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A Multivariate Study of Religiosity and Obsessive Compulsive Symptoms: Implications for Clinical Psychology Theory and Practice

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Abstract

An array of past religiosity-OCD (obsessive-compulsive disorder) studies were conducted, which yielded results with significant clinical implications. Most of these previous studies implied for a non-religious approach for OCD management. In the present study, an innovative and more rigorous empirical approach was applied for examining the religiosity-OCS (obsessive-compulsive symptoms) relationship. Firstly, religiosity level was examined along with parental authority styles and personality traits as predictors of religious (scrupulosity) and non-religious OCS. Secondly, three groups, two high-religiosity groups and one low-religiosity group, were "equally exposed" to subjects identified as OCD themes during their degree coursework studies. Thirdly, scales for both general and religious OCS were used to measure the outcome variables. The results of the present study and their clinical implications were then compared with those of past studies. The relationship of the three predictors with religious and non-religious OCS were examined in a sample of 344 university students, which included 117 high-religiosity exposed Muslim participants (religious studies degree students); 88 high-religiosity exposed Christian participants (religious studies degree students); 89 low-religiosity exposed participants (medical degree students); and 50 low-religiosity, non-exposed participants (Information and Communication Technology degree students). Participants were recruited from four universities and a church in Malaysia; and one Indonesian university (for the high-religiosity Christian group). The Obsessive-Compulsive Inventory-Revised (OCI-R), the Penn Inventory of Scrupulosity (PIOS), the Obsessive Beliefs Questionnaire-44 (OBQ-44), the short-form revised Eysenck Personality Questionnaire (EPQR-S), the Parental Authority Questionnaire (PAQ), the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS), and the Religious OC Symptoms Scale (ROCSS), were used for data collection. While the PIOS was included for the Christian and low-religiosity participants, the 28 item ROCSS was developed for Muslim participants in order to adequately capture their religious OCS. The self-tailored ROCSS demonstrated good psychometric properties. Non-experimental, cross-sectional multivariate, quantitative techniques (e.g., correlation, multiple regressions) were used to investigate the relationships between variables. Obsessive-beliefs were examined as a mediator between the significant relationships found, with findings indicating a mediation effect present. Results demonstrated a significant relationship of personality traits with both religious and non-religious OCS across the four groups. Parental authority styles were also significantly related with religious OCS in the high-religiosity exposed Christian group and low-religiosity non-exposed group; and with non-religious OCS in the high-religiosity exposed Christian and Muslim groups and the low-religiosity exposed group. Religiosity level and non-religious OCS were not significantly associated in the four groups. Results also demonstrated a significant negative relationship between religiosity level and religious OCS in the high-religiosity exposed groups and a significant positive relationship between the two variables in the low-religiosity exposed group. Religiosity was identified as a protective factor against religious OCS in high-religiosity Muslims and Christians. Results of the high-religiosity exposed groups in the present study, which indicated a decrease in religious OCS severity with an increase in religiosity level, had crucial clinical psychology implications, as they supported the adoption of an approach which integrates religious interventions with cognitive behaviour therapy in the management of religious patients with OCD.

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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Chapter 1

A Historical Account of OCD and Introduction of the Study

Studies on obessive-compulsive symptoms (OCS) and obsessive-compulsive disorder (OCD) are becoming increasingly relevant and important due to the rising prevalence of OCD. According to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (*DSM-5*; American Psychiatric Association, 2013), the 12-month international prevalence of OCD is 1.1% to 1.8%. The present study is interested in examining the relationship between religiosity and OCS. The results of this study, like previous religiosity-OCS and religiosity-OCD studies, can have crucial implications on the theoretical and therapeutic approaches being adopted for understanding and managing OCS/OCD. Therefore, it is important to review the modern theoretical models of OCS/OCD and the most relevant OCS/OCD therapeutic approaches before addressing past religiosity-OCD and religiosity-OCS studies and their implications. A historical approach will be taken for presenting the modern OCS/OCD models.

The review of the modern theoretical OCS/OCD models will start with a brief exposition on the approaches that were adopted by early religious authorities for managing religious OCS/OCD or scrupulosity, and the shift of mental health responsibility to secular psychology and psychiatry. Then, it will introduce the founders of the modern OCS/OCD models (i.e., psychodynamic, behavioral, cognitive & neurobiological), which emerged after the shift, and will present their theories in detail. After the historical account, the behavioral and cognitive therapeutic methods, which are the most relevant therapeutic approaches to the present study, will be discussed followed by a brief introduction to some modern psychologists and psychiatrists who recommended the integration of religious interventions in the theory and practice of psychology.

This introductory chapter contains twelve sections. The first section briefly discusses OCD. The second section provides the historical account of OCS/OCD and the etiological theories on which the psychodynamic, behavioural, cognitive and neurobiological OCS/OCD models were founded. Section three explains the most widely applied cognitive and behavioral OCS/OCD therapeutic techniques which, as mentioned above, are the most relevant to the present study. In the fourth section, a brief introduction is given to some modern psychologists and psychiatrists, who reccommended the integration of spiritual/religious interventions in modern therapy. The fifth section succinctly discusses the prevalence of religious OCS/OCD and the relationship found between religiosity and OCS/OCD, while the sixth section highlights the gaps found in previous religiosity-OCS and religiosity-OCD relationship studies. In the seventh section, the aim of the present thesis is discussed, followed by the statement of the research problems in the eighth section. The research questions and the research objectives are presented in the ninth and tenth sections respectively. In section eleven, the significance of the research is presented, followed by the research structure in the last section.

Obsessive-Compulsive Disorder (OCD)

OCD is characterized primarily by obsessions and/or compulsions (American Psychiatric Association [APA], 2013). Obsessions are intrusive, unwanted thoughts, urges, doubts or images (Abramowitz, Deacon, Woods & Tolin, 2004; APA, 2013) that recur to an individual persistently, causing marked distress and anxiety, whereas compulsions are the mental acts, behaviours and/or rigid rules that an individual feels driven to perform or follow repeatedly with the aim of reducing the distress (APA, 2013) or neutralizing the anxiety (Abramowitz et al., 2004). The most common symptom dimensions of OCD are those of cleaning (e.g., contamination obsessions & cleaning compulsions); harm (e.g., fears of harm to oneself or others and related checking compulsions); forbidden or taboo thoughts (e.g.,

aggressive, sexual, and religious obsessions and related compulsions); and symmetry (symmetry obsessions and repeating, ordering, and counting compulsions; APA, 2013; Ressler, Pine & Rothbaum, 2015). Females are affected at a slightly higher rate with OCD than males in adulthood; however, it is more common for males to be affected during childhood (DSM-5; APA, 2013).

In the *DSM-5*, OCD was grouped with other related disorders, namely body dysmorphic disorder, hoarding disorder, trichotillomania (hair pulling disorder), excoriation (skin-picking) disorder, substance/medication-induced obsessive-compulsive disorder, obsessive-compulsive disorder due to another medical condition, and other specified and unspecified obsessive-compulsive disorders (e.g., body-focused repetitive behaviour disorder, obsessional jealousy; APA, 2013). The severe distress caused by OCD is often debilitating. It can cause functional impairments (Saxena, Ayers, Maidment, Vapnik, Wetherell & Bystritsky, 2011), and lead to a reduced quality of life (APA, 2013). Impairment can be due to the time spent obsessing and doing compulsive acts, or due to the avoidance of situations that trigger obsessions and/or compulsions (APA, 2013). OCD can also lead to family dysfunction when the patient imposes rules and prohibitions on family members, such as not permitting visits by friends/relatives at home for fear of contamination (APA, 2013).

A Historical Account of OCS/OCD

Obsessions and compulsions had attracted the attention of religious authorities and scholars early in history (i.e., in the 9th century C.E.; Awaad & Ali, 2015), long before Robert Burton's compendium of 1620, which was titled, *The Anatomy of Melancholy* (see Berrios, 1996). In fact, a number of early Muslim scholars and religious authorities had identified and described obsessions and compulsions as a syndrome long before Esquirol (Manal, 2003) introduced the contemporary concept of obsessions and compulsions as a disorder in 1838 (Esquirol as cited in Alvarenga, Hounie, Mercadante, Miguel, & Conceicao

do Rosario, 2007). For example, Ibn al-Qayyim (1933), who was a Muslim scholar, used the term *waswas* to describe obsessions and defined it as recurring unpleasant thoughts that are *psycho-spiritually* harmful to the individual and may become pathological if they occur repetitively (Ibn al-Qayyim, 1933). Since, most early Muslims scholars lived in Islamic Arab cultures, which regarded religious authorities as the chief source of reference and the primary caregivers for the mentally ill (Okasha, Khalil, Seif El Dawla, Yehia, 1994), they systematically examined such symptoms and wrote about them extensively. They discussed the themes of obsessions and compulsions that were prevalent in their time, independently pointing to their cause and treatment from an Islamic point of view (see Al-Balkhi, 1984; Ibn al-Qayyim, 1933).

The early presence of such knowledge on OCS and OCD is evident from the contribution of Al-Balkhi (1984), a Muslim psychologist and scholar who lived in the 9th century C. E. He is known to be the first to discover, diagnose and detail the aetiology and remedy of the disorder (Awaad & Ali, 2015). Al-Balkhi (1984) was also the first scholar to clearly differentiate between normal repetitive thoughts and obsessions as a disorder and to describe the stage at which repetitive thoughts can turn pathological. He devoted a complete chapter in his book, *Kitab Masalih al-Abdan wa al-Anfus* for explaining the symptoms of obsessive neurosis and its treatment approach (Al-Balkhi, 1984).

While Al-Balkhi (1984) paid more attention to the non-religious contamination and disease obsessions, Ibn al-Qayyim (1933), who lived in the 10th century C. E, wrote at length on obsessive doubts in the areas of religious rituals like ablution, purification bath, washing of the private parts and prayers (Ibn al-Qayyim, 1933). He explained the factors that cause this disorder and its effect on the perception of the individual. Ibn al-Qayyim (1933) discussed the different types of obsessive doubts that occur while performing these rituals and the resulting compulsive behaviour. These obsessive doubts, he explained, compel the

sufferer to repeat the doubted act a number of times like excessive hand washing in ablution or immersion in water during purification bath (Ibn al-Qayyim, 1933). Ibn al-Qayyim (1933) elaborated that, at a pathological stage, the patient may torture or harm his body due to the exaggerated compulsive behaviour, which ultimately occupies most of his time. Comparing the effect of OCD on the sufferer's life with that of other mental illnesses, Ibn al-Qayyim (1933) regarded it as the most devastating disorder and accordingly suggested its treatment approach and management, which he believed, if coupled with other techniques, would ensure recovery. He speculated *level of religious knowledge* as a possible contributing factor to religious OC symptoms and suggested the presentation of religious arguments to disprove the patient's doubts and worries (Ibn al-Qayyim, 1933).

Similarly, in the second half of the nineteenth century, religious authorities of the Catholic Church were profoundly engaged in a discourse regarding the aetiology of religious OCS/OCD and its prevention (e.g., Bourke, 2009; Cobb, 2014). Their endeavours were a response to the overwhelming prevalence of the disorder in Anglo American societies of the time, which specifically plagued Roman Catholic circles (Bourke, 2009). They termed religious OCD as *scrupulosity* and described it as excessive fear of sinning which, they explained, ruined the life of the scrupulous believer as it destroyed his spiritual confidence and mental peace (Bourke, 2009). According to the Catholic Church authorities, part of the problem was the incorrect image of the Almighty to which the scrupulous person held. Hence, their efforts were mostly targeted towards transforming the image of God from a punishing lawgiver to a nurturing merciful Father (Bourke, 2009).

Until the end of the nineteenth century, scrupulosity was regarded as a spiritual ailment (Bourke, 2009). Hence, understanding and helping the scrupulous person was considered as the responsibility of religious advisers, particularly priests (Bourke, 2009). In the early decades of the twentieth century, however, pastoral diagnosis of the illness was

challenged by the burgeoning profession of psychiatry and the religious term *scruples* was substituted by the secular pathological label of OCD (Bourke, 2009). Hence, the management of OCD, which once was the responsibility of theologians, had instead become the jurisdiction of secular psychiatry and clinical psychology.

A leading figure in the separation of the therapeutic profession from religion was Sigmund Freud. The explanatory approach he used was typically hostile to religion, considering it as a cause of pathology (Faiver, O'Brien & Ingersoll, 2000). In 1907, Freud propagated that religious rituals and creeds are symptoms of obsessive-compulsive behaviour, thus suggesting religion as a universal neurosis (Freud as cited in Greenberg, 1984). Freud's negative views about religion were possibly adopted by Western psychologists and psychiatrists of the time because of the negative sentiments towards religion that already existed widely in western societies. According to Badri (2000), the onset of such negative sentiments dated back to the 17th century when an anti-religious movement evolved as a reaction to the tyrannical rule of the church.

Subsequent to the separation of the therapeutic profession from religion, an array of OCS/OCD etiological theories were propounded which addressed the disorder from psychosexual, behavioral, cognitive and biological perspectives. These theories gave rise to the psychodynamic, behavioral, cognitive and neurobiological models (Sue, Sue & Sue, 2010), all of which were essentially based on secular paradigms. The founders of these four models are introduced and their theories are detailed below.

Freud's psychodynamic model. This model, which was founded on Freud's views, suggests that obsessions represent the substitute or replacement of an original conflict; therefore, OCD is viewed as a displacement neurosis (Stafford-Clark, 1965). The original conflict is sexual in nature, which begins during the anal-sadistic stage, the second stage of

the psychosexual developmental stages postulated by Freud in his accounts (Stafford-Clark, 1965). In this stage the infant experiences sexual pleasure through the anal and rectal areas, particularly the junction of the skin and the ano-rectal mucous membrane (Stafford-Clark, 1965). While pleasure is gained physically by emptying the bowels, it is also gained emotionally by avoiding punishment of the parents, who are the infant's sexual object, and gaining their pleasure (Stafford-Clark, 1965).

At the same time the infant also develops an awareness of being helpless in relation to his/her parent, whom he/she wants to love (Stafford-Clark, 1965). As a result, the infant develops anger, aggression and a longing to exercise control (Jakes, 1996). Such sadistic impulses are attributed to the punitive toilet training that the child experiences during this stage (Jakes, 1996). Therefore at the anal-stage, the child cannot love the parents without having aggressive, destructive and defiant impulses, even in imagination (Stafford-Clark, 1965). With the idea of loving the parents and enjoying their love, there exists a repressed idea of being strong enough to kill them. In compensation, the child creates fantasies of omnipotence and tries to actualize them by defying the authority of the parents and withholding the faecal contents in his/her rectum (Stafford-Clark, 1965). The ability to perform this act gives the child the pleasure of independence and power (Stafford-Clark, 1965).

As such, fixation at, and regression to, the anal-sadistic stage was theorized to cause an individual to develop obsessional neurosis, in which similar conflicts between aggression and submissiveness, cruelty and gentleness, dirtiness and cleanliness, disorderliness and orderliness, etc., are exhibited (Jakes, 1996). In regression, the repressed memory returns, but not in its original form, because the ego separates the affect from the original anxiety-causing thought and symbolically associates it to other neutral ideas by isolation of affect, which is one of its defense mechanisms (Jakes, 1996). As a result of such associations, the neutral

ideas become anxiety provoking, thus turning into obsessions. Symbolic association only happens when the affect is not fully isolated from the original anxiety causing idea. Contrarily, if the affect is fully isolated there will be no obsessions as both the affect and the idea are repressed (Ahuja, 2006). In regression, the ego also attempts to prevent or undo the feared consequences of the obsessions by Undoing, another defense mechanism of the ego, hence leading to compulsive behavior (Ahuja, 2006).

