anak suatu perkara yang menarik, saya akan lebih bermotivasi untuk menjalankan tugas yang lebih baik sebagai ibubapa.							
15.	Sejujurnya, saya yakin saya mempunyai semua kemahiran yang diperlukan untuk menjadi ibubapa yang baik untuk anak saya.							
16.	Menjadi seorang ibubapa membuatkan saya berasa tegang dan bimbang.							
17.	Menjadi ibubapa yang baik memberikan kepuasan kepada saya.							

Appendix 12

Overview of parents training program

Training program: Stage One

1.	Introduction to Developmental, Individual Difference and Relationship-based (DIR) model: What is the DIR Model?
2.	Three components of DIR model: Development, Individual difference, Relationship
3.	Developmental: Six stages of functional emotional developmental levels
4.	Individual difference: sensory systems
5.	Relationship: co-regulated interaction
6.	Principle and strategies for six developmental levels

Training program: Stage Two

1.	Introduction to Floortime: What is Floortime?
2.	Circles of communication (CoC)
3.	Basic principles and strategies of Floortime
4.	Strategies to use while playing with your child

Appendix 13

Parents' reflective journal in English and Malay language

Parent's reflective journal

Day: Monday / Tuesday / Wednesday / Thursday / Friday / Saturday / Sunday

Sessions: 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10

Duration of session: 5 minutes / 10 minutes / 15 minutes / 20 minutes / 25 minutes / 30 minutes

Activities: daily activity routine / free play / pretend play / structured play / outdoor play / indoor play

Member of activity: father / mother / siblings / friends / others (please state): _____

Reflective note:

Comments:

Issues:

Jurnal reflektif ibubapa

Hari: Isnin / Selasa / Rabu / Khamis / Jumaat / Sabtu / Ahad

Sessi: 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10

Durasi sesi: 5 minit / 10 minit / 15 minit / 20 minit / 25 minit / 30 minit

Aktiviti: rutin harian / bermain bebas / bermain olok-olok (pretend play) / bermain struktur / permainan luar rumah / permainan dalam rumah

Ahli aktiviti: bapa / ibu / adik beradik / rakan-rakan / lain-lain (sila nyatakan): _____

Nota reflektif:

Komen:

Isu:

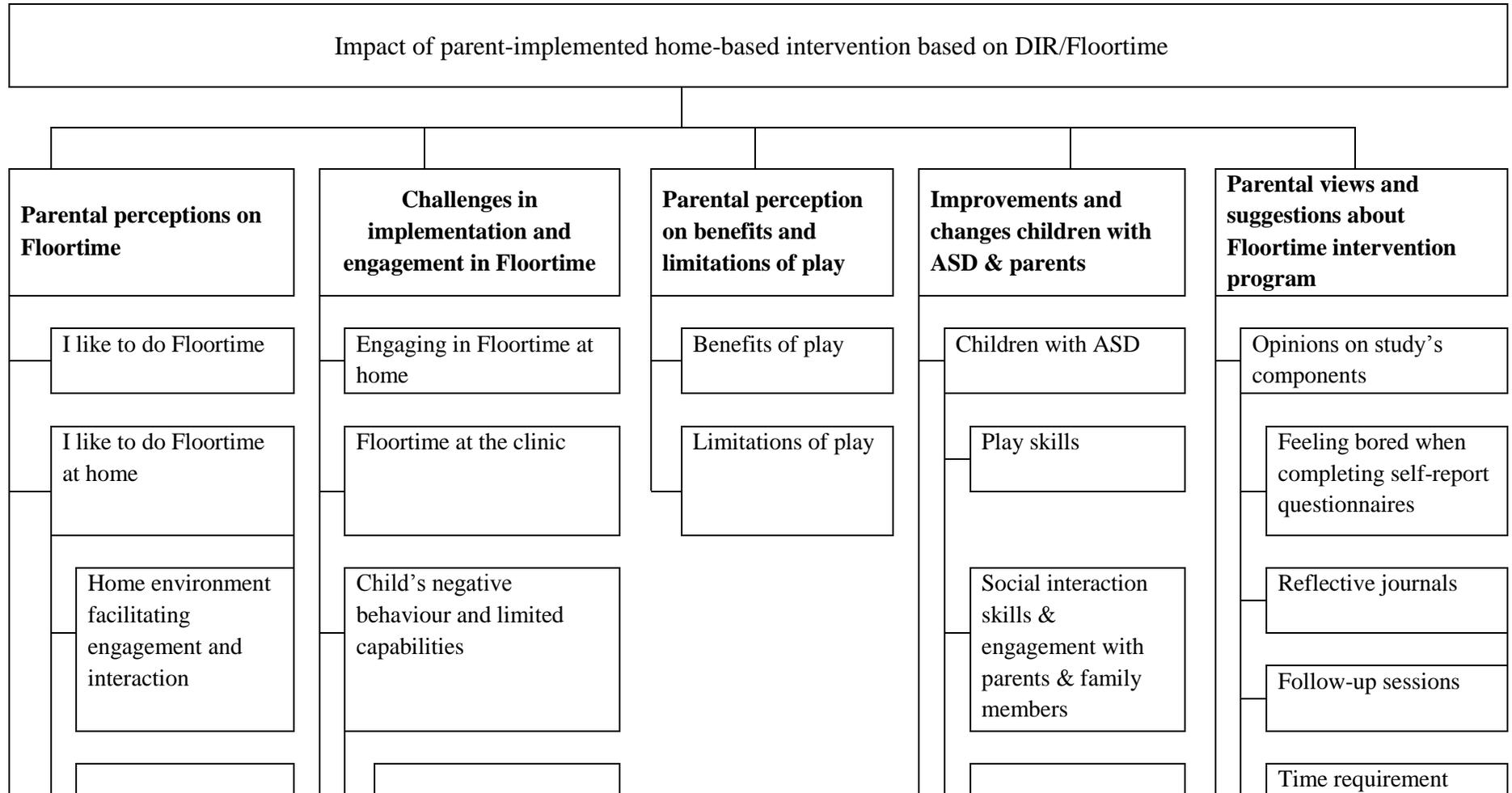
Appendix 14

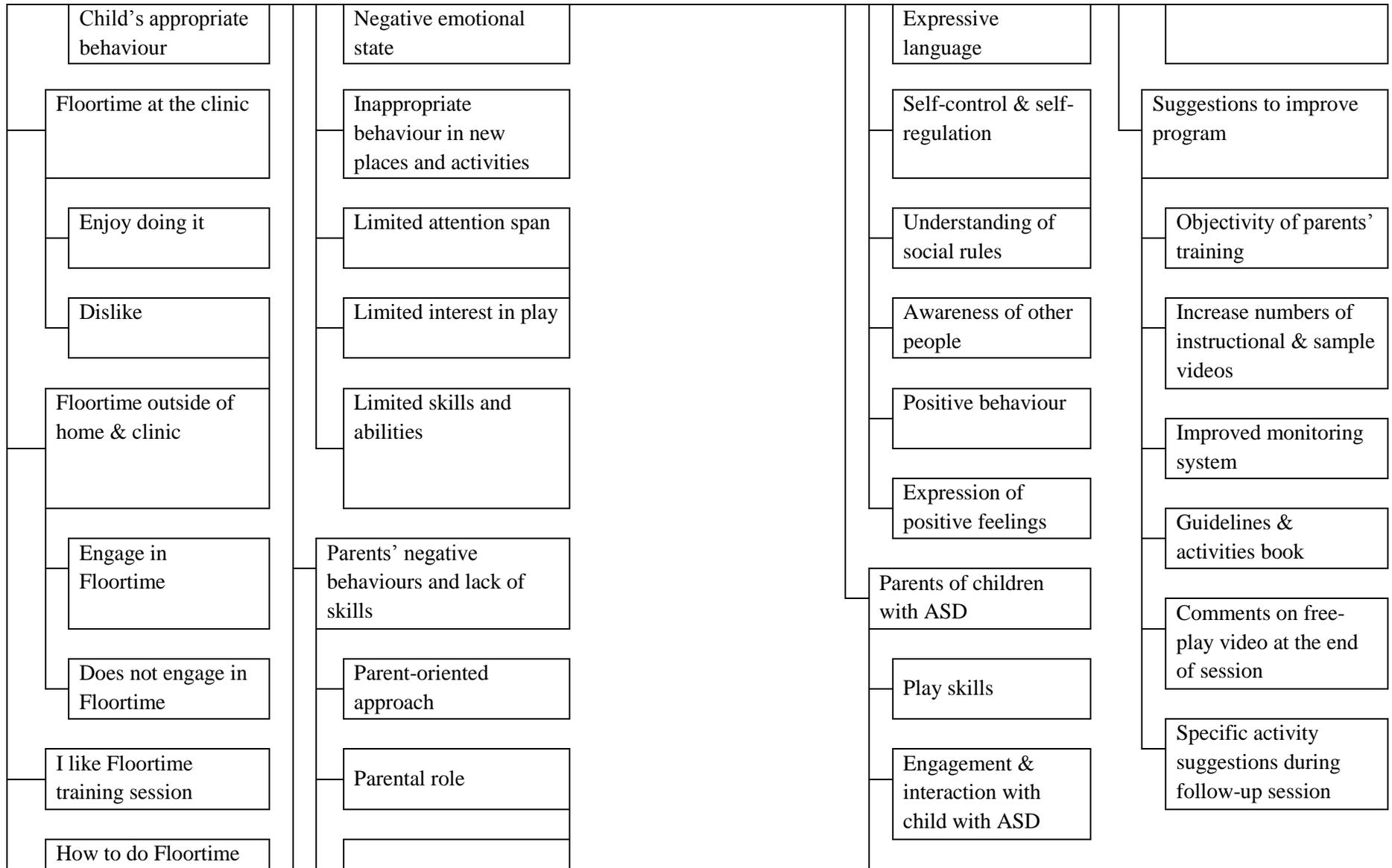
Key informant interview questions schedule for parents of children with ASD in Malay language