Hence, according to the psychodynamic model, thoughts of damage, destruction or involvement in forbidden sexual activities with the nearest and dearest people like the mother, father, wife or child symbolize these conflicting impulses which are unconsciously at work in obsessive patients (Stafford-Clark, 1965). Obsessive thoughts of germs and dirt, on the other hand, symbolize a forbidden desire for sexual pleasure, which develops during the infantile anal-sadistic stage (Sue, Sue & Sue, 1994). As such, washing ones hands repeatedly symbolically represents cleansing oneself from such desires. Likewise, excessive cleanliness or orderliness may result from an unconscious impulse of being messy which develops earlier during the anal-stage when the patient was being toilet trained (Sue, Sue & Sue, 1994). In short, the model suggests that the original conflict in obsessional neurosis is sexual in nature, which begins during the anal-sadistic stage (Stafford-Clark, 1965). Most critically, however, the psychodynamic model did not lead to treatments that dependably resulted in significant OCD symptoms reduction (e.g., Foe, 2010). Today, it is generally recognized that psychodynamic approaches have little evidence base to justify their use for OCD treatment (e.g., Foe, 2010).

Mowrer's behavioral model. This model was founded on Mowrer's (1939, 1960) two factor theory of fear acquisition, which combines classical conditioning with instrumental conditioning. In his theory, Mowrer (1960) suggested that an individual responds to a neutral stimulus with fear because, in the past, it was followed by experiences

of pain or injury. Hence, his fear reaction to the neutral stimulus was previously learned as a result of its association with unpleasant experiences. When the learned fear reaction, which is a mere anticipation of actual pain or injury, is aroused due to the conditioned stimulus, it effectively motivates the individual (Mowrer, 1939, 1960) to physically avoid or escape from the conditioned stimulus, hence avert the anticipated unpleasant experience (Mowrer, 1960).

Such avoidance or escape behaviour reduces the fear of the individual because he begins to feel secure. The fear reduction, in return, may powerfully reinforce the individual's performed avoidance behaviour (Mowrer, 1939), encouraging him to repeat it habitually (Mowrer, 1960). Hence, the individual's fear response to the neutral stimulus is acquired and maintained via two discrete and dissimilar types of learning processes: (a) the process in which the fear gets shifted from the unconditioned to the conditioned stimulus; and (b) the process in which the instrumental response needed to reduce or eliminate the fear is acquired and made a habit (Mowrer, 1960).

Mowrer's (1939, 1960) two-factor theory of acquiring and maintaining fear was further elaborated to explain the onset and maintenance of OCD (Dollard & Miller as cited in McGinn & Sanderson, 1999). It was suggested that like patients with phobias, who develop fear, patients with OCD develop anxiety of neutral stimuli because earlier they were conditioned to arouse anxiety (Dollard & Miller as cited in McGinn & Sanderson, 1999). In conditioning, neutral stimuli become anxiety-arousing stimuli because of their past association with situations that provoke anxiety (Dollard & Miller as cited in McGinn & Sanderson, 1999). To reduce the anxiety aroused by the conditioned stimuli, patients with OCD engage in avoidance escape behaviors like phobia patients. Such behaviors are repeated because of their success in reducing the anxiety experienced (Dollard & Miller as cited Foa, Steketee & Ozarow, 1985).

Foa, Steketee & Ozarow (1985) have elaborately described the differences between the conditioned behavior of patients with phobia and patients with OCD, According to them, patients with phobia and patients with OCD vary on several aspects, despite the common features found in them (Foa et al., 1985). Firstly, unlike patients with phobia whose escape responses are logically related to the feared object, the specific compulsions of patients with OCD may be logically unrelated to the stimuli eliciting anxiety (Foa et al., 1985). Such compulsions or rituals are possibly repeated because of their chance association with reduction in anxiety, the first time they were performed (Foa et al., 1985). The more such chance acquired rituals are repeated by the patient with OCD, the more he/she becomes convinced that they alleviate his/her anxiety (Foa et al., 1985).

Secondly, while phobia patients can often avoid the feared stimuli easily and successfully, patients with OCD find avoiding feared stimuli very difficult because of the high degree of generalization and the higher order conditioning which takes place (Foa et al., 1985). With such generalization and conditioning, the effectiveness of simply avoiding the external stimuli gradually decreases (Foa et al., 1985). Moreover, patients with OCD have problems avoiding the feared stimuli because of the intrusive nature of obsessions that they trigger (Foa et al., 1985). Due to such difficulty, patients with OCD develop specific behavioral patterns which they believe will alleviate or reduce the discomfort caused by the countless number of stimuli which cannot be avoided (Foa et al., 1985). Such behaviors are "active" avoidance patterns, rather than the "passive" ones performed by patients with phobias (Foa et al., 1985). They are described as rituals or compulsions and, in most cases, are stereotyped and performed rigidly (Foa et al., 1985). Ironically, performance of avoidance and escape patterns, which take the form of compulsive ritualistic behavior in patients with OCD, increase obsessional anxiety in the long run, as the belief of imminent danger persists. By not preventing compulsive behaviour, patients with OCD do not allow themselves to

experimentally learn that no harm will occur and that anxiety will abate if they are stopped (Leahy & Holland, 2012).

Though the two-factor theory provides a reasonable explanation for the maintenance of OCS through operant-conditioning, its explanation for the initial development of fear through classical conditioning is less convincing, given that most patients with OCS/OCD report stressful life events as preceding their obsessions and compulsions rather than linking them to traumatic conditioning events (Warren & Zgourides, 1991). Studies have shown that the onset of OCD, especially in adults, is generally preceded by significant life changes, such as marriage, childbirth or job loss (Abramowitz, Moore, Carmin, Wiegartz, & Purdon, 2001; Fairbrother & Abramowitz, 2007).

Ellis and Beck's cognitive model. This model, was mainly founded on Ellis (1996) and Beck's (1976) cognitive theories on human feelings and behaviour. Ellis (1996) proposed that the feelings and behaviors of an individual towards an event are determined by his/her choice of beliefs. When the individual experiences an unpleasant event, he/she can either choose rational beliefs that encourage healthy, functional feelings and behaviors, or irrational beliefs that encourage dysfunctional, destructive feelings and behaviors. Therefore, rational beliefs help the individual to cope with unpleasant events, while irrational beliefs disrupt the individual's coping with such events (Ellis, 1996).

According to Ellis (1996), beliefs were conceptualized as mainly self-statements or sentences that people tell themselves. However, they can also be more subtle conscious and unconscious, ideas, meanings, images, attitudes, symbols and other kinds of cognitions (Ellis, 1996). An individual's rational beliefs, almost always, comprise of preferences, hopes and wishes and contain *and/also* and *yes/but* meanings about the unpleasant event (Ellis, 1996). For example, the following statement may illustrate a rational belief: "I wish this

unpleasantness doesn't occur; but if it does, I can cope with it and still have some happiness in my life." (Ellis, 1996, p. 12). His irrational beliefs, on the other hand, almost always comprise of absolutistic *shoulds, oughts* and *musts*, thus being a cause of neurosis (Ellis, 1996). Ellis (1996) described three basic neurosis provoking irrational beliefs including the following: (a) "I absolutely must, at practically all times, be successful at important performances and relationships- or else I, as a person, am inadequate and worthless!" (p. 13); (b) "Other people absolutely must practically always treat me considerately, kindly, fairly, or lovingly-or else they are no damned good and deserve no joy in their existence!" (p. 13); and (c) "Conditions under which I live absolutely must be comfortable, pleasurable, and rewarding- or else it's awful, I can't stand it and the goddamned world is no good!" (p. 13).

The first irrational belief causes feelings of despair, worthlessness, depression and severe anxiety, which subsequently may lead to withdrawal behavior, avoidance and addiction (Ellis, 1996). The second belief causes feelings of real anger, rage, fury and resentment, which then may lead to fights, feuds, violence, war and genocide, whereas, the third belief causes feelings of self-pity, rage and low frustration tolerance, which may consequently lead to withdrawal behavior, procrastination, and addiction (Ellis, 1996).

With regards to OCD, Ellis (1994) observed that patients with OCD suffer from low tolerance to frustrations that result from their inexplicable behaviour. Based on his cognitive theory, Ellis (1994) attributed such low frustration tolerance (LFT) to irrational beliefs such as,

> I absolutely should not, must not be so severely frustrated by my OCD and the disadvantages to which it leads. Such great frustration and such severe handicaps must not afflict me! It's awful [completely or more than bad] when they do. I can't stand it and will never be able to conquer it. How horrible! (p. 123).

With their LFT, patients with OCD also suffer from feelings of worthlessness and self-denigration, which also result from irrational beliefs such as, "I must not be as disapproved as I am being! I'm no good for bringing on this disapproval! If I can't function better than I do function, I'm a worthless person" (Ellis, 1994, p. 123). The poor emotions and behavioural results which accompany such irrational beliefs are often followed by secondary disturbing thoughts such as, "I must not be anxious about my OCD! I must not demand that I be free of OCD! I must not have low frustration tolerance about my OCD!" (Ellis, 1994, p. 123). In this way patients with OCD can easily self-down themselves for having self-downed themselves and have low frustration tolerance for having low frustration tolerance (Ellis, 1994). Moreover, patients with OCD can regularly have self-denigration and LFT for failures and hassles, in other matters of their lives (Ellis, 1994). Hence, patients with OCD often have ego anxiety and depression due to self-downing and discomfort anxiety and depression due to LFT about the following: (a) their OCD difficulties, (b) their other regular life problems, and (c) their self-downing and their LFT that usually accompany their OCD and non-OCD difficulties (Ellis, 1994).

Similar to Ellis (1994, 1996), Beck (1976) had earlier attributed the arousal of emotions to a stream of preceding thoughts that generally distorts reality. He described such thoughts as internal signals which emerge automatically and are extremely rapid and termed them "*negative automatic thoughts*" (Beck, 1976). The automatic thoughts exert a powerful influence over the individual, as such thoughts constantly interpret or misinterpret events, make predictions and draw generalizations about the individual (Beck, 1976). The individual usually doesn't pay attention to the automatic thoughts or report them, despite their powerful influence on his life (Beck, 1976).

Subsequently, Salkovskis (1985), who adopted Beck's (1976) theory of automatic thoughts, asserted that patients with OCD become emotionally disturbed not because of their

obsessive thoughts, images, or impulses, but because of the negative automatic thoughts that rapidly emerge with such obsessions. Salkovskis (1985) elaborated that negative automatic thoughts are instantly accessible to the consciousness and are not regarded as intrusive. Rather, they are perceived as being congruent with the belief system as well as realistic and plausible in nature and are, therefore, accepted by the sufferer. Obsessions, in contrast, are not accepted, as they are perceived as inconsistent with the belief system as well as irrational and implausible in nature (Salkovskis, 1985). The unacceptable obsessions become a source of constant mood disturbance only when they generate negative automatic thoughts (Salkovskis, 1985). The emergence of automatic thoughts depends on the extent to which the occurrence of the intrusive thought is salient to the person (Salkovskis, 1985). If he/she believes that odd and unpleasant thoughts can occur and have no further implications, then automatic thoughts will not arise. On the other hand, if he/she believes that such thoughts might have important implications, then automatic thoughts would be expected to arise (Salkovskis, 1985).

The automatic thoughts are based on an adverse evaluation of the obsessions, which takes place when they interact with the belief system (Salkovskis, 1985). The content of automatic thoughts seems to reflect particularly the idea of being responsible for damage or an approaching danger to oneself or to others, or another related imagery of a similar nature (Salkovskis, 1985). In other words, the automatic thoughts or images are related to a sense of personal responsibility for things that might possibly go wrong (Salkovskis, 1985). To vulnerable individuals, this idea of personal responsibility can also extend to having had the abhorrent intrusive obsession itself, hence leading to condemning the self for being a bad or evil person unless preventive measures are taken to avoid culpability (Salkovskis, 1985). In an attempt to rectify the problem, and avoid the possibility of being blamed by self or others, the patient engages in compulsive behavior.

Rachman (1997), in his model, classified the negative thoughts associated with obsessions into descriptions, interpretations, and feared anticipated consequences. A patient with OCD, Rachman explained, often attaches exaggerated importance to his/her obsessional thoughts, images and impulses, hence describing them as immoral, sinful, dangerous, disgusting, threatening, alarming, criminal, insane, bewildering etc. He/she also interprets them, at a higher level, as revealing an important but usually hidden element in his/her character such as, deep down, he/she is evil, dangerous, unreliable, totally uncontrollable, weird, going insane, sinful or fundamentally immoral (Rachman, 1997). An elaboration of such interpretations may lead to fear of specific anticipated consequences, like eventually losing control and acting upon the violent, aggressive or immoral impulses or breaking down and causing serious physical harm for others, which further result in fear of being rejected, locked up, sent to hell or punished. Such descriptions, interpretations and anticipated consequences make obsessions so repugnant and frightening to the patient that he/she intensely and even hysterically struggles to resist or remove them (Rachman, 1997).

Rachman (1997) attributed such OC related disturbing thoughts to cognitive biases and beliefs. Patients with OCD, overestimate the significance of their unpleasant intrusive thoughts, which could be due to thought-action fusion (TAF; Rachman & Shafran, 1999). TAF is the tendency in patients with OCD to believe that (a) having intrusive thoughts of repugnant acts is morally equivalent to carrying them out, and (b) having intrusive thoughts of aversive events makes them more likely to happen (Rachman, 1997). Hence, the first belief particularly relates to intrusions on engaging in morally repugnant acts, while the second belief particularly relates to intrusions on the occurrence of aversive catastrophic events.

Foa and Kozak (1986) suggested that the persistence of erroneous evaluations and interpretations about a stimulus as being highly dangerous, hence a potential cause of

disaster, could be attributed to impairments in rules of inference. The patient with OCD may affirm the presence of a threat simply because its presence is not disproven, which is a basic epistemological error. Hence, unlike typical people, who assume that a situation is safe unless there is a valid evidence for danger, they assume that situations are dangerous unless proven safe (Foa & Kozak, 1986). The patient with OCD perceives the probability of a disaster to happen as significantly high, and might support such a cognitive bias with the fact that thoughts of the threat and harm are recurring to him/her persistently (Rachman & Shafran, 1999). As a result, he/she becomes hyper-vigilant with a constant involvement in rapid global scanning (Rachman & Shafran, 1998). Once a threat stimulus is detected, his/her focus is intensely narrowed down to it, which causes anxiety followed by compulsive behaviors to guarantee safety (Rachman & Shafran, 1998).

Rachman (1997) attributed the patients' idea of personal responsibility to prevent possible misfortunes, over which they have no control whatsoever, to the cognitive bias that only they, and not others, can be held responsible for allowing the catastrophe to happen. Rachman (1997) further elaborated that patients with OCD are also inclined to think that when they are responsible, the likelihood of a horrible disaster to happen is increased. Also, concerns about controlling obsessional thoughts, when appraised as inconsistent with the upheld beliefs and values (i.e., as ego-dystonic) and/or at odds with the valued sense of self in terms of morality, personality or rationality (Purdon & Clark, 1999), were attributed to a higher-order belief regarding thoughts. The belief is that a person can and should have absolute control over the nature of thoughts that occur and, that he/she is totally responsible for the content of all his/her thoughts and, that the unacceptable intrusive thoughts, which reflect a failure to control them, must be countered (Purdon & Clark, 2002).

Taking Rachman's (1997) concept of cognitive biases and beliefs into account, the Obsessive Compulsive Cognitions Working Group [OCCWG, 2005) designed the Obsessive

Belief Questionnaire (OBQ) to assess the cognitive biases and dysfunctional beliefs which could play important roles in the aetiology and maintenance of obsessive compulsive (OC) symptoms. Based on their assessment, they outlined six cognitive biases and beliefs, which were: (a) inflated responsibility,(b) overestimation of thought importance, (c) control of thoughts, (d) overestimation of threat, (e) intolerance for uncertainty, and (f) perfectionism.

Significant OCD neuroimaging research on which the neurobiological model was founded. Recent studies have increasingly highlighted the neurobiological model of OCD; thus this model will be briefly reviewed to provide a more comprehensive background of modern theoretical approaches. The neurobiological model proposed that OCD symptomatic expressions are mediated by an abnormality in the orbitofronto-striatal circuitry as well as other structural brain abnormalities (e.g., Menzies, Chamberlain, Laird, Thelen, Sahakian, & Bullmore, 2008). The neurobiological model was mainly founded on neuroimaging and neuropsychological studies. The techniques that have been used in neuroimaging studies included positron emission tomography (PET), single photon emission computed tomography (SPECT), magnetic resonance imaging (MRI), and the new voxel based morphometry (VBM) technique (Menzies et al., 2008). While PET, SPECT and MRI focus on specified regions of the brain, the rapid automated VBM technique analyses the whole brain (Menzies et al., 2008). As such, PET, SPECT and MRI studies are region of interest based, whereas VBM technique studies are whole brain-based (Menzies et al., 2008). Three key approaches have been used in neuroimaging studies: the approach of assessing the brain during its "resting state", the approach of assessing it under stimulation and the approach of assessing it before and after successful treatment using pharmacological and psychological interventions (Cottraux & Gerard, 1998).

The studies of Baxter et al. (1987, 1988) were among the earliest OCD neuroimaging studies. In his studies, the brain functioning of patients with OCD was assessed on the basis

of cerebral glucose metabolism using PET. Findings revealed that patients with OCD have significantly high rates of metabolism in the entire cerebral hemispheres, the heads of the caudate nuclei and the orbital gyri (Baxter et al. 1987; Baxter et al., 1988). In another PET study, Saxena, Brody, Maidment et al. (1999) reduced the glucose metabolic rates in specific sub-regions of the orbitofrontal cortex (OFC) and associated basal ganglia using paroxetine hydrochloride to confirm whether metabolic hyperactivity in these structures mediated OCD symptoms. Results of their PET study confirmed that metabolic hyperactivity in the orbitofrontal-basal ganglia-thalamo-cortical circuit mediated OCD symptomatic expressions, as there was clinical improvement when such hyperactivity was reduced (Saxena et al., 1999).

Subsequent to Baxter et al.'s (1987, 1988) studies, several PET and SPECT neuroimaging studies were conducted (e.g., see review from Whiteside, Port & Abramowitz, 2004). Whiteside et al. (2004) conducted a meta–analysis on a number of the PET and SPECT studies to weigh the available evidence regarding abnormalities in brain activity of patients with OCD (e.g., see review from Whiteside et al., 2004). Results of the analysis partially supported structures in the orbitofrontal cortex (OFC), caudate nucleus, and thalamus (Whiteside et al., 2004). The orbital gyrus and the head of the caudate nucleus, in particular, appeared as the areas in which reliable differences existed between patients with OCD and healthy controls (Whiteside et al., 2004). The differences were not significant in the more inclusive regions of the OFC and the caudate (Whiteside et al., 2004).

Similarly, Menzies et al. (2008) conducted a voxel-level meta-analysis on a number of functional magnetic resonance imaging fMRI studies using activation likelihood estimation (ALE), with the aim of assessing any anatomical commonality across regions of the brain which were reported to display abnormal activation in patients with OCD compared to typical individuals (e.g., see review from Menzies et al., 2008). The meta-analysis results clearly supported abnormalities in the orbito-fronto-striatal regions of patients with OCD (Menzies et

al., 2008). In addition, consistent foci of activation abnormalities in lateral frontal, anterior cingulate, middle occipital and parietal cortices and cerebellum were also found, which indicated that more large-scale systems which are distributed in the brain may be involved in OCD (Menzies et al., 2008). Since VBM is a whole brain-based technique, studies that used the technique provided new information concerning structural alterations in the brain of patients with OCD (Rotge, Langbour, Guehl et al., 2010). Hence these studies extended the findings of the prior region of interest (ROI) meta-analyses (Rotge et al., 2010). VBM studies provided information about the brain regions that have been poorly investigated in ROI studies, such as the middle frontal gyrus (dorsolateral prefrontal cortex), the superior frontal gyrus (frontal eye fields), the supra-marginal gyrus, the medial frontal gyrus (anterior prefrontal cortex) and others (Rotge et al., 2010).

VBM assesses the brain on the basis of its local grey matter concentration, which usually is referred to as the "grey matter density" (GMD; Ashburner & Friston, 2000). Rotge et al. (2010) conducted ALE meta-analysis on several VBM studies (e.g., see review from Rotge et al., 2010). Results of the meta-analysis indicated smaller GMD in many parietal and frontal cortical areas of patients with OCD (Rotge et al., 2010). The areas included the superior frontal gyrus (frontal eye fields), the supra-marginal gyrus (part of the parietal cortex), the middle frontal gyrus (dorsolateral prefrontal cortex), and the medial frontal gyrus (anterior prefrontal cortex; Rotge et al., 2010). Also, greater GMD was found in the bilateral putamen (part of the striatum) and the inferior frontal gyrus (lateral part of the OFC) of patients with OCD (Rotge et al., 2010). These findings were consistent with the established neurobiological models of OCD, which underline the dysfunction of OFC-striatal circuits in patients with OCD. Neuropsychological impairments described in patients with OCD are believed to be linked to these structural changes (Rotge et al., 2010).

For example, the higher frequency of anticipatory saccades and oculomotor impairments found in patients with OCD when compared to healthy controls, suggested

dysfunctional events in their superior frontal gyrus (frontal eye fields; Spengler et al., 2006). Also, impairments in executive functions found in patients with OCD, such as planning, indicated dysfunction in the middle frontal gyrus (dorsolateral prefrontal cortex; Van den Heuvel et al., 2005). In addition, there is a possibility that deficits in cognitive flexibility, particularly in cognitive reallocation, which may contribute to the maintenance of compulsions, are linked to dysfunction in the medial frontal gyrus (anterior prefrontal cortex; Rotge et al., 2010). The inferior frontal gyrus (lateral OFC) also could have a crucial function in cognitive flexibility deficits and, therefore, in the genesis of compulsive behaviour (Chamberlain et al., 2008).

The most commonly prescribed medications to treat such neurological abnormalities in patients with OCD are serotonin reuptake inhibitors (Kring, Johnson, Davison & Neale, 2013). However, patients who respond to these medications often get only partial relief (Pigott & Seay as cited in Sue et al., 2010) from their problem. Moreover, the symptoms often rapidly return and the patient's condition quickly deteriorates within months after the medication is stopped (Jenike as cited in Sue et al., 2010). Therefore most patients on serotonin reuptake inhibitors still seek cognitive behavioral therapy (Foa, 2010).

The Behavioural and Cognitive OCD Therapeutic Techniques

Based on the behavioural and cognitive models, a number of behavioural and cognitive therapeutic techniques were developed. The thesis focuses on behavioural and cognitive therapeutic techniques because of their potential correspondence with religion and religiosity through the behavioural and cognitive processes that they address. The suggested connection of cognitive therapy with religion could be supported by the fact that it typically addresses adverse appraisals of the intrusive thoughts and the self, which, according to Salkovskis (1985) and Rachman (1997), emerge because of their incongruence with the upheld belief system and values or religion and religious values, so to speak. Similarly,

behavioural techniques typically address the behaviours and rituals, which are compulsively repeated in response to the adverse evaluations of the ego-dystonic intrusive thoughts and the accompanying anxiety and guilt. In many cases such compulsive behaviours correspond to the individual's belief system and values (i.e. ego-systonic in nature), as they are aimed at countering or neutralizing the ego-dystonic intrusive thoughts and reducing the negative affect caused by them.

Behavioural therapeutic techniques. A number of behavioural techniques were developed to ease OCD-related suffering, with differing degrees of success. Such techniques included systematic desensitization as well as operant-conditioning procedures, such as aversion therapy and thought-stopping. Systematic desensitization aimed at reducing obsessional anxiety/distress through habituation to the avoided distress-arousing item or situation (Foa, 2010). It involved gradual exposure of the patients to such items or situations while in a relaxed state, and the process continues until the patients get habituated to them (Foa, 2010). Clearly, compulsions are not directly addressed in this technique. Although systematic desensitization was extensively used for treating OCD, its success rate was limited (Foa, 2010).

Operant-conditioning procedures, on the other hand, aimed at alleviating OCD suffering by blocking obsessions and compulsions. Aversion therapy involves blocking by punishing the patient upon having the undesirable thought or response (Foa, 2010). Electric shock was one of the methods used to produce aversion to undesirable thoughts. In electric shock aversion, the patient was first asked to imagine the stimulus to which aversion was to be produced, and then the electric shock was administered (McGuire & Vallance, 1964). Thought-stopping, on the other hand, involves attempts to block or reduce the manifestation of the undesirable thought by interrupting it (Rachman, 1997). With some exceptions, operant-conditioning procedures were largely ineffective in reducing OCD symptoms (Rachman, 1997). The first significant breakthrough came when Meyer (1966) introduced

exposure and ritual prevention (EX/RP; Meyer as cited in Foa, 2010). Foa (2010) described the components of EX/RP as exposure in vivo, imaginal exposure, ritual prevention and processing. Each of Foa's (2010) EX/RP components are presented below.

Exposure in vivo involves assisting the patient in confronting the cues that trigger his/her obsessions in real life (Foa, 2010; Sue et al., 2010). Such cues could be words, images, objects or situations (Foa, 2010). The cues may be presented to the patient gradually in a hierarchical order, beginning with the moderately distressing ones then advancing to the more distressing ones (Foa, 2010; Freeston et al. 1997; Sue et al., 2010) or they may be presented immediately to the most distressing cues (Sue et al., 2010). However, patients are usually more satisfied with a gradual presentation of cues. Since patient willingness to comply with therapy procedures is very crucial for EX/RP to be successful, most therapists present the cues in a hierarchical order (Foa, Franklin & Kozak, 1998).

In imaginal exposure, the patient is asked to imagine the distressing thoughts or situations in detail (Foa, 2010). It is used mainly when the catastrophic consequences expected to happen by the patient for not performing the rituals cannot be readily translated into in vivo exposure (Foa et al., 1998). For example, a patient who is afraid of contracting a disease as a result of not washing his/her hands sufficiently after using a public bathroom may be asked to imagine that he she has contracted the disease. Clearly, such consequences cannot and should not be confronted in reality (Foa, 2010). Imaginal exposure can also be used with in vivo exposure to circumvent cognitive avoidance strategies applied by patients to avoid thinking about the consequences of their in vivo exposure (Foa et al., 1998).

Ritual prevention involves preventing the patients from performing rituals (Foa, 2010; Sue et al., 2010), which they believe would stop the feared disaster from happening or alleviate the distress caused by the obsessions (Foa, 2010). To maximize the efficiency of ritual prevention, the therapist should convince patients to voluntarily abstain from ritualizing during exposure and the therapist should help by giving suggestions on how to refrain in

specific situations and by providing support as well as encouraging remarks (Foa et al., 1998). Through ritual prevention, patients realize that the feared consequences do not happen if rituals are not performed and they also learn that their anxiety and distress can decrease without ritualizing (Foa, 2010).

In processing, a patient's experience during or after exposure and response prevention is discussed. For example, sample questions may include: "You touched the floor and you did not wash your hands for about 1 hour; is your level of distress as high as in the beginning of the exposure?" (p. 201). "How strong are your urges to wash? Are they as strong as you expected?" (p. 201). The patient is also asked what he/she learned from this experience and whether it confirms or disconfirms his/her expectation (Foa, 2010).

Most patients with OCD who seek EX/RP therapy are already taking serotonin reuptake inhibitors (Foa, 2010), which are the most commonly prescribed medications for OCD (Kring, Johnson, Davison & Neale, 2013). The patients seek EX/RP therapy because of the residual OCD symptoms which they suffer even while being treated with a sufficient dose of medication (Foa, 2010). Results from several studies show the efficacy of EX/RP in reducing OCD symptoms. In fact, EX/RP has the largest evidence base to support its use for OCS/OCD treatment (Foa, 2010). Furthermore, the gains of EX/RP in most patients are maintained after treatment. Therefore, it is recommended as the first-line behavioural treatment for OCD (Foa, 2010). Today, EX/RP is the most widely used psychological therapeutic procedure for treating OCS/OCD and related disorders (Kring et al., 2013).

Cognitive therapeutic techniques. According to Foa (2010) obsessions become distressing for patients with OCD because they are interpreted as warnings of dangerous events that are likely to happen. Foa (2010) detailed cognitive therapeutic techniques for patients with OCD. In cognitive OCD therapy, the therapist assists the patient to identify his/her automatic unrealistic thoughts and change the way he/she interprets them, because such a change would help reduce the patient's anxiety and lessen his/her compulsions (Foa,

2010). Firstly, the therapist aims at making the patient realize and acknowledge that his/her worries and rituals are, in fact, obsessions and compulsions (Foa, 2010). To develop such awareness, the patient is instructed to keep a daily diary called the thought record, in which he/she is required to write down the occurring obsessions and the interpretations associated with them (Foa, 2010). Among the important details that may be recorded are the following: the content of the obsession, what the patient was doing when the obsession began, the meaning that he/she ascribed to the obsession, and how did he/she respond to them (Foa, 2010).

Then the therapist reviews, with the patient, his/her recorded thoughts and assesses his/her interpretations of the obsessions. Any unrealistic belief found is then verbally challenged by the therapist using gentle reasoning and Socratic questioning (Foa, 2010; Freeston et al., 1997). This approach enables the patient to identify his/her cognitive distortions, particularly the faulty danger assessments, the inflated sense of responsibility, or thought-action fusion (Foa, 2010; Freeston et al., 1997). As soon as the patient begins to identify his/her obsessions and compulsions as OCD symptoms, a few behavioural experiments, which involve EX/RP, are initiated by the therapist to disprove cognitive errors with regards to cause and effect (Foa, 2010). Results of this experiment are then used during discussions to disprove other types of magical thinking (Foa, 2010). As the therapy progresses, the patient learns to identify and reassess his/her beliefs regarding the possible consequences of performing or avoiding compulsive behaviours. By such reassessment the patient eventually discontinues the compulsions (Foa, 2010).

As noted, the EX/RP therapeutic approach is usually complemented with processing, a cognitive method which helps the patient question his/her unrealistic beliefs and irrational thoughts (Rosa-Alcazar, Sánchez-Meca, Gómez-Conesa & Marín-Martínez, 2008). On the other hand, the cognitive therapeutic approach is usually complemented with behavioural experiments, which involves EX/RP, to challenge the patient's irrational thoughts (Rosa-

Alcazar et al., 2008). Hence, both EX/RP and cognitive techniques are included in each of the two OCD treatment approaches (Rosa-Alcazar et al., 2008). Today, the therapeutic approach which combines these cognitive and behavioural techniques for treating psychological disorders is described as cognitive behavioural therapy (CBT). In CBT, cognitive restructuring can be used before exposure or parallel to it (Freeston et al., 1997).

Religious/Spiritual Interventions in Modern Therapy

As evident in the preceding section, the standard behavioural and cognitive therapeutic techniques, which are founded on secular western models, fail to address the spiritual and specific cognitive needs of more religious patients with OCD by discounting the potential need for religious interventions. Badri (1979), who is known as the founder of Islamic psychology, was the first modern psychologist to introduce and promote the idea of adopting a religious oriented approach for specific patients to enhance their therapy outcomes. He contended that adopting an exclusively secular approach while applying modern therapeutic methods for treating Muslim patients was inappropriate. Badri (1979) critically assessed contemporary psychological theories and questioned whether a theory of human behaviour was plausible while ignoring the religious concept of the human soul.

Following Badri's efforts, many modern Muslim and non-Muslim psychologists and psychiatrists began to appreciate and acknowledge the need for incorporating religious/spiritual interventions in therapy (e.g., Bhugra & Osbourne, 2004; Bonchek & Greenberg, 2009; Hatta, 2001; Singh & Khan, 1998; West, 2000; Zain, 2001). For example, West (2000) acknowledged the significance of spirituality in people's life and its positive impact on their health and wellbeing, hence advocating that spiritual interventions be made an essential part of counselling and psychotherapy. Likewise, Bhugra and Osbourne (2004) suggested that clinicians should be open about discussing their patients' spiritual/religious beliefs, so that they can distinguish between such beliefs and psychopathology. They alerted

that clinicians will undoubtedly encounter patients who observe their spiritual/religious beliefs in their practice and advised to abstain from adopting the simplistic mind-body approach in managing such patients (Bhugra & Osbourne, 2004). As such, they stressed that the role of religion should be considered when determining the mental state of patients or when planning a strategy for managing their problem. In this way, they affirmed, the management plan will be holistic and more acceptable to the patients and caretakers (Bhugra & Osbourne, 2004).