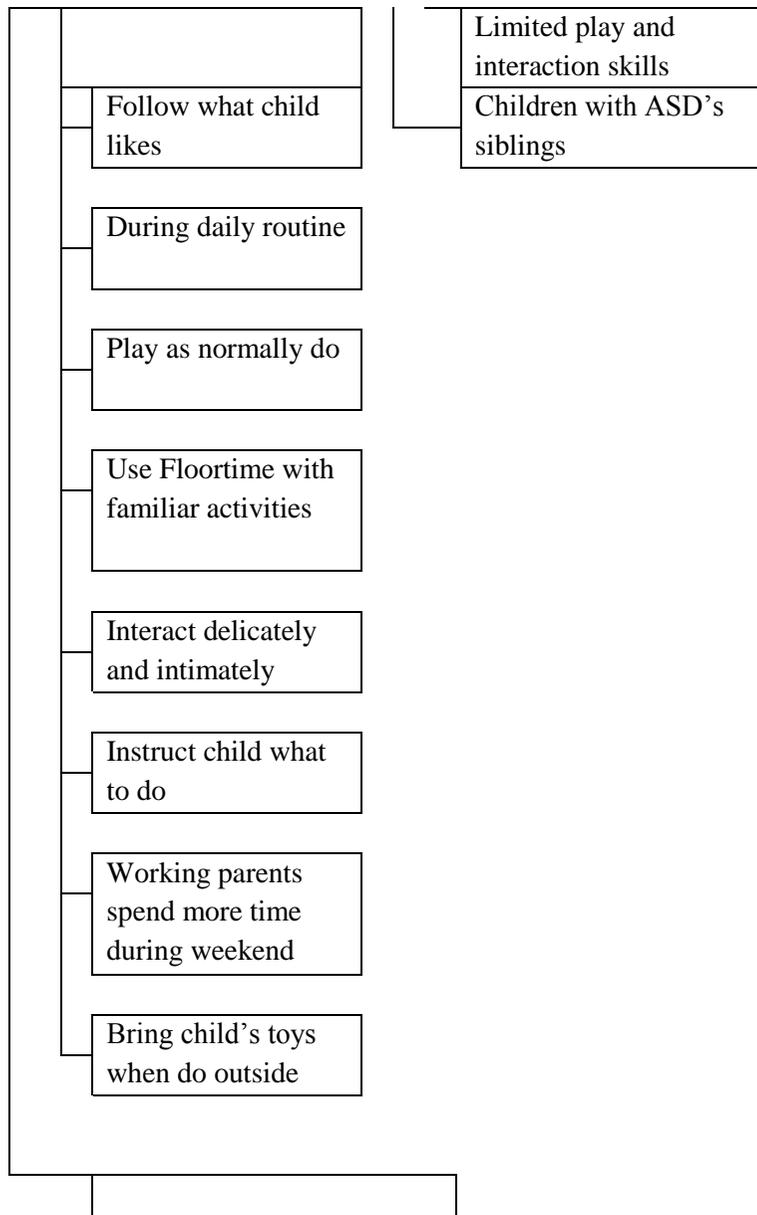
1. Bahagian manakah di dalam program intervensi ini yang paling anda sukai?
2. Bahagian manakah di dalam program ini yang anda rasakan mencabar?
3. Adakah program ini berkesan dalam memperbaiki/meningkatkan kemahiran bermain dan berinteraksi kanak-kanak ASD dengan anda (ibubapa)?
4. Adakah sesi Floortime berkesan dalam memperbaiki/meningkatkan kualiti hidup dan kesejahteraan anda (ibubapa)?
5. Bagi anda (ibubapa), adakah intervensi ini mudah atau sukar untuk anda implemen/jalankan dalam persekitaran rumah?
6. Adakah apa-apa yang anda rasakan perlukan penambahbaikan (termasuk program latihan, program intervensi di rumah, sesi lawatan susulan, dll.)?
7. Adakah anda mempunyai apa-apa komen atau cadangan berkaitan dengan program intervensi atau apa-apa aspek berkenaan dengan program yang dirasakan boleh membantu anda untuk menjalankan sesi Floortime dengan lebih efisien?

Appendix 15

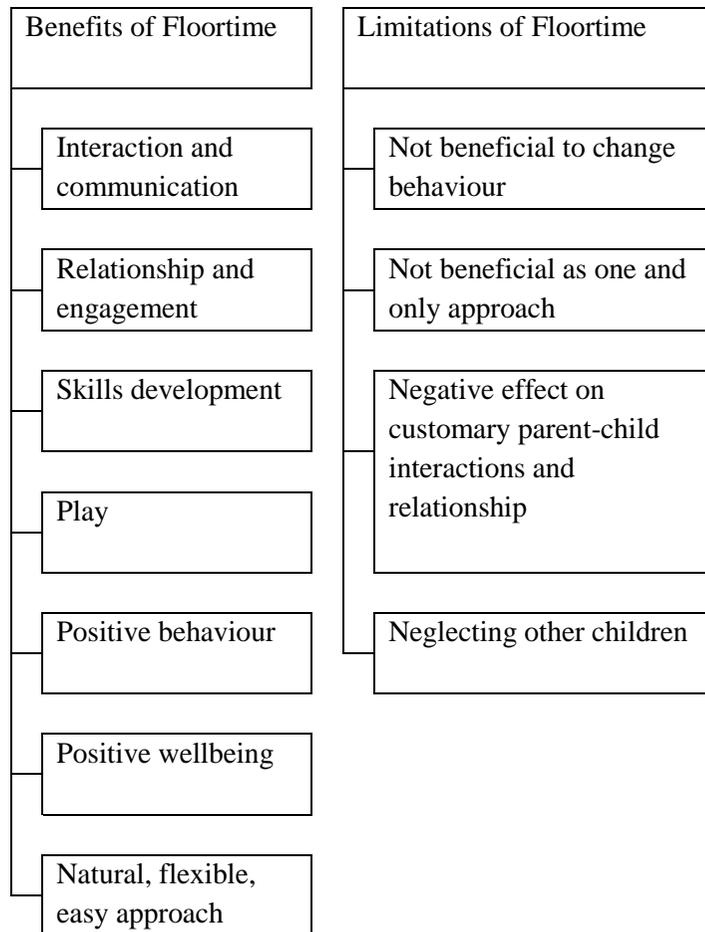
Coding Frame







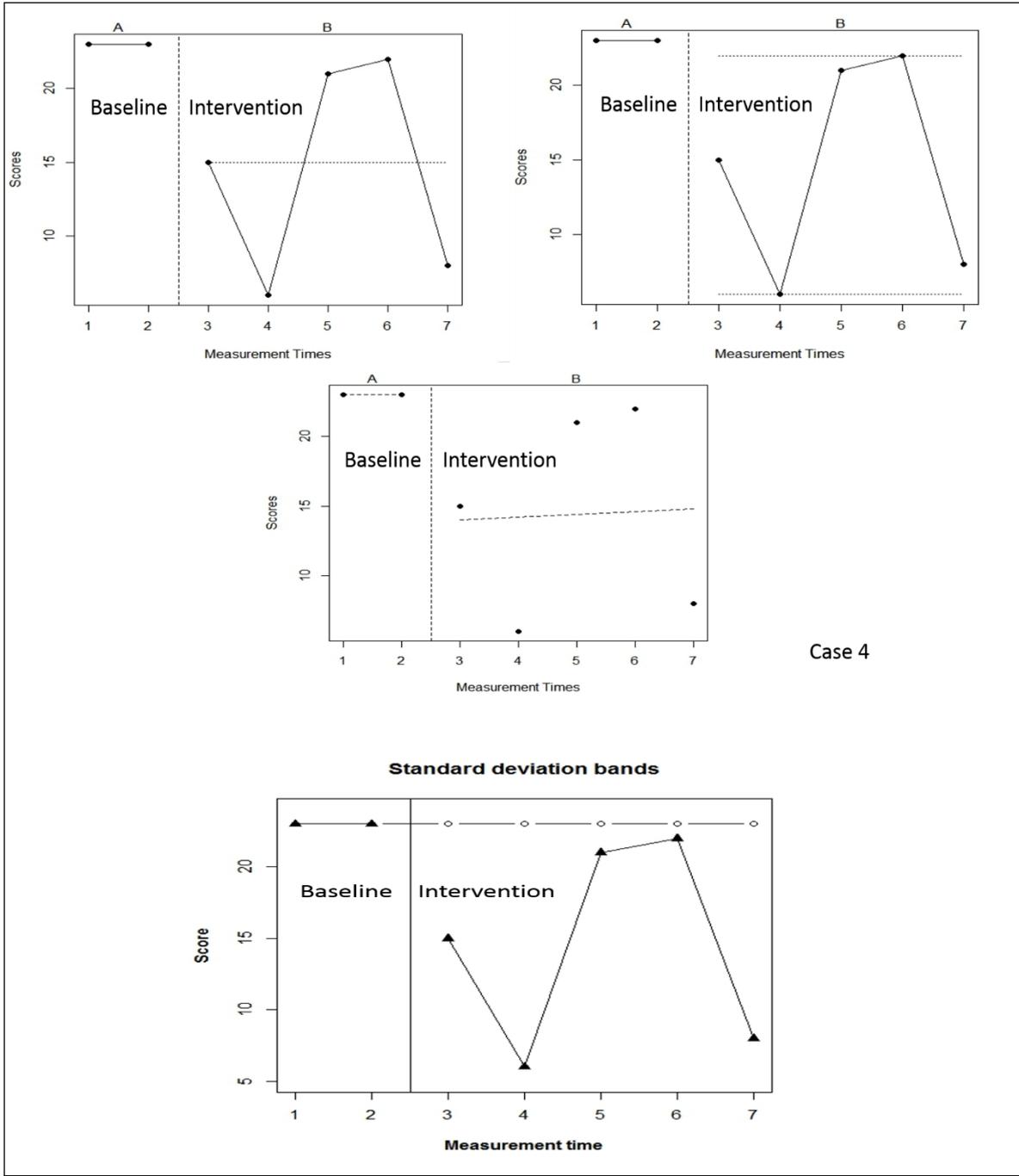
- Social interaction with other people
- Parents' knowledge in play, interaction & engagement
- Positive emotions, wellbeing & sense of competence