For adopting this approach, Zain (2001) added, clinicians should have not only psychological knowledge but religious knowledge as well. He then documented a case of generalized anxiety that he had successfully treated using a religious therapeutic approach (Zain, 2001). Likewise, Singh and Khan (1998), who also advocated the use of religious interventions, documented a case of religious OCD that was successfully treated using religious intervention (Singh & Khan, 1998). Such application of religious principles in the theory and practice of psychology and psychiatry is, in fact, becoming a common trend among modern mental health professionals today (Hatta, 2001).

Prevalence of Religious OCS and the Relationship between Religiosity and OCS

Studies have suggested that religious OC themes are more prevalent in Middle-Eastern Muslim and Jewish communities than in western Christian communities. In eight studies with predominantly Muslim samples, the percentages of participants with religious OCS ranged from 11% to 60% (see Greenberg & Huppert, 2010). The percentages of participants with religious OCS in three Jewish studies were also very high, ranging from 41% to 93% (see Greenberg & Huppert, 2010). In contrast, the percentages of participants with religious OCS in nine studies with predominantly Christian samples were relatively low, ranging from 0% to 38% (see Greenberg & Huppert, 2010). Religious OCS was also found to be less prevalent in some eastern Buddhist and Hindu communities (see Greenberg &

Huppert, 2010). In four studies with predominantly Buddhist, Japanese and Hindu Indian participants, the percentages of religious OCS ranged from 4% to 31% (see Greenberg & Huppert, 2010).

In fact, the presence of religious OC symptoms in Jewish, Muslim and Christian samples has been demonstrated also in an array of OCD phenomenological and relationship studies (e.g., Abramowitz et al., 2004; Greenberg, 1984; Greenberg & Shefler, 2002; Karadag, Oguzhanoglu, Ozdel, Atesci, & Amuk et al., 2006; Mahgoub & Abdel-Hafeiz, 1991; Okasha et al., 1994; Yorulmaz, Gencoz, & Woody, 2009). A number of religious themes across the three religious groups were reported, the most common of which were doubt in the correct/complete performance of ritualized prayers and their preceding purification and washing rituals (Greenberg, 1984; Greenberg & Shefler, 2002; Mahgoub & Abdel-Hafeiz, 1991; Okasha et al., 1994). Blasphemous and sex intrusive thoughts were also reported in some studies (e.g., Abramowitz et al., 2004; Okasha et al., 1994). These obsessions were usually accompanied by checking compulsions, repeating compulsions and praying rituals (Abramowitz et al., 2004; Greenberg, 1984; Greenberg & Shefler, 2002; Karadag et al., 2006; Mahgoub & Abdel-Hafeiz, 1991; Okasha et al., 1994; Yorulmaz et al., 2009).

The modern discovery of religious OCS prevalence across the three religions has, prompted researchers to reconsider the role of religion and religiosity in the development of both religious and non-religious OCS. As such, more studies have, recently, been conducted to explore the association between religiosity and OC phenomena (obsessive beliefs and symptoms) in various cultures and religions (Abramowitz et al., 2004; Hermesh, Masser-Kavitzky & Gross-Isseroff, 2003; Seive & Cohen, 2007; Sica et al., 2002; Tek & Ulug, 2001; Yorulmaz et al., 2009; Zohar, Goldman, Calamary, & Mashiah, 2005). So far, results of these studies have been inconsistent across Muslim, Jewish and Christian samples. In some studies, no significant difference was found between the OC phenomena results of high

religiosity groups and low religiosity/atheist groups of the research samples, hence indicating no significant relationship between religiosity and OC phenomena (e.g., Hermesh et al., 2003; Tek & Ulug, 2001; Zohar et al., 2005).

In other studies, a significant difference was found between the OC phenomena results of the high religiosity groups and lower religiosity/atheist groups. In these studies, the mean score value on OCS or the religiosity-OCS relationship value of the high-religiosity groups were greater than the low-religiosity/atheist groups, hence indicating that OCS increased with an increase in religiosity level (e.g., Abramowitz et al., 2004; Gonsalvez et al., 2010; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Seive & Cohen, 2007; Sica et al., 2002; Williams et al., 2013; Yorulmaz et al., 2009; Zohar et al., 2005). A few of these studies used the bivariate or multiple regression analysis technique to investigate the relationship between religiosity and OC phenomena. In these studies obsessive beliefs were either examined as mediators or outcome variables with OCS (e.g. Gonsalvez et al., 2010; Himle et al., 2012; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012).

Studies which showed a difference between the high-religiosity and low-religiosity groups (Abramowitz et al., 2004; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica et al., 2002; Williams et al., 2013; Yorulmaz et al., 2009; Zohar et al., 2005) had crucial implications on the theoratical and therapeutic approach being adopted for understanding and managing OCS/OCD. While they supported the secular theoretical approaches that were taken by the founders of the four models presented above, they also suggested that the use of religious interventions would be, not only inappropriate, but rather problematic in the treatment of OCS/OCD. Similarly, the studies which did not show a difference between the groups suggested that religious interventions would have no impact if used in treating OCS/OCD, hence dismissing any potential need for applying them, even for patients who may suffer from religious OCS/OCS.

Gaps in Previous Religiosity-OCD Studies

In an attempt to determine the potential underlying factors for the results obtained, religiosity-OCS/OCD studies on Muslim, Christian and Jewish samples have been thoroughly examined in the present research. Several research gaps, which may have contributed to such results, were identified in the process. Firstly, potential predictors of OCS such as parenting styles and personality traits were not included in the research models of the few past studies, which had conducted bivariate or multiple regression analyses to demonstrate the predictive ability and explanatory power of religiosity for OCS (e.g. Gonsalvez et al., 2010; Himle et al., 2012; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012). As a result, obsessive beliefs (OB) were also not examined as a mediator in a model which included parenting styles and personality traits along with religiosity level as predictors for OCS (e.g. Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Gonsalvez et al., 2010). The non-inclusion of other potential predictors beside religiosity in previous religiosity-OCS/OCD research models has led to an isolated, incomplete explanation for the OCS variations found in some studies.

Secondly, the participants of high-religiosity and low-religiosity groups in past studies were not equally *"exposed"* to contents identified as OCD themes. In the present thesis *"exposed participants"* refered to individuals who were receiving teachings/instructions on topics which were found to be the symptom themes of many patients with OCD. Most past researchers ensured that all participants of their highly-religious groups met the religiousness criteria of being exposed to (i.e. were recieving or had recieved teachings/instrustions on) contents like prayers, morality, blasphemy etc., which were also identified as OCD themes. However, they did not ensure that all participants of their low-religiosity groups were exposed to (i.e. were recieving or had recieved teachings/instrustions on) non-religious contents identified as OCD themes, such as contamination/germs and diseases (Abramowitz

et al., 2004; Gonsalvez et al., 2010; Hermesh et al., 2003; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Seive & Cohen, 2007; Sica et al., 2002; Tek & Ulag, 2002; Williams et al., 2013; Yorulmaz et al., 2009; Zohar et al., 2005). The exposure of all high-religiosity group participants to subjects identified as religious OCD themes may have been the reason for them, in studies which showed a difference between the groups, to have a significantly higher mean score on OCS scales or a greater religiosity-OCS relationship value as compared to their non-religious counterparts, whose exposure to subjects identified as OCD themes was indefinite.

Thirdly, despite the presentation of a wide variety of religious OCS across cultures (e.g., Abramowitz et al., 2004; Greenberg, 1984; Greenberg & Shefler, 2002; Karadag et al., 2006; Mahgoub & Abdel-Hafeiz, 1991; Okasha et al., 1994), most religiosity-OCS/OCD studies, relied solely on standard OCS/OCD scales such as the Yale-Brown Obsessive Compulsive Scales (Y-BOCS; Di-Nardo as cited in Hermesh et al., 2003), the Yale-Brown Obsessive Compulsive Checklist (Y- BOCC), the Padua Inventory (PI; Sanavio, 1988), the Obsessive Compulsive Inventory-Revised (OCI-R; Foa et al., 2002) and the Maudsley's Obsessive-Compulsive Inventory (MOCI; Hodgeson & Rachman, 1977), to measure both religious and non-religious OCS in their religiosity groups (Hermesh et al., 2003; Sica et al., 2002; Tek & Ulug, 2001; Yorulmaz et al., 2009; Zohar et al., 2005).

Only a few studies used the Penn Inventory of Scrupulosity (PIOS), which was designed specifically to measure religious OCS/scrupulosity. Although this scale was designed for Christians, it was also used for Muslims in several past studies (e.g. Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012). The general shortage of religious OCS related items may have been the reason for religious groups, Christian or Muslim, to score low like their non-religious counterparts in studies that showed no group differences, given that much of their potentially experienced religious OCS may have remained untapped.

Lastly, in past Muslim vs. Christian cross-religious studies (Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Yorulmaz et al., 2009), cultural diversity was not controlled to minimize confounding of results. Therefore the religiosity-OCS relationship difference found between Muslims and Christians in these studies could have been due the differences in their cultures rather than the dissimilarities of their religions. For example, Inozu, Clark and Karanci (2012), and Inozu, Karanci and Clark (2012) compared Christians in Canada with Muslims in Turkey.

The Aim of the Present Research

The chief aim of the present study was to statistically investigate the predictive ability of religiosity level for religious and non-religious OCS and examine the mediating role of obsessive beliefs in the predictive relationships. However, in an attempt to obtain more accurate results than the results of previous religiosity-OCS/OCD studies, this study first addressed the above mentioned gaps by undertaking the following innovative efforts.

Firstly, a multivariate religiosity-OCS model was proposed in which personality traits and parental authority styles were included as potential predictors of religious and non-religious OCS, alongside religiosity level, and obsessive beliefs was added as a potential mediator. This model was proposed and developed after extensive review of the literature. The aim was to examine the predictive ability of religiosity level for religious and non-religious OCS variations in the presence of other potential predictors, namely parental authority styles and personality traits. Then, this study aimed to compare the explanatory powers of the predictors, which showed a significant relationship/s with religious and non-religious OCS, and subsequently to examine obsessive beliefs (OB) as a mediator in the significant relationship/s found.

In the present study, religiosity level referred to the frequency of: performing prayers privately   and   in   congregation,   fasting,   reading   the   holy   book   and   reciting

supplications/graces, helping and serving others without expecting a reward from them, forgiving others, repenting and asking God's forgiveness, reading religious literature, watching and listening to religious programs and trying to apply religious beliefs in all dealings of life (see Fetzer Institute/National Institute on Aging Working Group, 1999) Parental authority styles, was described as any of the three parental behavior prototypes: the permissive parental behavior that is relatively warm, non-demanding and non-controlling; the authoritarian parental behaviors that demands unquestioning obedience and attempts to control the child's behavior using disciplining or punitive approaches; and the authoritative parental behavior that is firm yet flexible (Buri, 1991). The description of personality was in terms of the dominant trait (extravert, neurotic or psychotic). Hence, there was the extravert trait personality, the neurotic trait personality and the psychotic trait personality (Eysenck, Eysenck & Barrett, 1985).

Parental authority styles and personality traits were selected as predictors with religiosity in the research model as numerous studies had demonstrated an association between specific personality factors and OCS/OCD (e.g., Frost, Steketee, Cohn & Griess, 1994; Fullana, Mataix-Cols, Trujillo et al., 2004; Fullana, Mataix-Cols, Caseras et al., 2004; Gutiérrez-Zotes, Farnós, Vilella & Labad, 2013; Rees, Anderson & Egan, 2005; Rector, Hood, Richter & Bagby, 2002; Salmanpour & Issazadegan, 2012; Wu, Clark & Watson, 2005). Similarly, the link between parenting factors and OCS/OCD was validated in several studies (Alonso et al., 2004; Myhr, Sookman & Pinard, 2004; Turgeon, O'Connor, Marchand & Freeston, 2002; Vogel, Stiles & Nordahl, 1997; Wilcox et al, 2008; Yoshida, Taga, Matsumoto & Fukui, 2005). The detailed review of personality-OCS/OCD and parenting-OCS/OCD association studies is presented in the literature review chapter.

Secondly, the relationship of religiosity level with religious and non-religious OCS was examined using two low-religiosity groups and two high-religiosity groups; one of high-religiosity Christian participants and the other of high-religiosity Muslim participants. Three

of the four groups were formally exposed to (i.e. were formally receiving teachings/instructions on) subjects identified as OCD themes. The exposed groups were the high-religiosity Christian group, the high-religiosity Muslim group and one of the low-religiosity groups. The high-religiosity groups were formally exposed to (i.e. were formally receiving teachings/instructions on) OCD themes like prayers, morality blasphemy etc., while the low-religiosity group was formally exposed to (i.e. was formally receiving teachings/instructions on) OCD themes like germs, contamination, disease etc. To ensure that all participants in the three groups were formally exposed to subjects identified as OCD themes, they were selected from university programs that exposed them to (i.e. provided teachings/instructions on) such OCD themes. The high-religiosity exposed groups' participants were selected from religious studies programs, whereas the low-religiosity exposed group's participants were selected from medical studies programs. The present study was the first to recruit university students for all its religiosity groups; hence it ensured that all its participants were receiving a high level of academic exposure to OCD related themes.

Thirdly, both generic OCD scales and religious OCD scales were used for the high-religiosity and low-religiosity groups to adequately measure their non-religious and religious OCS. However, the religious OCS scale used for Muslims in the high-religiosity Muslim group (HRMG) and Muslims in the low-religiosity groups (LRGs), was different from the religious OCS scale used for Christians in the high-religiosity Christian group (HRCG) and Christians and non-Christians (Muslims excluded) in the low-religiosity groups (LRGs). The religious OCS of Muslims in the HRMG and LRGs was assessed by a self-tailored 28-items scale, which was designed to adequately capture the religious OCS of Muslims. The aim was to obtain more accurate group and overall results, with regards to the religiosity-OCS relationship. Lastly, the participants of the four groups were sampled from regions with similar cultures to minimize confounding due to cultural/regional diversity. An aim was to investigate whether the relationship between religiosity and OCS in the High religiosity

Muslim and Christian groups would be similar when their cultural diversity was controlled. After taking these measures, the results obtained from the present study and their therapeutic implications were discussed and compared with the findings and therapeutic implications of past studies in the last chapter of this research. The congruence of the new finding with past and present OCD therapeutic practices were also addressed in the last chapter.

Statement of the Research Problems

Firstly, very few studies have compared the predictive ability and explanatory power of religiosity level for OC symptoms simultaneously with the predictive ability and explanatory powers of other OCD predisposing variables like parenting factors and personality factors in a single multivariate research model. Furthermore, due to the scarce number of studies comparing religiosity's predictive ability with parenting factors and/or personality traits' predictive abilities in a single model, obsessive beliefs (OB) was also rarely examined as a mediator in such a multivariate framework. This gap was found in both single-religious group studies and cross-religious group studies. Secondly, the participants of high-religiosity and low-religiosity groups in past studies were not equally exposed to contents identified as OCD themes. While all high religiosity participants were exposed to religious contents such as prayers, morality and blasphemy, which are OCD themes, the exposure of all low-religiosity participants to any of the non-religious contents identified as OCD themes, such as contamination/germs and disease, was uncertain. Thirdly, very few studies have used scales which are specifically designed to measure religious OCS with standard scales for generic OCS. Therefore, religious OCS, especially in Muslim participants, was not adequately or validly measured, as the generic OCD scales used in these studies were not sufficiently equipped with items to capture them. Lastly, cultural diversity in past Muslim vs. Christian cross-religious studies was not controlled to minimize confounding of results.