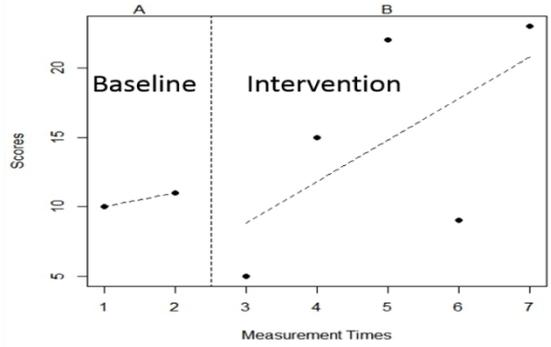
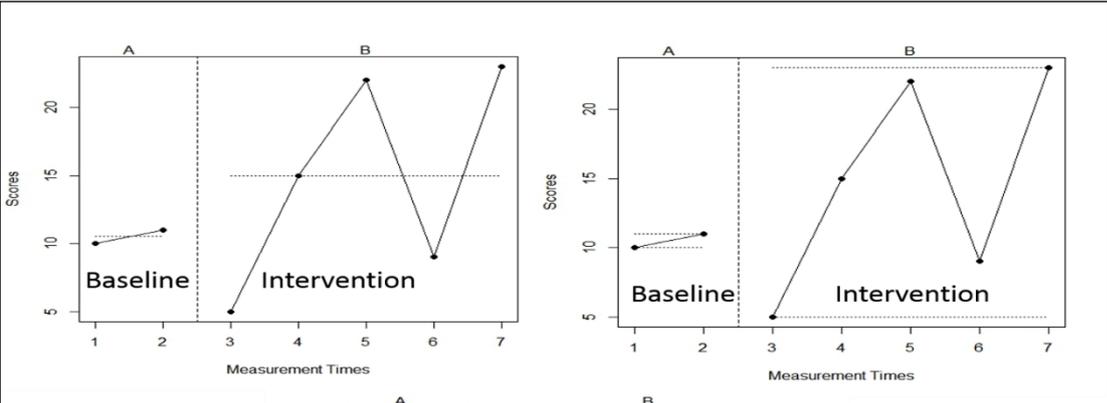


Appendix 16

Visual analysis graphs of Cases 4 – 8

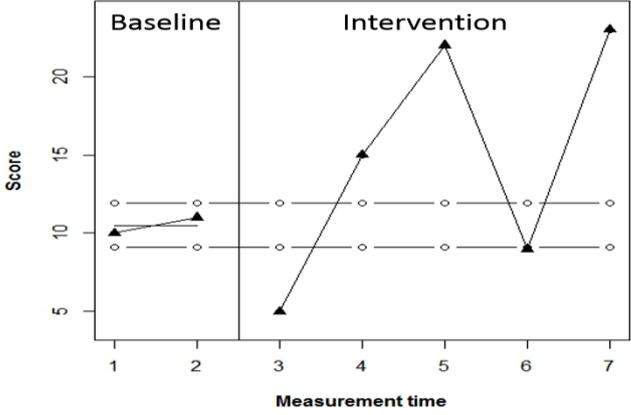
a. Parent-initiated directive communication (PI-D)

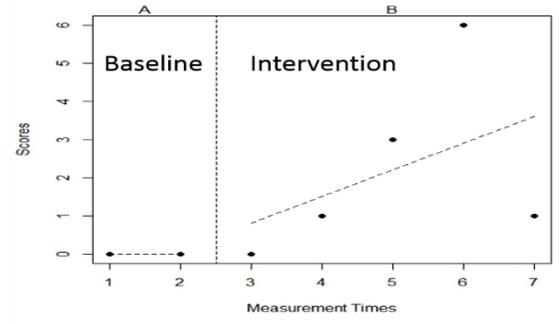
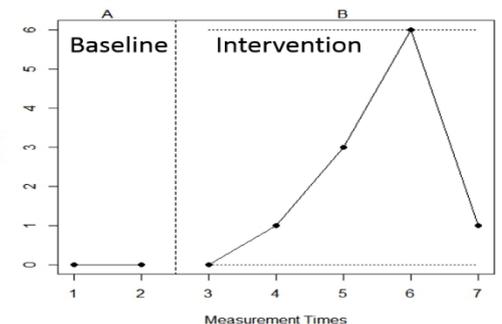
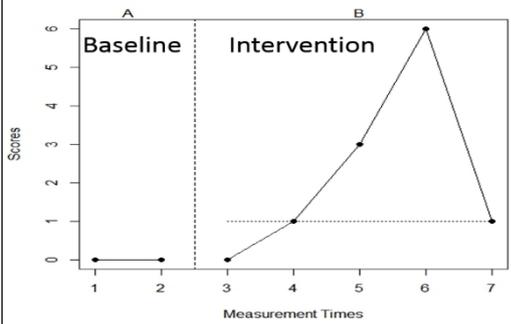




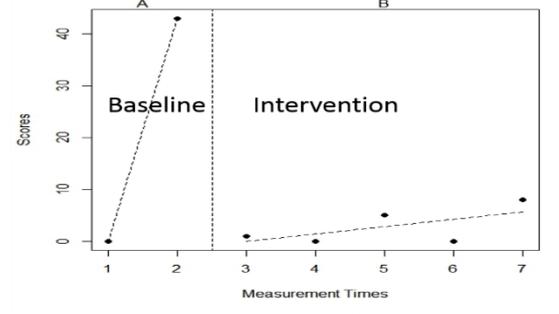
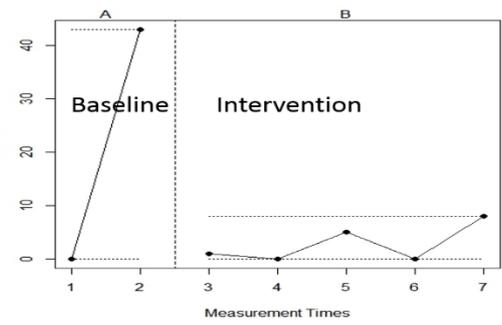
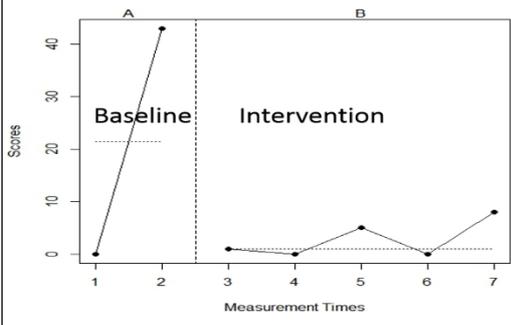
Case 5

Standard deviation bands

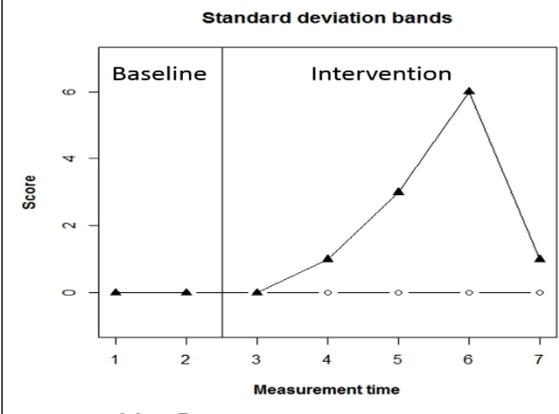




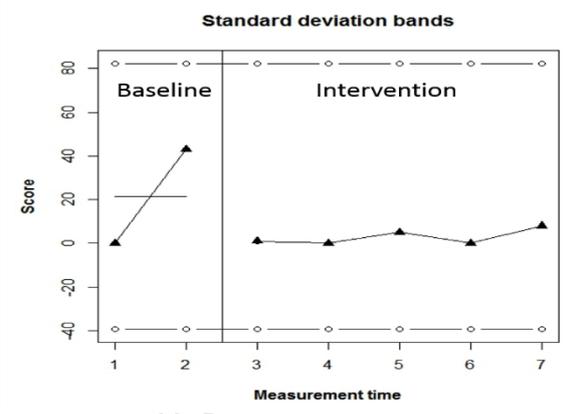
Case 6
Mrs. F-Child F



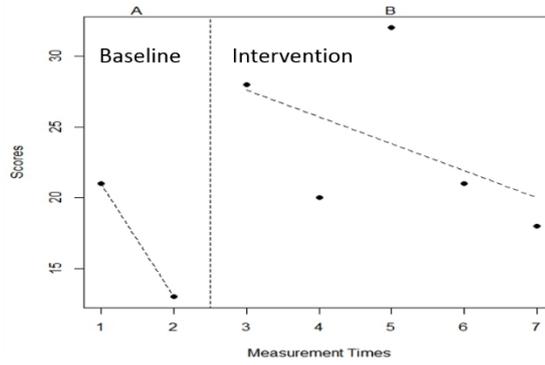
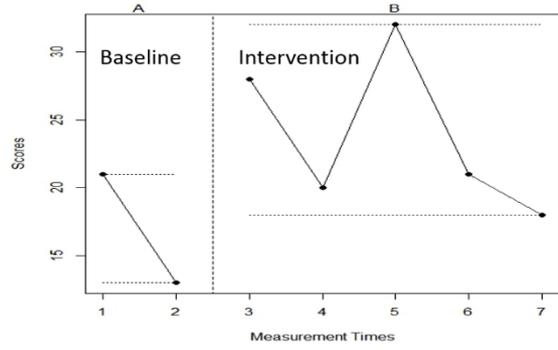
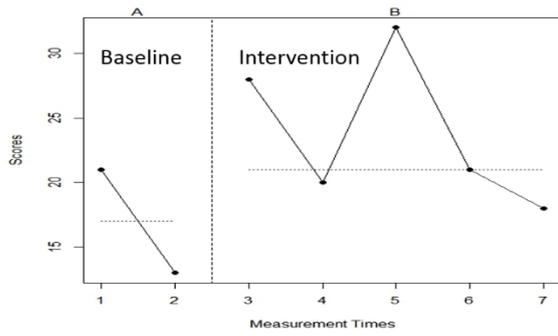
Case 6
Mr. F-Child F