The Research Questions

The research questions of the present study include the following: (a) Is religiosity level significantly related with religious and non-religious OC symptoms in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group, and low-religiosity non-exposed group? (b) Are parental authority styles significantly related with religious and non-religious OC symptoms in the high-religiosity Christian group, high-religiosity Muslims group, and the two low-religiosity groups? (c) Are personality traits significantly related with religious and non-religious OC symptoms in the high-religiosity Christian group, high-religiosity Muslims group, and the two low-religiosity groups?

Additional subsidiary questions include the following: (d) Does obsessive beliefs mediate any significant relationships between the predictors (religiosity level, personality trait & parental authority styles) and the outcome variables (religious & non-religious OCS) in the four sample groups? (e) Does the religiosity level-OCS relationship differ in Christians and Muslims from the same culture?

The Research Objectives

The objectives of the present research include the following: (a) to examine the relationship of religiosity level with religious and non-religious OC symptoms in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group, and low-religiosity non-exposed group; (b) to examine the relationship of parental authority styles with religious and non-religious OC symptoms in the high-religiosity Christian group, high-religiosity Muslims group and, the two low-religiosity groups; (c) to examine the relationship of personality traits with religious and non-religious OC symptoms in the high-religiosity Christian group, high-religiosity Muslims group, and the two low-religiosity groups.

Additional subsidiary objective include the following: (d) to examine obsessive beliefs as a mediator in any significant relationships found between the predictors (religiosity level, personality trait & parental authority style) and the outcome variables (religious & non-religious OCS) in the four sample groups, and (e) to compare the religiosity level-OCS relationship results of Christians and Muslims from the same culture.

The Significance of the Research

This study examined personality traits and parental authority style with religiosity as predictors of OC symptoms as well as examined obsessive beliefs as a mediator in a single model. This model theoretically allowed the variables to be examined statistically without causing the typical isolation of individual variables. Methodologically, such a model extended the use of multivariate analysis to religiosity-OCD studies, hence charting a new direction for future research in the area. Practically, the findings can assist psychologists and clinicians in understanding the extent to which personality traits, parental authority style, obsessive compulsive beliefs and religiosity level contribute in the development and/or maintenance of OC symptoms. Such knowledge in turn would enable them to facilitate better management approaches for patients with OCD.

The present study also pioneered the idea of a more rigorous approach for obtaining groups which are equally exposed to subjects identified as OCD themes. Practically, future researchers may benefit from this approach in their sampling process for reducing possible group exposure biases and obtaining more accurate overall results. Moreover, the current study took the initiative in developing a new religiosity OCS scale to measure a wide variety of religious OC symptoms that generally afflict Muslims. The scale can be further improved and used for Muslim populations with OCD in future research and clinical settings.

Chapter 2

Literature Review, Conceptual Framework and Hypotheses

The interest in examining religiosity as a potential predictor of OCS began to develop after several OCD phenomenological studies demonstrated the presence of religious OCS in Jewish, Muslim and Christian samples (e.g., Abramowitz et al., 2004; Greenberg, 1984; Mahgoub & Abdel-Hafeiz, 1991). Besides sparking the interest of researchers to study the religiosity-OCD relationship, these phenomenological studies also explained the help-seeking behavior of patients with OCD in some communities, as well as supported the calls of a growing minority of psychologists for a therapeutic approach which integrates religious interventions and its adoption in their practice. The present study extends beyond previous religiosity-OCD studies, and aims to provide further insight in the relationship between religiosity and OCS. In an attempt to obtain more accurate results, it examins parental authority styles and personality traits as potential predictors along with religiosity level and employed more rigorous sampling and data collection methods. Its results and their implications on OCD treatment approaches is then compared with the findings, conclusions and therapeutic implications of past studies. In addition, the congruence of the obtained results with the propositions and practices of psychologists who integrate religious intervention in the management of OCD is addressed.

Hence, this chapter comprises of seven sections. In the first section, OCD phenomenological studies are reviewed. In section two, a brief exposition on help-seeking behaviour in Muslim and Jewish communities is given. Section three presents the integrative approach adopted by selected modern psychologists for managing religious patients with OCD. In the fourth section, past religiosity-OCD relationship studies as well as studies of the personality-OCD and parenting-OCD associations are reviewed. Section five presents the

study's conceptual framework, while section six provides the conceptual and operational definitions of the variables. The last section, seven, states the research hypotheses.

Religious OC Symptoms across Religions: A review of OCD Phenomenological Studies

In the past two decades an array of OCD phenomenological studies conducted on Jewish, Christian and Muslim samples illustrated the presence of religious OCS in patients across the three religions. For example, Mahgoub and Abdel-Hafeiz (1991) assessed 32 Saudi Muslim patients with OCD using a semi-structured interview and the standard mental-state examination. They found that the themes of obsessions in their Muslim sample were predominantly related to the religious practices of prayers and their associated washings (i.e., washing of private parts, ablution, and purification bath after sex and menstruation). These obsessions were commonly accompanied by repeating compulsions (Mahgoub & Abdel-Hafeiz, 1991).

Greenberg (1984), on the other hand, documented the religious compulsion histories of five Jewish patients with obsessions in the Jerusalem Mental Health Centre. Like Mahgoub and Abdel-Hafeiz et al. (1991), he found that doubt about cleanliness of the anal region before prayers and about correctness and devotion in prayers were among the main religious obsessions. Doubt about the completeness of faith during prayers was also reported (Greenberg, 1984). The accompanying compulsions were excessive cleaning, washing, and checking of the anal region before every prayer and after regular toilet visits and repeating compulsions (Greenberg, 1984). Okasha et al. (1994) assessed 90 Egyptian Muslim patients attending an outpatient psychiatric clinic of the Institute of Psychiatry using an Arabic version of the Yale-Brown Obsessive Compulsive Scale (Y-BOCS; Di-Nardo, 1985; Goodman et al., 1989) for symptomatology and severity of symptoms. Results of their study indicated that ritualized prayers and the preceding ritualistic cleansing process were the most common topics of religious obsessions. The most commonly experienced compulsions, on

the other hand, were repeating rituals, cleaning and washing, and checking compulsions (Okasha et al., 1994).

Similarly, Karadag et al. (2006) investigated the clinical features of OCD in a sample of 141 Muslim Turkish patients using a Turkish version of the Y-BOCS. They found that most of the patients (56.7%) suffered from contamination obsessions, followed by patients with aggression obsessions (48.9%), somatic obsessions (24.1%), religious obsessions (19.9%), symmetry obsessions (18.4%), and sexual imagery (15.6%). Patients with religious obsessions suffered mainly from doubt obsessions about the rules of religious practices. Eighty three percent of the patients with religious obsessions and 50% of those with sexual obsessions performed compulsions that involved religious practices. Consistent with previous studies (e.g., Mahgoub & Abdel-Hafeiz, 1991; Okasha et al., 1994), their compulsions included repeating religious rituals (Karadag et al., 2006). Likewise, Greenberg and Shefler (2002) conducted a 68 questions structured interview to evaluate in detail the most prominent religious and non-religious symptoms of 28 ultra-orthodox Jewish patients. They found that the main topics of religious symptoms were prayer and ritual immersion after menstruation. The topics of non-religious symptoms were reported as mainly relating to religious values and practices rather than the usual concerns as generally described in the OCD literature (Greenberg & Shefler, 2002).

Abramowitz et al. (2004) conducted their study on a sample of 220 Protestant and atheist/agnostic undergraduates who were enrolled in introductory psychology classes at a university in the south-eastern United States. Their sample was drawn from a larger sample ($n = 1,005$) of another study. Abramowitz et al. (2004) found that the most commonly occurring OC symptoms in highly religious Protestants were contamination fears and washing rituals. Consistent with other studies (Greenberg, 1984; Yorulmaz et al., 2009), blasphemous and sex thoughts and excessive praying rituals were also reported by this group

(Abramowitz et al., 2004). Okasha and colleagues (1994) and Abramowitz and colleagues, (2004) also indicated the occurrence of sinful immoral thoughts in their samples (Abramowitz et al., 2004; Okasha et al., 1994).

Although religious OC symptoms were found across the three religions, their content differed from one religion to another. In Muslim and Jewish samples, the subjects of prayer and its preceding cleansing were more frequent than the subjects of sex and blasphemy; while, in Christian samples, the religious contents of sex and blasphemy were more common than the subjects of prayers and preceding washing rituals (Okasha et al., 1994; Siev & Cohen, 2007; Zohar et al., 2005). In some of the studies' contents, the participants' OC symptoms were attributed to the dominant themes or the emphasized aspects of their religion (Greenberg, 1984; Okasha et al., 1994). Greenberg (1984), for example, after observing common features related to pre-prayer cleanliness, prayer correctness and devotion in the presentations of his four Jewish patients, expounded that Judaism has specific rituals that particularly contribute in the development and presentation of religious obsessive fears. Similarly, Okasha et al. (1994), who found ritual-related symptoms more prevalent in Muslims than in Christians, attributed the prevalence of such contents in Muslims to their Islamic upbringing, which emphasizes religious rituals. They proposed that the OCD presentation of Egyptian Muslim patients is coloured by their religious upbringing. In other words, religious upbringing painted the symptomatology of Egyptian patients. Being a cultural norm, such upbringing was found to influence even the OC presentation of Egyptian patients who did not practice their religious duties (Okasha et al., 1994).

Okasha et al. (1994) further expounded,

The emphasis on cleanliness or ritual purity is the cornerstone of most of the compulsive rituals. The number of prayers and the verbal content can be the subject of

scrupulousness, checking and repetition. The ritualistic cleansing procedures also can be a source of obsessions and compulsions about religious purity. (p. 194)

Such an assertion indicated that Okasha et al. (1994) essentially attributed OCD symptoms in Muslims to fundamental Islamic doctrines, which have been accentuated culturally because of Islam's emphasis on them.

Help-Seeking Behaviour in Muslim and Jewish Communities

Studies show that many Muslims and Jewish patients suffering from religious OC symptoms still seek the help of religious authorities. In fact, such patients usually seek the help of religious authorities before and after approaching a mental health professional for assistance (Al-Solaim & Loewenthal, 2011; Greenberg & Shefler, 2002; Okasha et al., 1994). For example, Okasha et al. (1994), found that most of their Egyptian patients who suffered from religious OC symptoms sought psychiatric help only when their symptoms exacerbated. In the majority of the cases, the total score on Y-BOCS was in the severe range. Okasha et al. (1994) attributed the delay in seeking professional help to the cultural practice of initially visiting native healers or religious people for help as they are considered as the primary caregivers for the psychologically ill. The help of psychiatrists is sought as a last resort after these cultural lines of interventions have failed (Okasha et al., 1994).

The propensity of initially seeking the assistance of religious authorities was also seen in Jewish patients. For example, Greenberg and Shefler (2002) in their interviews with 28 ultra-orthodox Jews found that religious symptoms were more likely to be brought for guidance to a rabbi than a mental health professional. In cases of non-religious OC symptoms, however, help was first sought from mental health professionals. Hence patients were more likely to turn for help initially to a religious authority for religious OC symptoms and mental health professionals for non-religious symptoms.

In another study by Al-Solaim and Loewenthal (2011), interviews with 15 Saudi female patients suffering from religious OCD, revealed that all of them initially sought the help of spiritual healers as they considered it as an appropriate outlet for help. Seeking the help of spiritual healers seemed to be a spontaneous reaction to the illness by many Saudi families regardless of their social and financial backgrounds. They considered psychiatric service as the last resort for the disorder. The chief methods used by spiritual healers were reading verses from the *Qur'an*, giving the patient *zamzam* water to drink, and black seed oil to apply on the body (Al-Solaim & Loewenthal, 2011). As reported by the patients, these methods did provide a temporary relief, however they did not alleviate the OC symptoms. The patients continued with spiritual healers for an average of 6 months to 1 year before seeking the help of a mental health professional (Al-Solaim and Loewenthal, 2011).

However, even after they started psychiatric treatment and were told that their psychiatric disorder had biological origins, these patients continued to visit spiritual healers who attributed the biological imbalances to satanic forces like an *evil eye* (Al-Solaim & Loewenthal, 2011). The interview revealed that, when seeking professional help, patients preferred to undergo treatment with religious psychiatrists rather than non-religious psychiatrists, as the former were believed to possess knowledge of religious views (*'ilm*) that were relevant to their religious symptoms and therefore were in a better position to understand and manage their problem (Al-Solaim & Loewenthal, 2011). In fact many patients related to religious psychiatrists the way they did to spiritual healers. They asked them to read verses from the *Qur'an* and pray for their recovery as they were believed to have the ability to treat them not only biologically or psychologically by drugs, but also spiritually (Al-Solaim & Loewenthal, 2011).

Religious Interventions in the Management of OCD

Badri (1979), who contended that adopting an entirely secular approach was inappropriate for treating some Muslim patients, was the first to urge Muslim psychologists to look into the works of early Muslim scholars like al-Ghazali, Ibn al-Qayyim and others to benefit from their contributions in various fields of psychology. He encouraged the recitation of *Qur'anic* verses in managing patients who benefit minimally or gain no benefit at all from mainstream psychotherapy, as he found that relevant verses could help tremendously in changing a patient's outlook on life. Badri (1979) successfully treated a Muslim OCD female patient who suffered from doubt obsessions in prayers. Her doubts were about the correct performance of the prayer rituals and therefore she would compulsively repeat her prayers. Badri (1979) employed religious intervention by advising her to consult a *sheikh* (religious authority) about the rules of congregational prayers in *Islam* after he explained them to her personally.

When she learned that she simply needed to follow the *Imam's* movements and listen to his *Qur'anic* recitation while praying in a congregation, Badri (1979) advised her to pray in congregation. Since it was the holy month of *Ramadan*, he also recommended that she attends the *tarawih* prayer in a mosque. The patient complied and attended the *tarawih* regularly. By the end of the holy month she had completely recovered from her prayer related doubt obsessions. Badri (1979) pointed out the inapplicability of the standard EX/RP technique in this case, as applying it would have required him to prevent the patient from praying (Badri, 1979).

Similarly, Singh and Khan (1998) treated a Muslim OCD male patient who had doubt obsessions about uttering the word "divorce" to his wife three times during an argument. This was extremely distressing as he loved her and wished to maintain his marriage. To treat him, Singh and Khan (1998) sought the help of a religious preacher to explain the Islamic

injunctions regarding divorce. When the patient learned that a complete divorce in Islam would occur only if a man utters the word "divorce" on three separate occasions in the presence of witnesses and not on one occasion, he was convinced that his marriage was still valid and he could continue living with his wife without feeling that their relationship was sinful (Singh & Khan, 1998).

Bonchek and Greenberg (2009) also successfully treated three ultraorthodox Jewish patients with prayer related symptoms. Considering the inapplicability of standard EX/RP—indicated earlier by Badri (1979)—for patients with OCS related to prayers, Bonchek and Greenberg (2009) proposed two requisite modifications in the technique. The first modifcation concerns treating within the limits of religious practices. For example a patient should not be asked to completely annul his prayers or its rituals. Secondly, modifications include asking the patient to designate a religious authority with whom he can discuss his problem to set the limits for the EX/RP. Bonchek and Greenberg (2009) introduced the guided-prayer repetition for patients who compulsively repeat certain rituals of prayers while praying because of doubts related to them. This technique is a variation of the EX/RP in which the patient is instructed to repeat the prayer from the beginning every time he/she engages in compulsive ritual repetition, instead of preventing him/her from performing the ritual. The aim is to increase the motivation of the patient to refrain from compulsively repeating rituals by making the clinician's interruption and repetition of the prayers an aversive consequence of the compulsive behaviour. Bonchek and Greenberg (2009) suggested this technique for Muslim patients who compulsively repeat prayer rituals also, but on the condition that the therapist should have an understanding of the laws of Islamic prayer. Bonchek and Greenberg (2009) stated: *"Guided-prayer repetition may be useful in patients with OCD in religions other than Judaism with formal prayer structures, such as Islam, although the therapist should have an understanding of the laws of Islamic prayer"* (p. 402).

Recently, the number of psychologists adopting a religious approach for their religious patients with OCD has been growing (e.g. Badri, 1979; Besiroglu, Karaca & Keskin, 2012; Bhugra & Osbourne, 2004; Bonchek & Greenberg, 2009; Greenberg & Huppert, 2010; Hatta, 2001; Huppert, Siev & Kushner, 2007; Singh & Khan, 1998; West, 2000; Zain, 2001). Their increased contact with, and management of, religious patients enabled them to obtain a deeper understanding of the way these patients think and hence suggest the approaches which may be adopted during therapy, for example, Huppert et al. (2007), whose approach is elaborately discussed below.

Huppert's proposed religious approach in managing orthodox Jewish patients with OCD. Huppert et al. (2007) described the thinking of the Orthodox Jewish patients with OCD and detailed the most effective approaches which, according to them, should be adopted while employing the following stages of CBT and EX/RP.

Conceptualizing the problem. Huppert et al. (2007) suggested that the therapist should clearly conceptualize the main concerns and fears of his patient with OCD when using CBT. The main fear of many scrupulous Orthodox Jews is being in a state of continuous sin in this world or suffering the punishment of that sin in the hereafter. Huppert et al. (2007) believed that, for exposing religious patients, it is neither essential nor proper, to ask them to commit the actual sin. Instead, they should be instructed to only perform actions that increase the risk of committing the sin or being punished.

Although the therapist may ask his patient to take slightly more risk than others normally take, he should not allow the violation of religious principles in the process. Cognitively, the therapist should bring to the religious patient's attention to the difference between his OCD behaviour and the behaviour of other religious people in his community. The aim is to convince the patient to accept taking similar risks like others and allow the

possibility of sin. Sometimes, the scrupulous patient may still decide to continue their painful OCD rituals rather than taking the risk of sinning. Therefore the rationale of the therapy should be discussed during the first session and reinforced throughout the session (Huppert et al., 2007).

Rationale for treatment. According to Huppert et al., (2007), many scrupulous Ultra-Orthodox Jews may be sceptical about their non-religious therapists' abilities of effectively treating them. To lessen such scepticism, they suggested that the therapist should provide a sensitive rationale during his sessions to help build an alliance. For example, if a patient says: "If I just weren't religious, I wouldn't have this problem" (p. 933). Then, the therapist may say: "You might not have OCD about *halacha*, but you would likely have it about something else instead. You cannot run away from OCD" (p. 933). With this statement the patient will not only see a rationale for treatment, but will also implicitly understand that the therapist does not view religiosity as the problem, hence dispelling one of the possible concerns (Huppert et al., 2007).

Huppert et al. (2007) further explained that the distress resulting from OCD often causes religious patients to ritualize not in the service of God, but in the service of their OCD, sometimes to an extent of violating religious law. Therefore the therapist should clarify to the religious patient early during treatment that OCD is actually an obstacle to the spiritual connection that he/she longs to have with God, and that EX/RP can help him overcome this obstacle (Huppert et al., 2007). In EX/RP the patient is exposed to negative thoughts which can raise issues while applying it with religious Jewish patients, as according to Judaism a person must not articulate bad things for fear that they may happen. In this situation of conflict the therapist should address different aspects of OCD thoughts rather than engaging in a debate on whether thoughts are consequential, as it may side-track the treatment. According to Huppert et al. (2007), there are three aspects of thoughts that the therapist

should help the patient understand: (a) that the nature of the thought is intrusive not purposeful; (b) that the thought should be accepted by not supressing it rather than purposefully elaborating on it; and (c) that the intent of the thought is for treatment not pleasure. The use of a particular thought purposefully for treatment will depend on the OCD theme of the patient and the approval of his/her clergy.

Enhancement of motivation. Orthodox Jewish patients are best motivated within the framework of their Orthodox beliefs, Huppert et al. (2007) explained. Therefore, the goal of treatment is viewed as subservience to God and His laws, which eventually lead to a more fulfilling life. With this therapy goal set, the therapist must remind the patient that while living by the commandments, he/she should not suffer because the laws of the *Torah* are not meant to be repressive or retributive. The therapist should also explain that the process of EX/RP, which involves small risks of committing sin, is acceptable and consistent with Orthodox Judaism, as Judaism even allows the violation of the commandments to save a life, such as eating pork to prevent death due to starvation. To address the religious patient's perfectionism, the therapist should remind him that the *Torah* was revealed to fallible human beings. Therefore, perfection in practicing its laws is not expected. Such a religious approach can greatly increase the motivation of a religious patient and his/her compliance to the treatment (Huppert et al., 2007).

Helping the patient distinguish between OCD and religious laws. To help the religious patient distinguish between OCD and religious laws, the therapist may use a modified form of a gun test. In a standard gun test a patient is told to answer a question about his obsessive fears or compulsions while imagining that someone will shoot him/her with a gun if he doesn't answer correctly. In the modified gun test, however, the religious patient is told to answer such questions, while imagining death if he doesn't answer correctly. The question for a religious patient may be the following: "Do you need to ritualize from the point

of view of religious law?" Mostly patients answer correctly under such an imaginary threat as they respond on the basis of logic rather than affect (Huppert et al., 2007).

A therapist who is knowledgeable about the boundaries of laws can also use irreverent persuasion to clarify the unclear lines between OCD and reality. For example, if a patient is anxious about bringing pork anywhere at home, the therapist can help him/her differentiate between eating or cooking pork (forbidden) and using a can of pork ham as a paperweight (not forbidden). Many scrupulous patients regard an accidental minor violation of the law as equivalent to a deliberate major violation of the law (Huppert et al., 2007). Therefore, many religious patients resist taking the risk that others can take during treatment because they believe that they are involved in committing a sin. In this situation the therapist should help them distinguish between engaging in risk behaviour for treatment and engaging in a sinful behaviour, by asking for example, "Is doing this the same as going to McDonald's and eating a bacon cheeseburger?" (p. 936). By such comparison the religious patient understands the reality of what they are to do during treatment (Huppert et al., 2007).

In Vivo Exposure. It is fundamentally imperative and therapeutically adequate to remain within the limits set by the law while exposing the patient to stimuli that cause him/her to ritualize during *in vivo exposure* (Huppert et al., 2007). Therefore an Orthodox Jewish patient may be asked, after rabbinic sanctioning, to tolerate uncertainty with regards to religious standards, but without violating the law. After the exposure, if the patient ritualizes by praying to prevent negative outcomes, the therapist should ask the patient to "allow God's will" to undo his ritual, rather than ask him to pray for bad things to happen (Huppert et al., 2007). By Allowing God's will, the patient accepts ambiguity, since His will is unknown. It is either life or death. When unexpected situations arise during EX/RP which cause the patient to become concerned, the therapist should recognize that his/her concerns may or may not be OCD obsessions and allow him/her to choose whether to continue with

the exposure or not. If the patient is certain that he/she has violated the religious law then the exposure may be postponed until a rabbi is consulted (Huppert et al., 2007).

Huppert et al. (2007) alert that many scrupulous orthodox Jews may repeatedly consult Rabbis for reassurance. Due to their unfamiliarity with OCD, these rabbis usually provide them with the excessive reassurance they want. In such cases, the therapist, with the permission of the patient, should meet the Rabbi and ask him not to answer the patient's OCD questions, but to refer the patient back to him. By the rabbi's refusal to answer questions, the patient implicitly understands that he is dealing not with a religious issue, but with OCD. The therapist, however, should be careful not to become the rabbi's proxy in providing reassurance.

Rabbinic consultation by the therapist is essential, if he does not possess sufficient religious knowledge to counter the patient's claim of an existing *halachic* problem during EX/RP. The rabbis may point out leniencies that are built into the *halachic* system. Such leniencies are meant for difficult circumstances and can be applied for therapeutic purpose during EX/RP. The therapist should carefully help the rabbi understand the therapeutic need to push the client within the law (usually via leniencies), and explain to him how obsessive caution can maintain OCD symptoms. It is important not to violate the rabbi's ruling even if he forbids particular exposure behaviours, and try to determine with him acceptable alternatives for exposure (Huppert et al., 2007).

Religious approach proposed by other mental health practitioners for managing patients with religious OCD. Other researchers also described the dysfunctional cognitions and maladaptive behaviours of religious patients. They expounded that religious patients are focused on selected aspects of religion, while devout individuals focus on all aspect (Besiroglu, Karaca & Keskin, 2012). In other words, they are usually concerned about one

particular religious area or practice, whereas the devout are careful in all areas or practices (Greenberg & Huppert, 2010). When religious patients compulsively perform the religious practice of concern, they exceed what the religious law requires them to do (Besiroglu, Karaca & Keskin, 2012). Such religious compulsions usually consume so much of their time that they affect their general religious observance (Greenberg & Huppert, 2010).

For example, when a patient is preoccupied with pre-prayer cleaning compulsions, he may actually miss praying in the allotted time, which is a more valued aspect. The areas of concern, they explained, often resemble the common concerns of OCD, such as cleanliness and exactness followed by washing and checking (Greenberg & Huppert, 2010). These concerns are usually about issues that are trivial or of lesser importance to religion. Hence, the compulsive behaviour of religious patients with OCD violates religion and its laws, which usually are misconstrued by them (Besiroglu, Karaca & Keskin, 2012).

Greenberg & Huppert (2010) consider it crucial, when treating scrupulous patients, to strike a balance between convincing them that their compulsive religious behaviour are actually symptoms of a disorder and respecting their religious values and beliefs. It is also essential that the patients understand that the goal of treatment is not to rid them of their religious beliefs and acts, but to help them live a fuller religious life by treating the symptoms that are preventing them from living such a life (Greenberg & Huppert, 2010). In other words, the aim of therapy should be to enable the patient to practice religion in the correct and healthy manner, such as praying at the times prescribed by religious laws etc. (Besiroglu, Karaca & Keskin, 2012).

Scrupulous religious patients are often indecisive about seeking treatment because they worry of the possibility that their thoughts and behaviours might be necessary in order to avoid sin, or that their religious fervour might diminish if they stop their rituals. To motivate

them for treatment, the therapist should deal with the arguments they present to justify their compulsions. One of their arguments may be that even though people are not expected to be perfect, they are required to try their best, for which devoting an excessive amount of energy is necessary. In such a case, therapists should make them aware that the aim of religious practices is to serve God, and that there are other equally important values that should be observed to achieve this aim, rather than getting totally occupied in trying to perfect a single act, merely to avoid sin (Greenberg & Huppert, 2010).

The patients should realize that their OCD rituals are, in fact, a hindrance to the service of God. This will help the patient accept taking the risk of the feared sin, as the treatment requires that the patient takes such a risk without actually committing the sin. The patient should be alerted that when he tries to reduce the risk of the feared sin to zero, he elevates the risk of other sins (Greenberg & Huppert, 2010), that have been overlooked by him. As such, it is important to accept taking the risk of committing the feared sin rather than trying to diminish it.

Among the main beliefs that need to be challenged in scrupulous patients is the belief that all thoughts of immorality or sin are forbidden. This belief may be addressed by helping the patient to distinguish between intentional and unintentional thoughts (Greenberg & Huppert, 2010). Then, communicating to the patient that he/she is not responsible for his obsessions because they are unintentional intrusive thoughts. Given that they are not responsible for their obsessions, they do not need neutralization, repentance or atonement (Greenberg & Huppert, 2010). To address TAF, the therapist can ask the patient to imagine, for example, a mass murderer who is thinking of his immense love to his mother and an altruistic clergyman who has intrusive, unintentional thoughts of harming children or blasphemy, and then ask the patient who among them is bad? The aim of such an inquiry is to

emphasize that sin is not determined by thoughts alone, but also by intent and actions (Greenberg & Huppert, 2010).

According to Greenberg and Huppert (2010), involving the religious authority of the scrupulous patient in the treatment process is usually highly effective. By so doing, the therapist is able to directly discuss with the religious authority and reach a mutual understanding and collaborative approach to help reduce the patient's suffering. While involving a religious authority, the therapist should also acquire knowledge about religious beliefs and rituals (Besiroglu et al., 2012; Greenberg & Huppert, 2010). For example he should know that although Jewish law recommends care in being clean before prayers or being focused during prayers, repeating cleaning rituals or prayers many times are suggestive of a problem, for even a single repetition is not usual (Greenberg & Huppert, 2010). With limited religious knowledge on beliefs and rituals, it may be difficult for a therapist to distinguish religious OCD from normal religious concerns and rituals (Besiroglu et al., 2012; Greenberg & Huppert, 2010).

By familiarizing him/herself with religious knowledge, the therapist will also learn about specific religious leniencies within the faith which can help him/her understand the extent to which he/she can expose the patient during EX/RP. Such religious leniencies when conveyed to the patient can increase his/her motivation and compliance with the treatment (Besiroglu et al., 2012). Moreover, when a therapist shows some expressions of faith, the religious patient's trust in him/her may increase. However, the danger of having such a therapist is that he/she may be used as proxy for a religious authority to gain reassurance (Greenberg & Huppert, 2010).

Religiosity-OCD Relationship Studies

The presentation of religious OC symptoms across Muslim, Christian and Jewish samples has led researchers to consider religiosity level as a potential factor in their development. As such, recently more studies have been conducted to explore the relationship between religiosity and religious obsession in various cultures and religions (e.g., Abramowitz et al., 2004; Hermesh et al., 2003; Seive & Cohen, 2007; Sica et al., 2002; Tek & Ulug, 2001; Yorulmaz et al., 2009; Zohar et al., 2005). Tek and Ulug (2001), for example, conducted their study on 45 OCD Turkish outpatients. No significant difference between the scores of more religious participants and less religious participants was found. Hence, there was no sufficient statistical evidence to show a conclusive relationship between religiosity and OC psychopathology in their sample. It is worth noting that in Tek and Ulug's (2001) study among the 45 outpatients under study, 19 (42%) of them presented with religious OC symptom.

The themes of their symptoms were contamination (impurity), cleaning and repeating. Like Okasha et al. (1994), Tek and Ulug (2001) attributed the prevalent OCS content to the dominant cleaning and contamination themes in Islam. Their conclusion was based on results of a linear regression analysis run on their sample data which showed that the relationship of religiosity with the contamination/cleaning dimension of OCD, though non-significant, was stronger than its relationship with other OCD dimensions (Tek & Ulug; 2001). According to Tek and Ulug (2001), religious OCS differs from generic OCS simply because it is expressed through religion. Hence, religion was regarded as *"just another arena where OCD expresses itself"* (p. 107), rather than a determinant of religious OCS (Tek & Ulug; 2001). Tek and Ulug's (2001) stand about religion in this context is not different from that of Greenberg (1984) who suggested that *"religious commitment is merely incorporated into the presenting problem rather than being a causal factor"* (p. 530).

The religiosity-OC behaviour relationship was also examined in two non-clinical Jewish samples by Zohar et al. (2005). In the first study, the relationship between religiosity and OC behaviour was examined in a representative sample of 256 Israeli undergraduate students, whose ages ranged between 18 and 32 years. The second study was conducted on a non-random sample of 61 participants, aged between 18 and 59 years, with the aim of comparing the OC behaviour of 31 individuals who became more religious and 30 individuals who became less religious than their parents. Results of the first study indicated no significant difference in the OC behaviour of more religious and less religious participants. As such religiosity was not supported as a predictor of OC behaviour in this study (Zohar et al., 2005).

The second study, however, found that OC behaviour of the group which became more religious was significantly higher than those who became less religious. Zohar et al. (2005) speculated preceding OC tendencis, rather than religiosity, in the more religious group as responsible for the high scores. These tendencies, they explained, preceded the change of being more religious and could be part of the process that brought about the change. This conclusion conforms to their hypothesis that more fearful and neurotic individuals will be both more obsessive compulsive (OC) and more religious, while better adjusted individuals will be less of both (Zohar et al., 2005).