Mrs. F

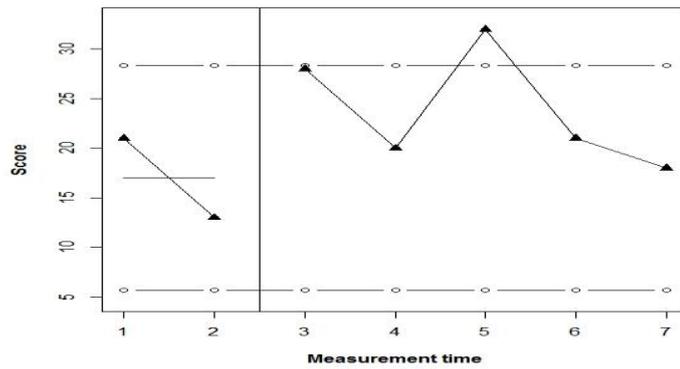


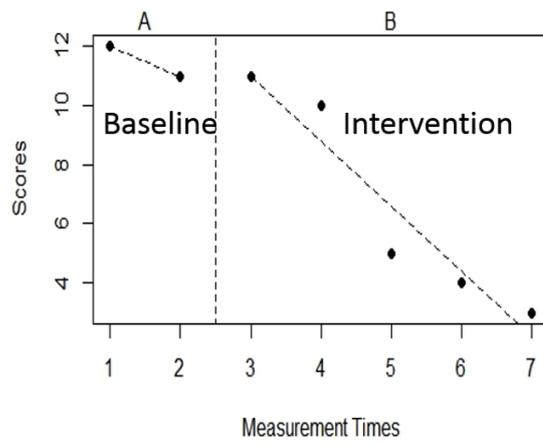
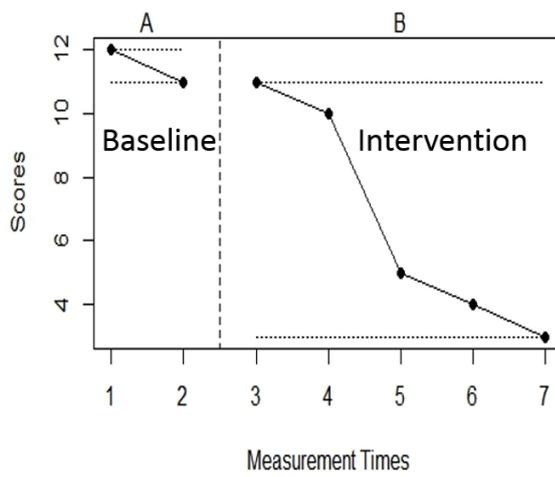
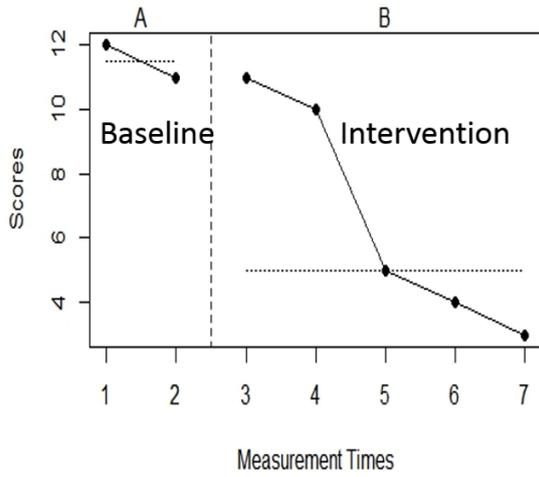
Mr. F



Case 7

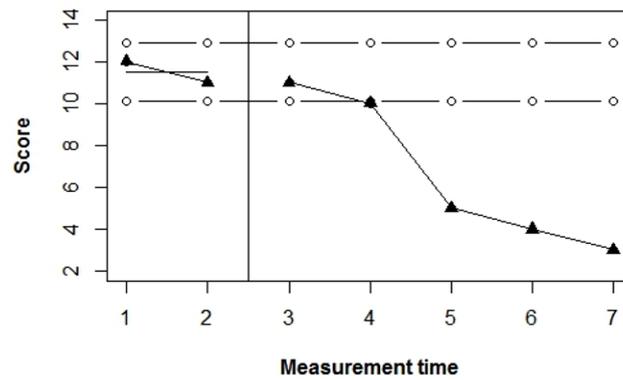
Standard deviation bands



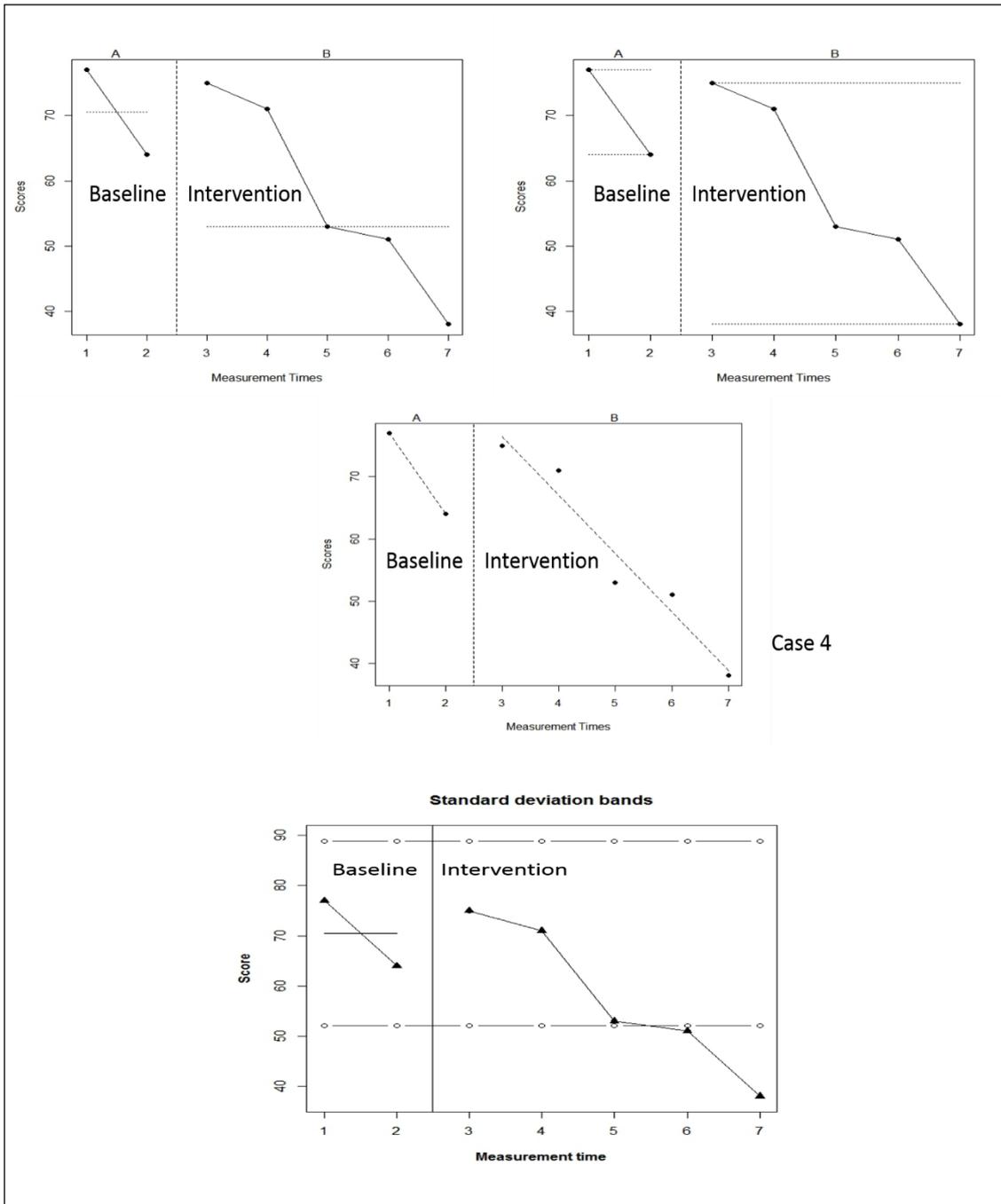


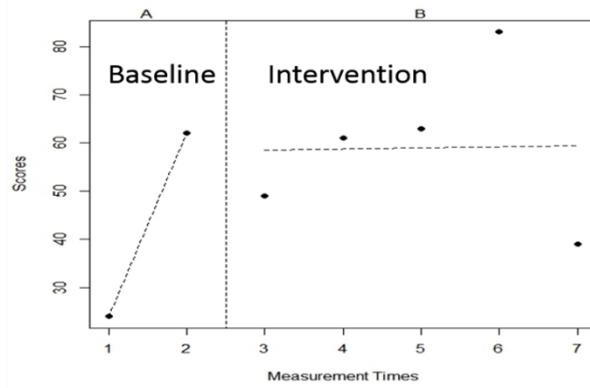
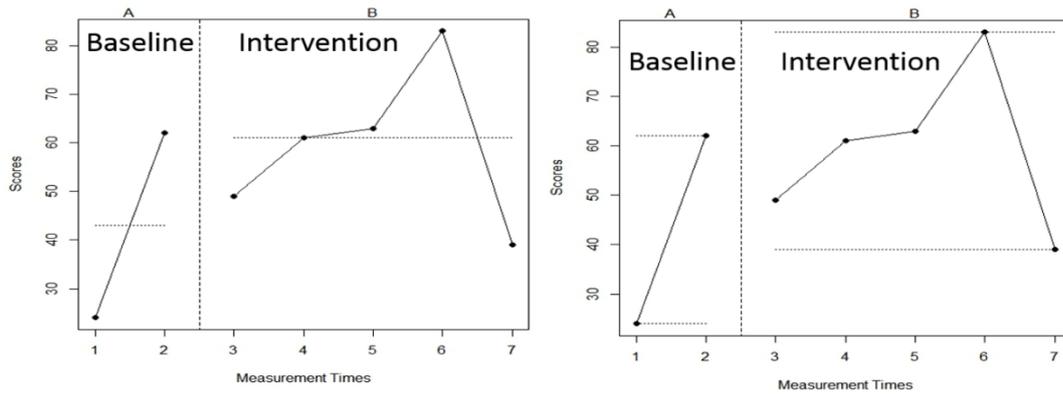
Case 8

Standard deviation bands

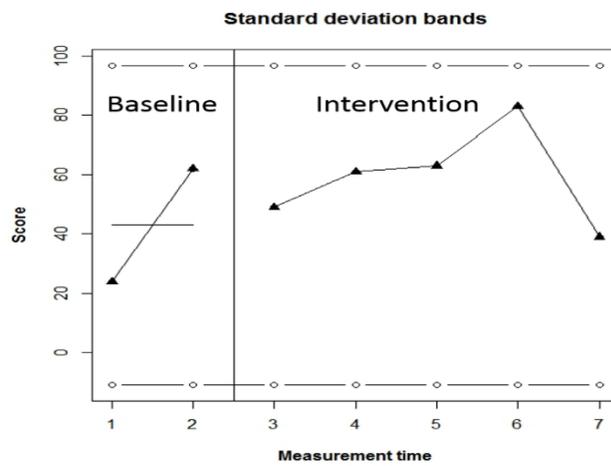


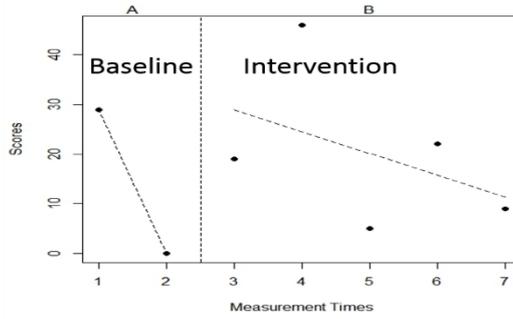
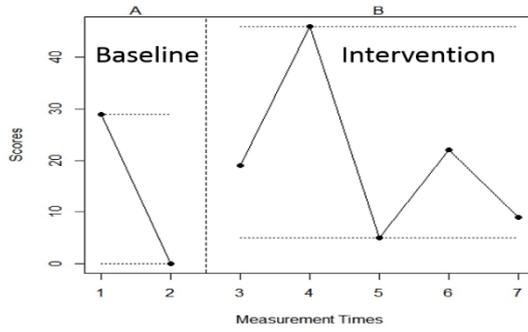
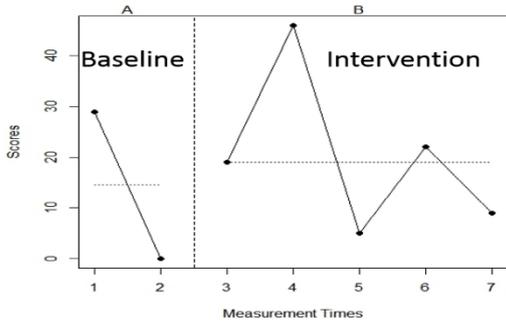
b. Parent-initiated non-directive communication (PI-ND)