Hermesh et al., (2003), on the other hand, measured the religiosity levels of 66 Jewish patients with OCD. Results showed that the patients' level of religiosity did not increase with the increase in severity of their OCS. Hence, no connection was found between the intensity of obsessive-compulsive pathology and the level of religiosity. In addition, Hermesh et al. (2003) examined the OCS contents of the highly religious and the non-religious patients to investigate whether the former presented with more religious OCS than the latter. No

difference was found between the OCS contents of the two groups. Hence no connection was established between religiosity level and the content of central obsessions.

In a similar, but more recent study, Siev, Baer and Minichiello (2011) compared the religiosity levels of two OCD groups. Patients in the two groups did not belong to any particular country as the survey was internet-based. Any patient with OCD aged 18 years and above was eligible to participate in the study. One group comprised of 75 non-scrupulous patients with OCD and the other comprised 72 scrupulous patients with OCD. The patients in both groups were of diverse religious backgrounds. Like Hermesh et al. (2003), they also examined the likelihood of their symptoms to interfere with their religious practices. The findings of their study were inconsistent with the findings of Hermesh et al. (2003). Compared to non-scrupulous patients with OCD, scrupulous patients with OCD were more religious and more likely to report symptom interference with their religious experience. The higher level of religiosity in scrupulous patients with OCD indicated that religiousness was linked with scrupulosity and not with generic OC symptoms.

Siev et al. (2011) concluded that scrupulosity symptoms are manifested only when patients with OCD are religious. In other words, patients with OCD are unlikely to manifest symptoms which interfere with religious practices unless religion is of personal importance to them. In addition, Siev et al. (2011) investigated the relationship of scrupulosity with negative and positive conceptions of God in scrupulous participants. Severity of scrupulosity in these participants was positively related to negative concept of God, but was unrelated to positive description of God. A number of religiosity-OCD studies also included obsessive compulsive (OC) cognitions/beliefs in their model. OC cognitions/beliefs are dysfunctional beliefs that are thought to play fundamental roles in the aetiology and maintenance of OCS (Tolin, Worhunsky & Maltby, 2006).

For example, Sica et al. (2002) examined the relationship of religiousness with OC cognitions and OC symptoms in three Italian groups: high degree religiosity group ($n = 45$), medium degree religiosity group ($n = 47$) and low degree religiosity group ($n = 64$). Catholic Italian nuns were chosen to represent the high degree religiosity group, Catholic associates to represent the medium degree religiosity group, and college students to represent the low religiosity group. Participants with high and medium degrees of religiosity were found to have higher levels of OC cognitions/beliefs and obsessionality than low degree religiosity participants. Hence religiosity was regarded as a factor that was potentially linked to OC cognition/beliefs and symptoms (Sica et al., 2002).

Likewise Abramowitz et al. (2004) examined the relationship of Protestant religiosity with OC beliefs and symptoms. They found that highly religious participants reported more severe contamination fears and washing rituals than less religious Protestants and nonbelievers. They also held stronger beliefs about the importance, need to control, and responsibility for their thoughts than non-believers. Although Abramowitz and his colleagues found a relationship between strength of religiosity and OCD phenomenon, they did not regard religiosity as a causal factor for the disorder. Rather, they considered the possibility of pre-existing cognitive biases that cause patients with OCD to affiliate more strongly with their religion. Likewise, childhood experience was also regarded as one potential variable that could account for the relationship between religiosity and OC related phenomena (Abramowitz et al., 2004).

OC Prevalence, OC Beliefs and OCS Contents across Religions

More recent studies have examined religiosity-OC phenomena across different religions and religious denominations. The results obtained further validated the instrumental function of religions' central themes on OC prevalence, OC beliefs and/or OCS contents. Siev and Cohen (2007) in their religiosity-OC beliefs study, recruited orthodox Jews,

conservative Jews, reform Jews and Christians in their sample to examine the relationship between religious affiliation and thought action fusion (TAF). Thought action fusion (TAF) was measured using the TAF-scale (Siev & Cohen, 2007). Factor analyses of TAF-scale using data from nonclinical undergraduate and adult community samples, yielded three subscales: moral subscale, likelihood-others subscale, and likelihood-self subscale (Shafran et al., 1996).

The moral subscale assesses the belief that thoughts are morally equivalent to action. Whereas, the two likelihood scales measure the belief that thinking about something makes it more likely to happen, either to others or oneself (Shafran et al., 1996). Results showed no significant differences among the Jewish denominations. The Christian group, however, differed substantially from all the Jewish groups, scoring higher on the TAF-moral subscale and lower on the likelihood-others subscale. Among the Jewish groups, the orthodox group scored highest in these two likelihood subscales. It is noteworthy that while all the Jewish denominations scored almost equal or below the normative group for the overall TAF-Scale, the Christian group scored higher than the TAF-Scale obsessional sample on the moral TAF subscale (Siev & Cohen, 2007).

Siev and Cohen (2007) postulated that Christians scored highly in TAF because Christianity focuses more on belief rather than observance of laws and religious ritualistic practices. In contrast, Jewish samples scored low in TAF and higher in likelihood-others because Judaism emphasizes on the observance of laws and religious rituals rather than belief (Siev & Cohen, 2007). Siev& Cohen (2007), therefore, concluded that the prevalence of obsessive beliefs in groups is determined by the central themes of their religions rather than the level of their religiosity. Hence, it is a group's religious affiliation that determines the prevalence of specific OC beliefs rather than their religiosity level.

Yorulmaz et al. (2009) examined the relationship between religiosity and OC beliefs and symptoms in a Turkish Muslim sample and a Canadian Christian sample. In both samples, they found an association between religiosity and OC beliefs and symptoms. Highly religious participants gave more importance to their thoughts and exerted more efforts to control them. They also showed more fusion of thought and action in the morality domain. Moreover, they experienced more obsessions and compulsions (Yorulmaz et al, 2009). However, importance and control of thought were found to be more strongly endorsed by religious Muslim participants in comparison to their Christian counterparts (Yorulmaz et al, 2009). In addition, OCD symptoms were also higher in Muslims than in Christians. As such, Yorulmaz et al. (2009) concluded that there is a relationship between religiosity and OCD phenomena in both samples. However, this relationship differs in strength because of the different characteristics of religions (Yorulmaz et al., 2009).

Siev, Chambless and Huppert (2010) conducted their study on 96 Catholic, 92 Protestant, and 153 Jewish undergraduate students from the University of Pennsylvania. They examined the religiosity-moral TAF relationship in the three groups and compared their level of moral TAF. They also investigated the potential role of religion (religious affiliation) as a moderator in the relationship between moral TAF and OC symptoms. Results showed that religiosity was related to moral TAF in Catholics and Protestants, but not in Jews. In addition, independent of OC symptoms, Catholics and Protestants reported higher levels of moral TAF than the Jews. The results also demonstrated that moral TAF was related with OC symptoms in Jews, but not in Catholics and Protestants (Siev et al., 2010).

Hence, Siev et al. (2010) concluded that moral TAF may be a marker of psychopathology in Jews, but not in Christians. While moral TAF may be a factor that risks obsessiveness in Jews, they explained it may be more a marker of healthy religious beliefs in Christians. They advocated that moral TAF was not associated with OC symptoms in

Christians as it was the function of Christian doctrinal teachings, which stress the moral importance of thoughts and intentions. On the other hand, moral TAF was associated with OC symptoms in Jews as it was not the function of religious teaching, since the Jewish doctrine focuses on behavioural observance instead (Siev et al., 2010). This implied that moral TAF would be associated with OC symptoms only when it is not a function of religious teachings. The study insinuates that it is the doctrinal teachings of an individual's religion that determine the presence or absence of OC pathology when he/she presents with moral TAF.

Similarly, Gonsalvez, Hains and Stoyles (2010) conducted their study across different denominations. Their sample comprised 46 Catholic, 58 Protestant and 51 non-religious first-year psychology students from a university in New South Wales, Australia. An additional 10 students who identified themselves just as Christians where also included. The aim was to investigate the relationship between religion and OC psychopathology. Both variables were examined in a comprehensive manner. The levels of religion investigated as predictor variables alongside obsessive beliefs were religious affiliation and religiosity; whereas, the levels of OC psychopathology examined as outcome variables were OC symptoms and scrupulosity.

Religiosity was addressed as a multidimensional construct (Gonsalvez et al., 2010). Hence three religiosity dimensions, namely belief in a punishing God, strength of faith and religious application, were simultaneously examined in the study. Results showed significant relationships of OC beliefs with OC symptoms and scrupulosity across all the sample groups, when depression, anxiety and stress were controlled (Gonsalvez et al., 2010). OC psychopathology was also significantly related with levels of religion, but less in strength than with OC beliefs. When OC beliefs were controlled, only the religiosity dimension 'strength of faith' was positively related with scrupulosity, but not with OC symptoms.

Affiliation to Catholicism was associated with higher levels of OC symptoms, but not scrupulosity (Gonsalvez et al., 2010).

Gonsalvez et al. (2010) suggested that the emphasis on sin, hell and punishment in the Catholic doctrine could be a function of a heightened sense of responsibility and perfectionism; hence the high levels of OC symptoms. In this case, they found it more feasible to regard obsessive beliefs and belief in a punishing God which are a function of Catholic teaching as possibly responsible for the association between being Catholic and high OC symptoms (Gonsalvez et al., 2010). The association of being Catholic with high levels of OC symptoms but not scrupulosity was explained in terms of the doctrinal emphasis of the Catholic tradition on rituals which promote higher levels of generic OC symptoms like repeating, checking and doubting rather than specifically affecting religious behaviour (Gonsalvez et al., 2010).

Himle, Taylor and Chatlers (2012) investigated the relationship of obsessive compulsive disorder (OCD) with demographic variables and religious involvement variables. They used samples from the National Survey of American Life (NSAL) which comprised African Americans and black Caribbeans who affiliated to the Baptist and Catholic denominations of Christianity. The religious involvement variables included religious denomination, service attendance, non-organizational religiosity (e.g., prayer, religious media), subjective religiosity, and religious coping. Among the demographic variables, age and education were negatively related with OCD.

Similarly, there was a significant negative relationship between OCD and service attendance from the religious involvement variables (Himle et al, 2012). Contrastingly, OCD was positively related with religious coping (importance of prayer in stressful conditions). In addition, OCD was found to be more prevalent in Catholics than Baptists (Himle et al.,

2012). Besides demonstrating variations in OCD prevalence within the two Christian groups, Himle et al.'s (2012) study was one of the first to attest that religion, as a multidimensional construct, has numerous tenets, some of which may act as an OCD protective factor, while others as OCD risk factors.

Inozu, Clark and Karanci (2012) examined the relationship between religiosity and obsessionality symptoms in 184 Christian and 141 Muslim students from Canadian and Turkish universities and religious schools. OC dysfunctional beliefs and generalized guilt were investigated as mediators in the relationship. While, results showed both increased obsessionality and compulsions in the highly devout Muslim group, they showed only increased obsessionality in the religious Christian group. Hence, only the relationship of obsessionality symptoms and religiosity was validated in the two samples, and OC dysfunctional beliefs and generalized guilt were found to mediate this relationship. Inozu, Clark and Karanci (2012) attributed the higher scores of the religious Muslim group on the compulsions subscales to doctrinal differences in the two religions, where Christianity emphasizes purity of thought, liturgy and intentions, while Islam focuses on the correct performance of religious practices. Findings suggested that the content and form of a patient's OC symptoms may be influenced by the tenets of his/her religion (Inozu, Clark & Karanci, 2012).

Using the same samples in another study, Inozu, Karanci, and Clark (2012) found that the highly religious groups in both samples scored significantly higher than the low religiosity groups on the Penn Inventory of Scrupulosity (PIOS). However, the content and severity of scrupulosity in the two samples differed. Compared to the Canadian Christian students, the Turkish Muslim students scored significantly high on the 'Fear of God' subscale of the PIOS. Such high scores on this subscale were attributed to Islam's emphasis on fearing God, along with hope and trust in Him. These findings, they suggested, indicated that

religious values may contribute to the differences in scrupulosity content and severity. In addition, Inozu, Karanci, and Clark (2012) also found a significant positive relationship between importance and control of thought and scrupulosity (fear of sin) in both the Muslim and Christian samples.

Williams, Lau and Grishan (2013), conducted an experimental study on 33 Christian, 22 Jewish and 30 Atheist/Agnostic first-year psychology students to investigate the mediating role of TAF in the religiosity-OCD phenomena relationship. The responses of the different religious groups were measured after inducing intrusive thoughts. TAF was found to mediate the religiosity-OCD relationship in the Christian group only. A bootstrapping analysis indicated that the mediated religiosity-OCD phenomena relationship was moderated by Christianity. Based on these findings, Williams et al. (2013) concluded that OC symptoms are not associated with religious convictions per se but with TAF, and the likelihood of TAF endorsement is particularly high when Christian beliefs are upheld.

Results of religiosity-OCD studies across religions. So far, results of the religiosity-OC phenomena relationship have been inconsistent for Muslim, Jewish and Christian samples in both single-religion studies and cross-religious studies. In some studies, no significant difference was found between high-religiosity groups and lower-religiosity/atheist groups of the research samples (Hermesh et al., 2003; Tek & Ulug, 2001; Zohar et al. 2005). Whereas, in other studies the high-religiosity groups of the research samples reported higher levels of OC beliefs and symptoms than their lower- religiosity/atheist groups (Abramowitz et al., 2004; Seive & Cohen, 2007; Sica et al., 2002; Yorulmaz et al., 2009).

Muslim samples. In their Muslim sample, Tek and Ulug (2001) found no significant difference between the OC symptoms scores of more religious participants and less religious participants. Hence, there was no sufficient statistical evidence to show a conclusive

relationship between religiosity and OC psychopathology (Tek & Ulug, 2001). Contrastingly, Yorulmaz et al. (2009), Inozu, Clark and Karanci (2012), and Inozu, Karanci and Clark (2012) found a difference in OCD phenomena scores of the highly religious and the less religious Muslims. In Yorulmaz et al.'s (2009) study, highly religious Muslims scored higher on importance of thoughts, moral thought and action fusion and control of thoughts than less religious Muslims. Moreover they experienced more OC symptoms than the less religious Muslims. Hence, there was sufficient statistical evidence to show an association between Muslim religiosity and OC beliefs and symptoms (Yorulmaz et al. 2009). Also, compared to less devout Muslims, highly devout Muslims reported increased OC symptoms (Inozu, Clark & Karanci, 2012), and increased scrupulosity (Inozu, Karanci & Clark, 2012). Hence, the relationship of religiosity with OC symptoms (Inozu, Clark & Karanci, 2012), and scrupulosity (Inozu, Karanci & Clark, 2012) was validated. Moreover OC dysfunctional beliefs were found to mediate the relationship of religiosity with both OC symptoms (Inozu, Clark & Karanci, 2012), and scrupulosity (Inozu, Karanci & Clark, 2012).

Jewish samples. Hermesh et al. (2003) found that the level of religiosity in Jewish patients did not increase with the increase in severity of their OC symptoms. Hence, no connection was found between the intensity of OC pathology and the level of religiosity. Similarly, Zohar et al. (2005), who conducted their study on two samples, found no significant difference in the OC behaviour of more religious and less religious Jewish participants of their first sample. As such religiosity was not validated as a predictor of OC behaviour (Zohar et al., 2005). However, Zohar et al. (2005) found in their second sample that OC behaviour of Jews who became more religious than their parents was significantly higher than those who became less religious. Rather than attributing the higher scores of OC behaviour to high religiosity, Zohar et al. (2005) speculated preceding OC tendencies such as fearfulness and neuroticism in the religious group as responsible, not only for the high OC

behaviour scores, but also for the increase that happened in their religiosity level. Siev and Cohen (2007) and Siev et al. (2010) who examined the relationship of religiosity with OC beliefs and cognitions in Jewish samples also found no relationship between the variables. In Siev and Cohen's (2007) study, no significant differences in the levels of moral TAF and Likelihood among the Jewish denominations which represented different levels of religiosity were found. Hence, no relationship was found between Jewish religiosity and TAF & likelihood-others. In another study by Siev et al. (2010), besides other relationships, religiosity- moral TAF relationship was investigated and religiosity was found not to be related with moral TAF in Jews.