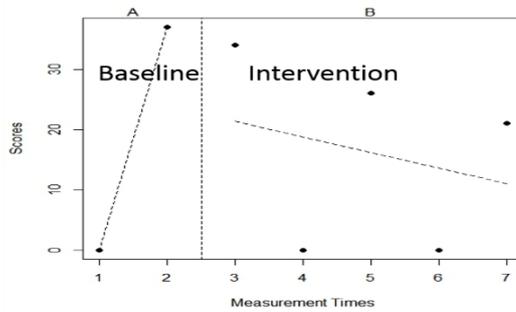
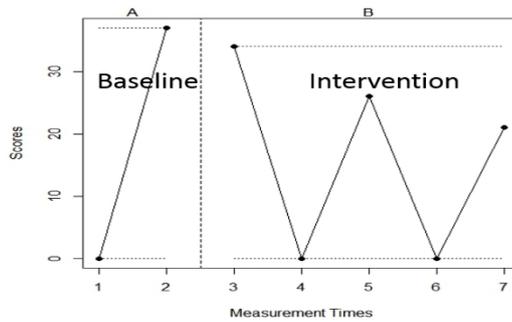
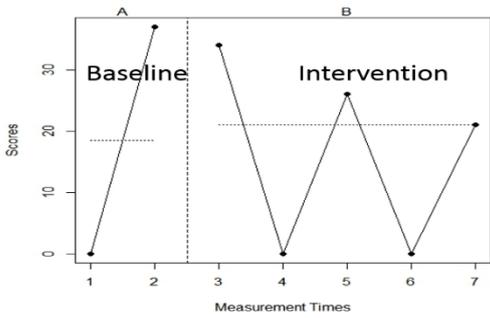


Case 5

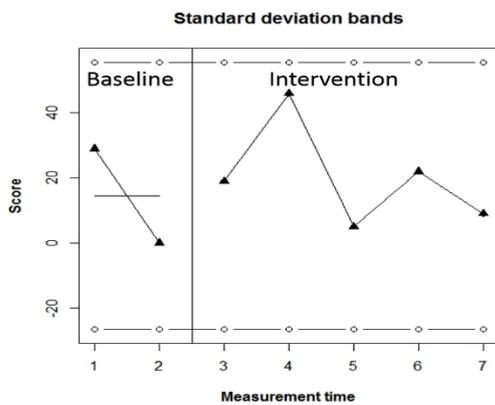




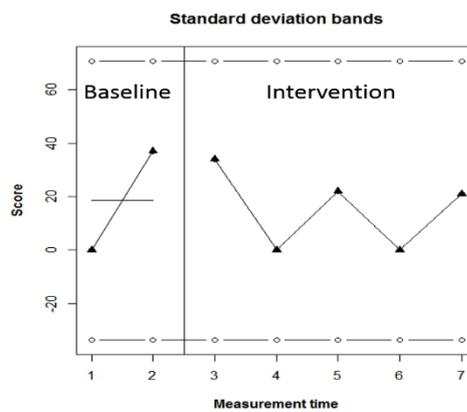
Case 6
Mrs. F-Child F



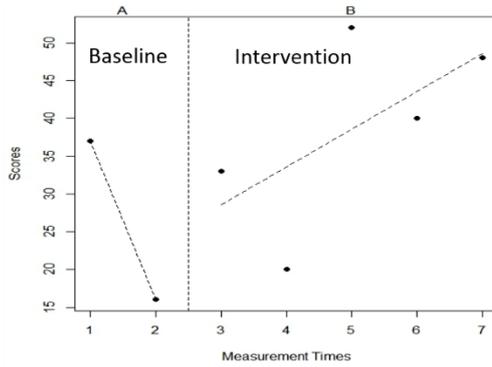
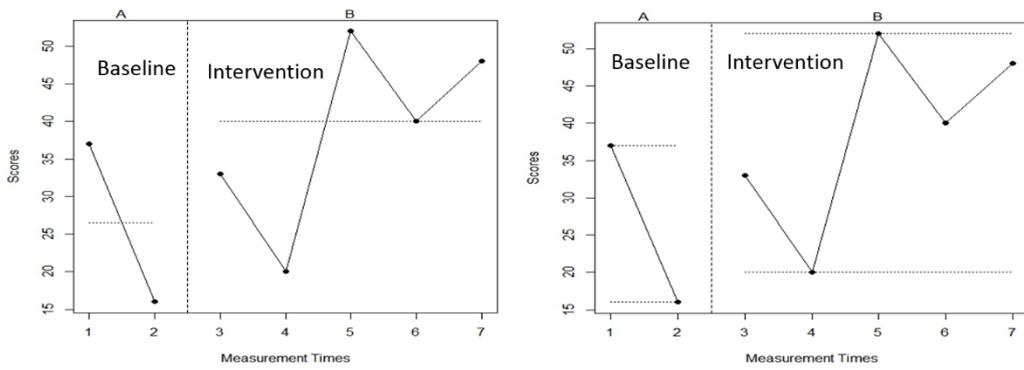
Case 6
Mr. F-Child F



Mrs. F

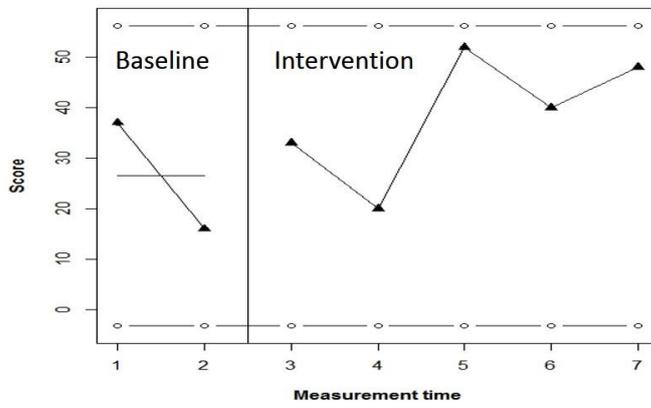


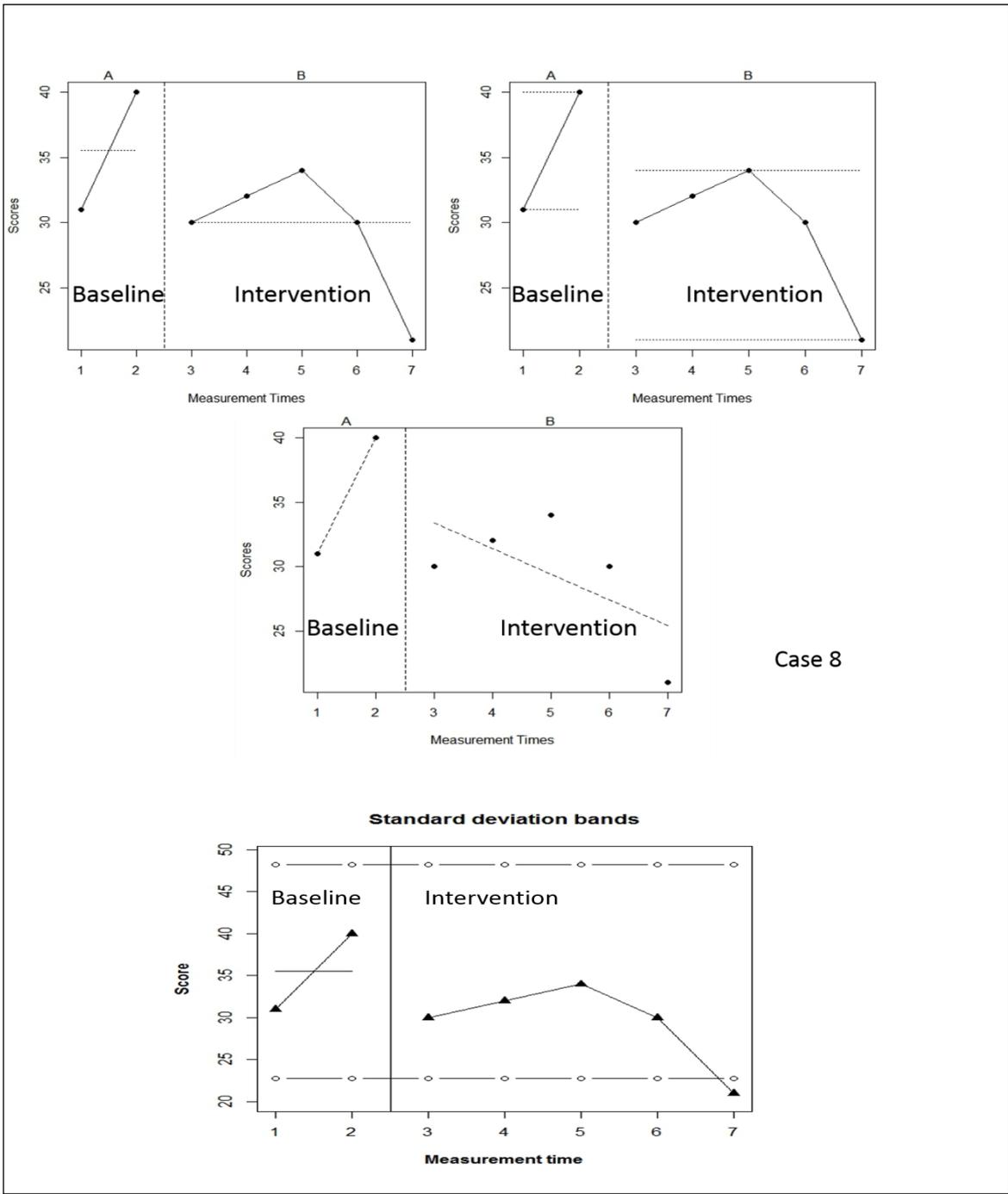
Mr. F



Case 7

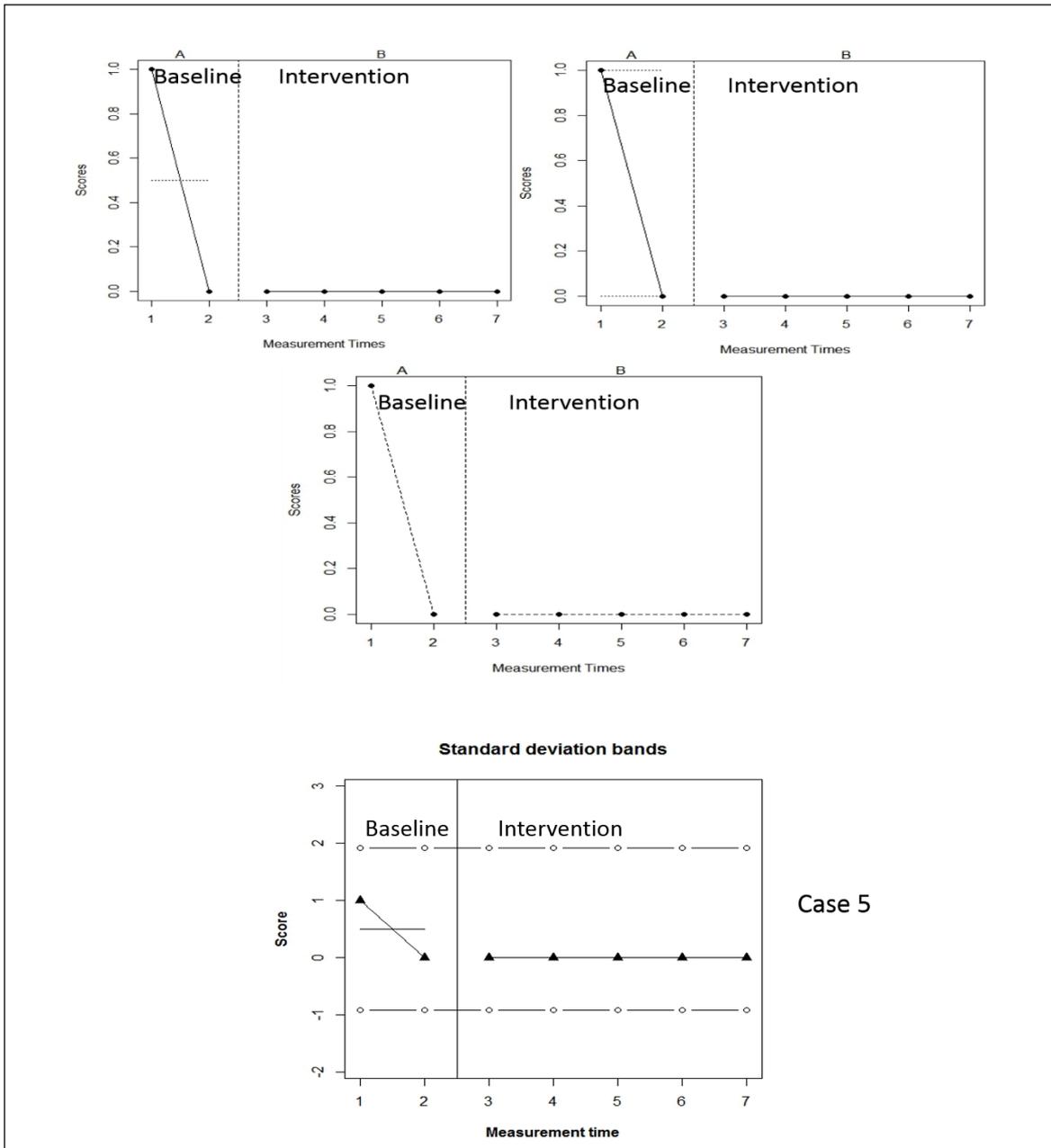
Standard deviation bands

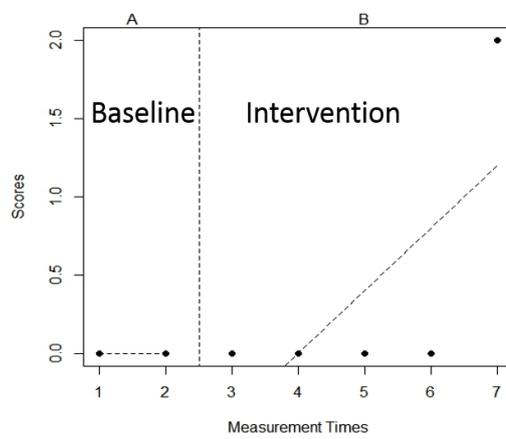
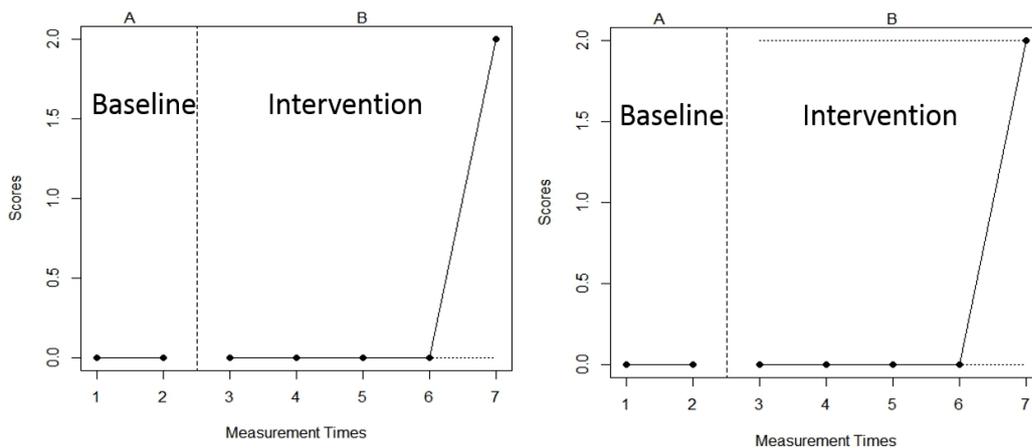




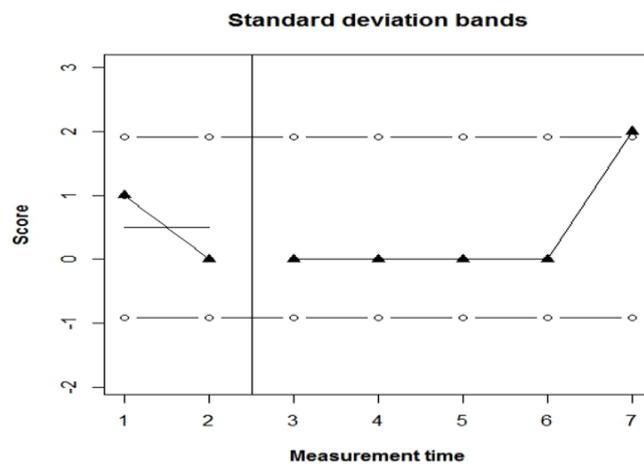
Case 8

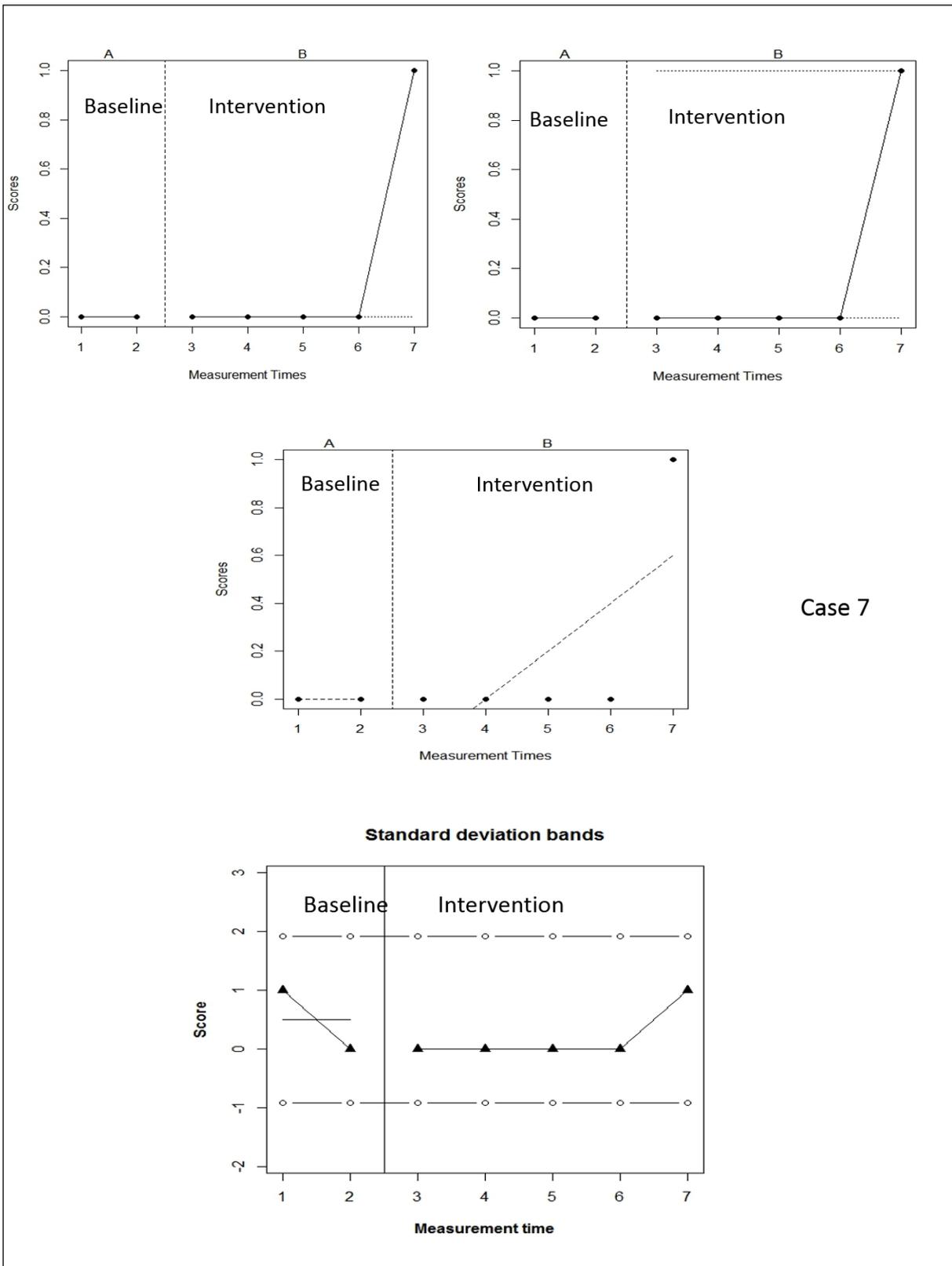
c. Child-initiated directive communication