Christian samples. In Sica et al.'s (2002) study, Catholics with high and medium degrees of religiosity had higher levels of obsessive compulsive beliefs and obsessionality than low degree religiosity Catholics. Hence, results indicated that religiosity was a factor that is potentially linked to OC beliefs and symptoms. Nonetheless, Sica et al. (2002) cautioned that a solely negative or exclusively positive influence of religion over cognition and behavior should not be concluded (Sica et al., 2002). Similar to Sica et al.'s (2002) findings, Siev et al. (2010) found that religiosity was related to moral TAF in their Catholic sample. Himle, Taylor and Chatlers (2012), who examined religious involvement (religiosity) as a multidimensional construct in their religiosity-OCD relationship study, found that there was a significant negative relationship between OCD and service attendance from the religious involvement variables. Contrastingly, OCD was positively related with religious coping (importance of prayer in stressful conditions). Himle et al. (2012) attested that religion, as a multidimensional construct, has some tenets which may act as OCD protective factor and others which may act as OCD risk factors.

Abramowitz et al. (2004), on the other hand, conducted their study on Protestants. They found that highly religious Protestants reported more severe contamination fears and

washing rituals than less religious Protestants and nonbelievers. They also held stronger beliefs about the importance, need to control, and responsibility for their thoughts than nonbelievers. In Siev et al.'s (2010) study, religiosity was also found to have a relationship with moral TAF in Protestants. Yorulmaz et al. (2009), Inozu, Clark and Karanci (2012), Inozu, Karanci and Clark (2012), Gonsalvez et al. (2010), and Williams et al. (2013) examined the religiosity-OCD phenomena relationship in Christians generally. Yorulmaz et al. (2009) found highly religious Christians gave more importance to their thoughts, showed more moral fusion of thought and action and exerted more efforts to control their thoughts than less religious Christians (Yorulmaz et al., 2009). Moreover, they experienced more obsessions and compulsions than the less religious Christians (Yorulmaz et al., 2009). Hence, there was sufficient statistical evidence to show an association between religiosity and OC beliefs and symptoms in Christians (Yorulmaz et al., 2009).

Also, compared to less devout Christians, highly devout Christians reported higher levels of scrupulosity (Inozu, Karanci & Clark, 2012), and obsessions (Inozu, Clark & Karanci, 2012). Hence, the relationship of religiosity with both scrupulosity and obsessions was validated. Both relationships were found to be mediated by OC dysfunctional beliefs. Williams et al. (2013) in an experimental study on Christians also found a relationship between religiosity and OCD, which was mediated by moral TAF. Among the three religiosity dimensions namely, belief in a punishing God, strength of faith and religious application in Gonsalvez et al.'s (2010) study, only "strength of faith" was positively related with scrupulosity in both Catholics and Protestants. Hence, the findings indicated that participants with stronger faith experienced more scrupulosity symptoms than participants with weaker faith. No relation, however, was found between any of the three religiosity dimensions and OC symptoms.

The implications of the studies, which showed that OCS severity increased with an increase in religiosity level (Abramowitz et al., 2004; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica et al., 2002; Williams et al., 2013; Yorulmaz et al., 2009; Zohar et al., 2005), on the theoratical and therapeutic approaches for OCD were crucial. While these studies supported the secular theoretical approaches that were adopted by the founders of the four models presented in the first chapter, they also suggested that the use of religious interventions would be, not only inappropriate, but rather problematic in the treatment of OCD. Similarly, the studies which did not show a difference between the groups suggested that religious interventions would have no impact if used in treating OCD, hence dismissing any potential need for applying them, even for patients who suffered from religious OCS.

In an attempt to determine the potential underlying factors for the results obtained, these religiosity-OCD studies on Muslim, Christian and Jewish samples were thoroughly examined in the present research. Particularly, their research frameworks, the approaches they adopted for classifying group participants and the scales used for data collection were examined. Several research gaps, which may have contributed to inaccurate results, were identified in the process. The gaps are presented and discussed below.

Non-inclusion of significant predictors in the models of past religiosity-OCD studies

Other important potential predictors of OCS were not included in the research models of studies which had conducted bivariate or multiple regression analyses to demonstrate the predictive ability and explanatory power of religiosity for OCS (e.g. Gonsalvez et al., 2010; Himle et al., 2012; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012).The non-inclusion of such predictors beside religiosity has led to an insufficient, isolated explanation for OCS variations. Some of the previous studies, which found a relationship between religiosity and OC symptoms, indicated this limitation while suggesting that other factors

could also be responsible for the high scores of their highly religious groups. Personality traits and parenting approach, which play a fundamental part in childhood education experience, were among the potential factors indicated in these studies. For example, Zohar et al. (2005) speculated preceding OC tendencies/traits such as fearfulness and neuroticism in the more religious group as responsible, not only for the high OC behaviour scores found, but also for the increase that happened in their religiosity level. Similarly, Abramowitz et al. (2004) considered childhood experience as a variable that could account for the relationship between religiosity and OC related phenomena.

Pointing to parental approach/style in religious education, Raphael et al. (1996) proposed the experience of rigidity and discipline during such education as the potential OCD predisposing factors in young individuals rather than the experience of religious education per se. (Raphael et al., 1996). Alongside these suggestions, numerous studies have demonstrated an association of specific personality traits and/or their facets with OCD (Frost, Steketee, Cohn &Griess, 1994; Fullana, Mataix-Cols, Trujillo et al., 2004; Fullana, Mataix-Cols, Caseras et al. 2004; Gutiérrez-Zotes, Farnós, Vilella & Labad, 2013; Rees, Anderson & Egan, 2005; Rector, Hood, Richter & Bagby, 2002; Salmanpour & Issazadegan, 2012; Wu, Clark & Watson, 2005). Similarly, the link between parenting factors and OCD has been validated in several studies (Turgeon, O'Connor, Marchand & Freeston, 2002; Vogel, Stiles & Nordahl, 1997; Yoshida, Taga, Matsumoto & Fukui, 2005;). These studies are reviewed in the subsection below.

The association of personality traits with OCS. An array of studies have been conducted to examine the association of personality variables with OC symptoms (Frost et al., 1994; Fullana, Mataix-Cols, Trujillo, et al., 2004; Fullana, Mataix-Cols, Caseras et al. 2004; Gutiérrez-Zotes et al., 2013; Rector et al., 2002; Rees et al., 2005; Salmanpour & Issazadegan, 2012; Wu et al., 2005). For example, Fullana, Mataix-Cols, Trujillo et al.,

(2004) conducted two studies with the aim of examining the relationship between normal personality traits and obsessive-compulsive (OC) phenomena in individuals with subclinical OC problems and patients whose problems met the diagnostic criteria for obsessive-compulsive disorder (OCD). The participants of Study 1 were 25 healthy undergraduates who scored high on the Padua Inventory (PI), hence indicating subclinical OC problems, and 28 healthy undergraduates who scored low on the Padua Inventory (PI), hence indicating no OC problems. All participants of this study were recruited from the University of Barcelona (Fullana, Mataix-Cols, Trujillo et al., 2004). Personality variables in the two participant groups were assessed using of the Spanish version (TEA, 1989) of the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) and the Spanish version of the SPSRQ (Torrubia et al., 2001), while the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989) and the Y-BOCS Symptom Checklist (YBOCS-SC) were administered to assess OCD symptoms severity. First ANOVA was conducted to compare the scores of the two groups (Fullana, Mataix-Cols, Trujillo et al., 2004).

Participants with subclinical OC problems were found to have scored higher than non-OC controls on the Neuroticism, Psychoticism and Sensitivity to Punishment scales, while there were no differences in Extroversion or Sensitivity to Reward between the two groups (Fullana, Mataix-Cols, Trujillo et al., 2004). The results remained the same after controlling for state-anxiety and depression. To determine the relative predictive value of personality factors for OC symptoms, a logistic regression analysis was conducted on the data, with Extroversion, Neuroticism, Psychoticism, Sensitivity to Punishment and Sensitivity to Reward as predictors and OC severity (of both groups) as the dependent variable. Among the five personality factors, Neuroticism was the strongest predictor of high scores on the PI, before and after controlling for state variables (Fullana, Mataix-Cols, Trujillo et al., 2004).

In Study 2 (Fullana, Mataix-Cols, Trujillo et al., 2004), two samples were used; a clinical sample from the Department of Psychiatry of the Bellvitge Hospital in Barcelona, which consisted of 56 patients who met the DSM-PV criteria for OCD, and a sample of 40 healthy individuals from among the non-first degree relatives of the patients and ancillary staff at the Bellvitge Hospital, who lived locally. The measures and statistical methods used in this study were the same as in Study 1. ANOVA results showed that patients with OCD obtained higher scores on Neuroticism, Psychoticism and Sensitivity to Punishment and lower scores on Extroversion than normal controls. The samples did not differ on Sensitivity to Reward. Results of the logistic regression analysis showed that psychoticism was the strongest predictor, among the five personality factors, of OCD diagnosis (Fullana, Mataix-Cols, Trujillo, et al., 2004).

Hence, both the healthy subclinical OC group and the patient with OCD group scored significantly higher than their respective controls on the neuroticism, psychoticism and sensitivity to punishment factors of personality. The patients with OCD group, but not the subclinical OC group, scored lower than their respective controls on the extraversion scale. In Study 1, neuroticism was the strongest predictor of subclinical OC problems while, in Study 2, psychoticism was the strongest predictor of OCD diagnosis (Fullana, Mataix-Cols, Trujillo, et al., 2004). Fullana, Mataix-Cols, Trujillo, et al. (2004) concluded that while subclinical OC participants and patients with OCD shared various personality traits, they were different in their levels of extraversion, neuroticism and psychoticism levels.

Using the 56 patients with OCD of study 2, Fullana, Mataix-Cols, Caseras et al. (2004) conducted another study to investigate the relationship between the hoarding dimension of OCD and normal personality traits. In this study (Fullana, Mataix-Cols, Caseras et al., 2004) also the Spanish version of the Sensitivity to Punishment Sensitivity to Reward Questionnaire (SPSRQ; Torrubia et al., 2001) and the Spanish version (TEA, 1989) of the

Eysenck Personality Questionnaire (EPQ; Eysenck and Eysenck, 1975) were administered to measure personality traits, while the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989) and the Y-BOCS Symptom Checklist (YBOCS-SC) were administered to assess OCD symptoms severity.

A multiple regression analyses indicated a significant positive relationship of sensitivity to punishment, and a significant negative relationship of psychoticism with the hoarding dimension of OCD. None of the other personality variables predicted hoarding. The negative relationship between hoarding symptoms and Psychoticism suggested that behavioral inhibition and harm avoidance are strongly pronounced in hoarders. In other words, OCD hoarders tend to score low on the constructs of novelty seeking or impulsivity which are measured by the Psychoticism scale (Fullana, Mataix-Cols, Caseras et al., 2004).

Salmanpour and Issazadegan (2012) conducted a study on a sample of 484 undergraduate students, who were recruited from Peyam Noor and Azad University of Naqadeh in Iran. The aim of their study was to investigate religious orientations and personality traits as predictors of death obsession. The Death Obsession Scale (DOS, Abdel-khalek as cited in Salmanpour & Issazadegan, 2012) the NEO Five-Factor Inventory (NEO-FFI, Costa & McCrae as cited in Salmanpour & Issazadegan, 2012) and Allport religiosity orientation questionnaire (Allport & Ross as cited in Salmanpour & Issazadegan, 2012) were used to assess death obsessions, personality traits and religious orientation respectively. The predictive ability of personality traits and religious orientation for death obsession was examined using stepwise regression analyses. Results showed a significant positive relationship of neuroticism and negative relationships of extraversion, openness, agreeableness and conscientiousness with death obsession (Salmanpour & Issazadegan, 2012). They also demonstrated a significant positive relationship of extrinsic religiosity and

negative relationship of intrinsic religiosity with death obsessions (Salmanpour & Issazadegan, 2012).

Frost et al. (1994) conducted their study on two samples. Sample 1 consisted of 13 subclinical OC participants and 15 non-compulsive participants, who were social work and engineering graduate students. Whereas, Sample 2 consisted of 21 subclinical OC participants and 23 non-compulsive participants, who were undergraduates enrolled in an introductory psychology course. The aim of the study was to investigate whether the subclinical OC participants were more risk-aversive, perfectionistic and guilt-ridden than the non-compulsives participants. To assess the participants on these traits, the responsibility subscale, the risk taking subscale and the value orthodoxy (moral rigidity) subscale of the Jackson Personality Inventory (JPI, Jackson as cited in Frost et al., 1994) were selected and used. In addition, the Everyday Risk Inventory (ERI, Steketee & Frost as cited in Frost et al., 1994), the Multidimensional Perfection Scale (MPS, Frost et al., 1990 as cited in Frost et al., 1994) and, the Problematic Situations Questionnaire (PSQ, Klass as cited in Frost et al., 1994) were used. The Perceived Criticism Scale (PCS, Hooley, Orley & Teasdale as cited in Frost et al., 1994) and the Parental Bonding Instrument (PBI, Parker, Tupling & Brown as cited in Frost et al., 1994) were also used to measure the participants' perceptions of their parents' criticism level as well astheir overprotection and caring levels.

One-tailed t-tests were conducted to compare the scores of the non-compulsive participants and the subclinical OC participants of the two samples (Frost et al., 1994). As predicted, subclinical OC participants in both samples were less risk-taking than their non-compulsive counterparts, as they scored significantly lower on both the ERI and the risk taking subscale of JPI. Subclinical OC participants in both samples also were more perfectionistic and had more guilt than their non-compulsive counterparts, as they scored significantly higher on the MPS and PSQ. Contrastingly, the two groups did not differ on the

JPI responsibility scale in both samples. Also, the two groups did not differ significantly on the value orthodoxy subscales of the JPI and the PCS in Sample 2, but only in sample 1. In sample 2, the subclinical OC participants scored significantly higher than non-compulsives on the JPI Value Orthodoxy Scale and the mother's scale of PCS. Moreover, subclinical OC participants in both samples scored significantly higher than non-compulsives on thePBI overprotection subscale, hence demonstrating that overprotection distinguished the parents of subclinical OC individuals from those of non-compulsive individuals.

Gutiérrez-Zotes et al. (2013) conducted a study on a sample of 137 women, with no psychiatric history, who had given birth between December 2003 and October 2004 in the Department of Obstetrics and Gynaecology at Hospital Saint Joan in Reus, Spain. The aim of the study was to examine personality characteristics as a predictor of postpartum thoughts of harming one's infant. Such thoughts are very similar to OCD symptoms in their ego-dystonic, intrusive and time-consuming nature. Postpartum thoughts of harming one's infant were assessed with a semi-structured interview, while personality characteristics were assessed with a validated Spanish version of the Eysenck Personality Questionnaire (EPQ-R), which is widely used to assess neuroticism, psychoticism and extraversion. Logistic regression analyses were conducted to investigate the relationship between personality characteristics and postpartum thoughts of infant harm, after controlling depressive symptoms, postpartum stressful life events and age. Out of 137 women, 18 (13%) women reported thoughts of infant harm during the postpartum period. The scores of these women were significantly higher than the scores of the women without intrusive thoughts on the psychoticism scale of EPQ-R, but not on the neuroticism and extraversion scales. These results were consistent with the results of Fullana, Mataix-Cols, Trujillo, et al. (2004) study, which demonstrated the predictive utility of psychoticism for OCD diagnosis.

Rees et al. (2005) conducted their study on 60 psychiatric outpatients who were recruited through the Stress Anxiety Research and Treatment (StART) Clinic at the School of Psychology, Curtin University, Western