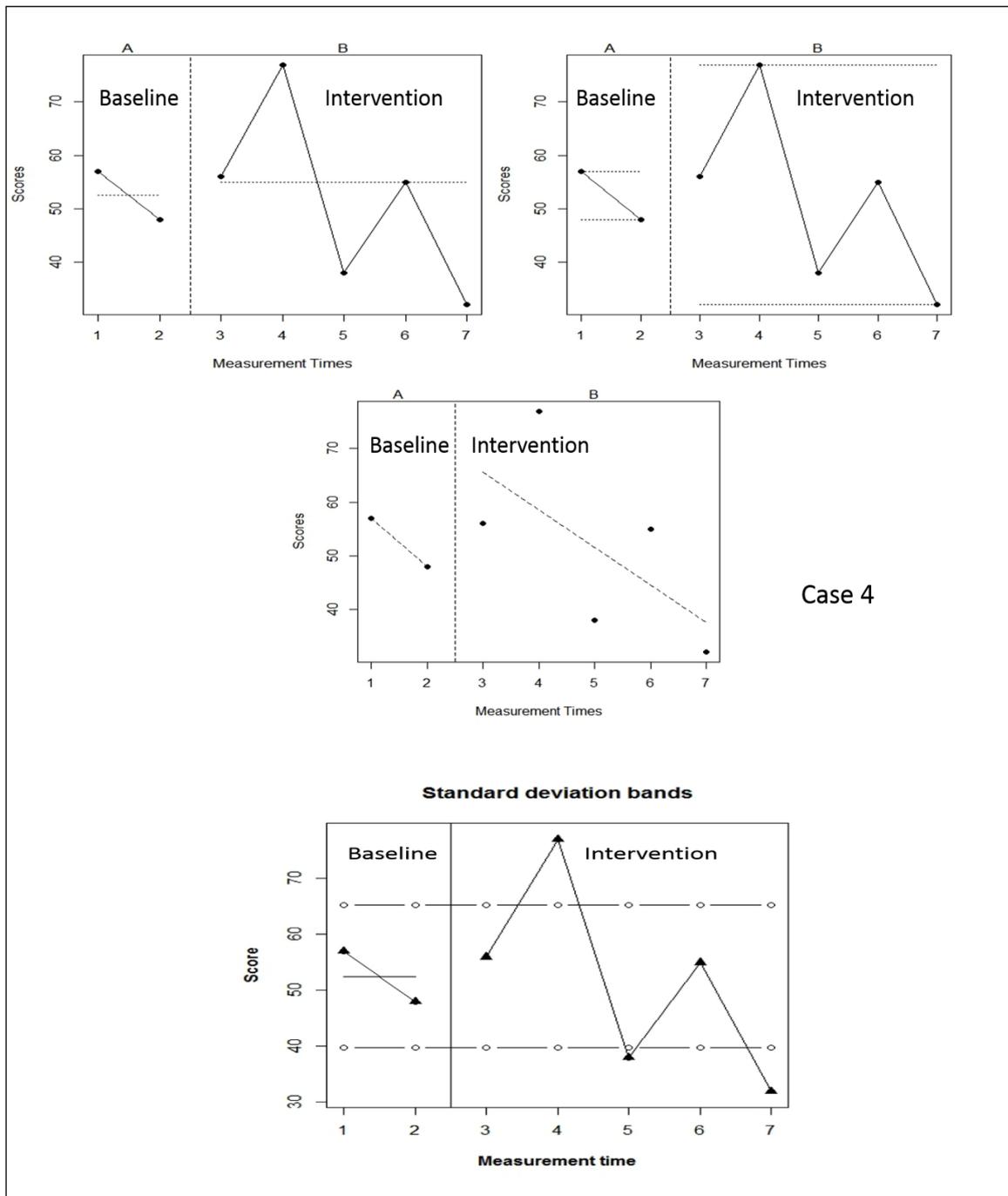


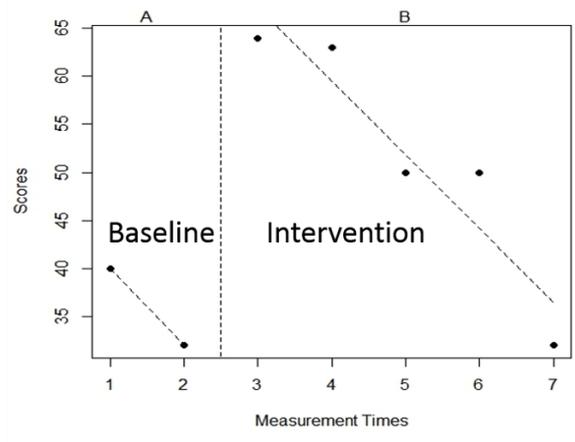
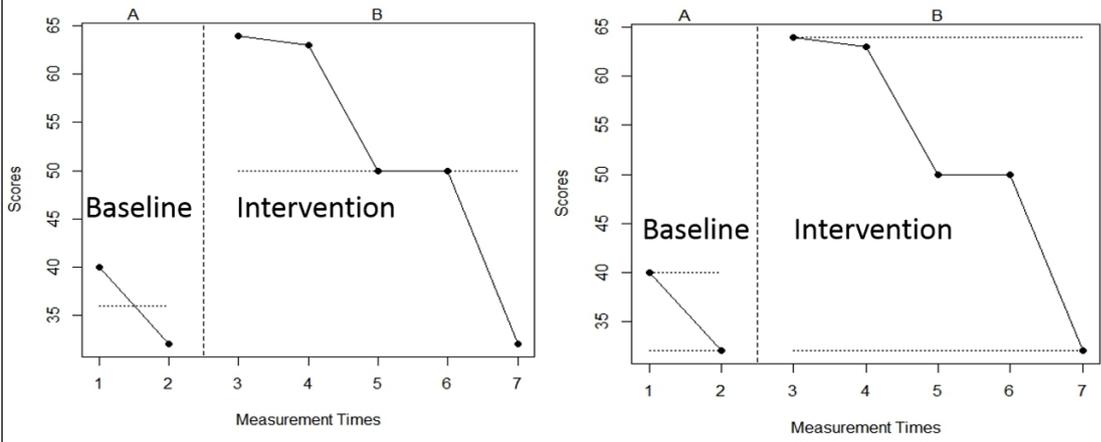
Case 6
Mr. F _ Child F





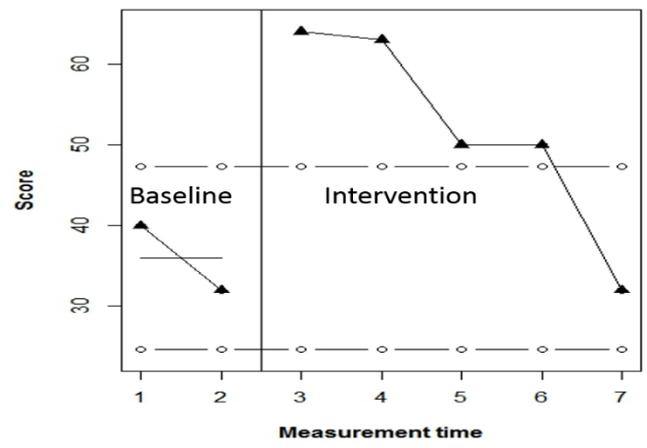
d. Child-initiated non-directive communication

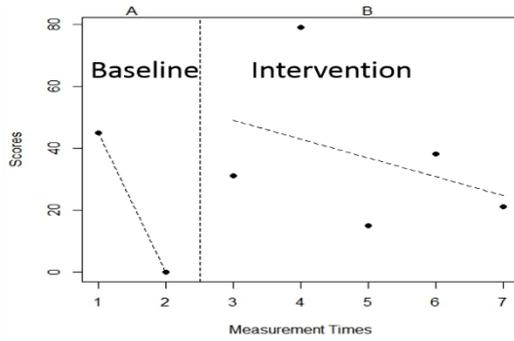
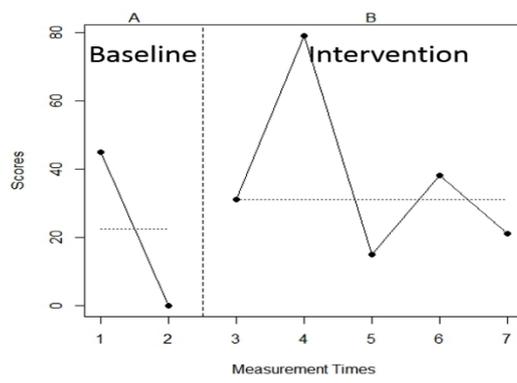
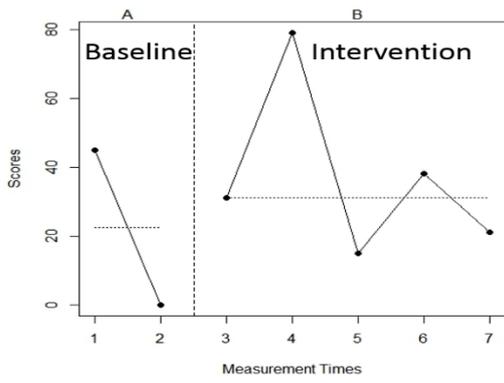




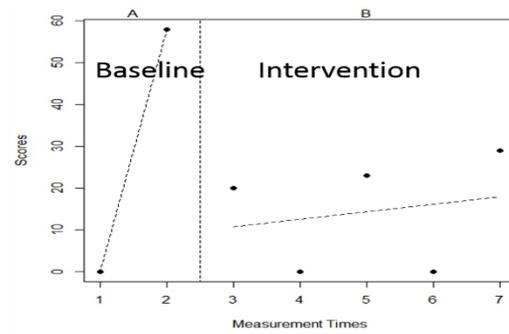
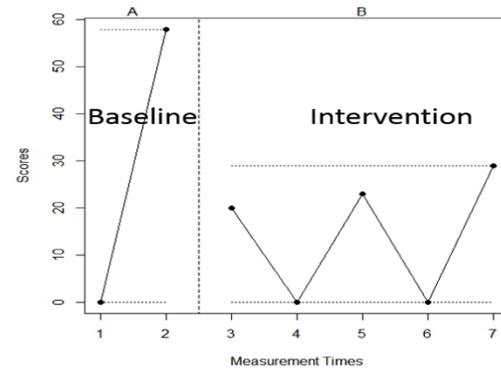
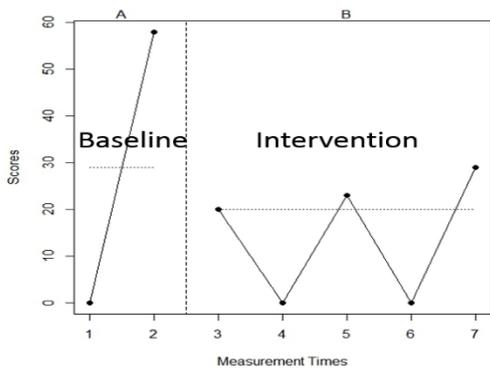
Case 5

Standard deviation bands

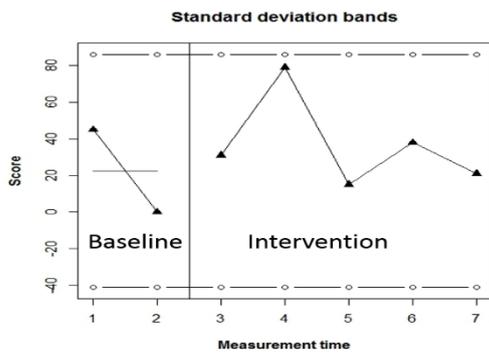




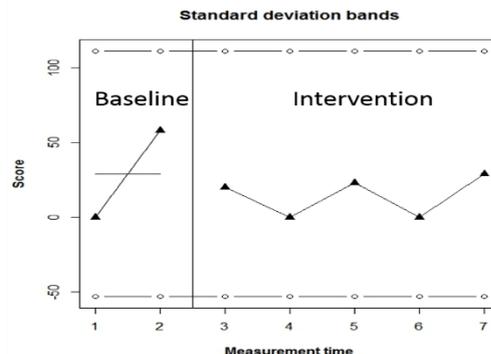
Case 6
Mrs. F – Child F



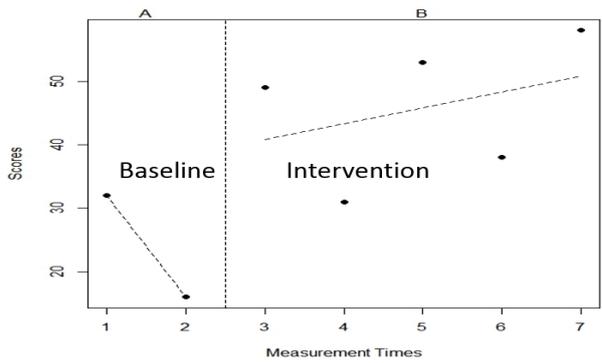
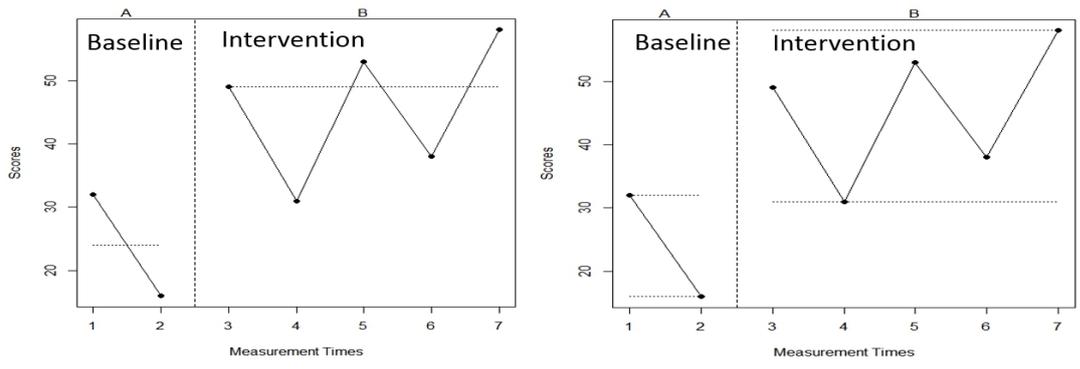
Case 6
Mr. F – Child F



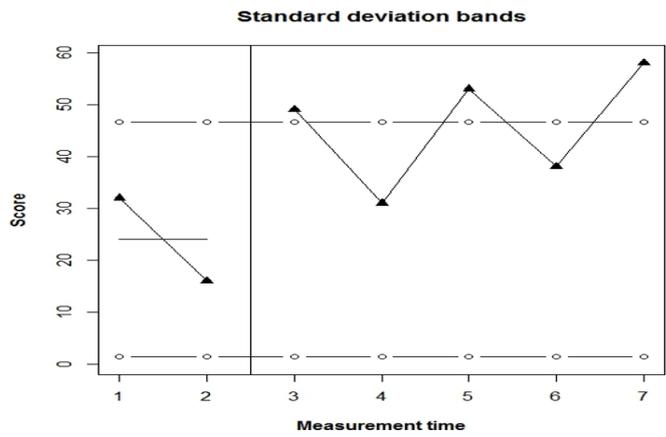
Mrs. F

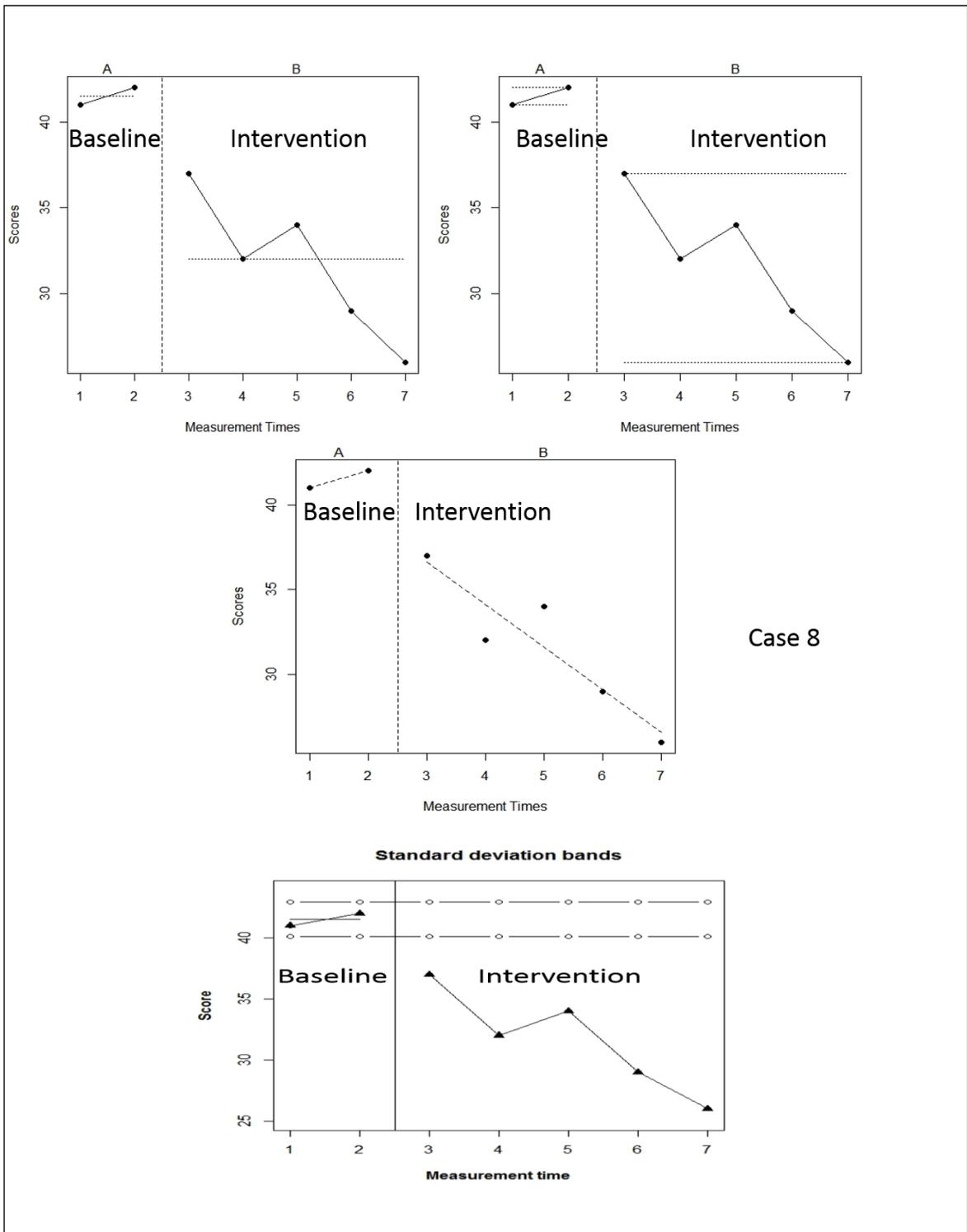


Mr. F



Case 7





Appendix 17

Paper accepted for publication in Journal of Occupational Therapy, School and Early Intervention (Title: Translation, cross-cultural adaptation and validation of Quality of Life in Autism Questionnaire [QoLA] from English into Malay language)

From: Journal of Occupational Therapy, Schools, & Early Intervention [REDACTED]
Date: Mon, 13 Aug 2018 at 9:05 am
Subject: Journal of Occupational Therapy, Schools, & Early Intervention - Decision on Manuscript ID WJOT-2018-0005.R1
[REDACTED]

12-Aug-2018

Dear Ms shamsudin:

Ref: Translation, cross-cultural adaptation and validation of the <i>Quality of Life in Autism Questionnaire</i> (QoLA) from English into Malay language

Our reviewers have now considered your paper and have recommended publication in Journal of Occupational Therapy, Schools, & Early Intervention. We are pleased to accept your paper in its current form which will now be forwarded to the publisher for copy editing and typesetting. The reviewer comments are included at the bottom of this letter.

Accepted papers will be transmitted for production. The first and most important task for authors at that point will be to complete an online author agreement form. Please make sure you complete it as soon as you receive the publisher notice about it.

The publisher also requests that proofs are checked through the publisher's tracking system and returned within 48 hours of receipt.

Thank you for your contribution to Journal of Occupational Therapy, Schools, & Early Intervention and we look forward to receiving further submissions from you.

Sincerely,
Dr Swinth
Editor, Journal of Occupational Therapy, Schools, & Early Intervention
[REDACTED]

Reviewer(s)' Comments to Author: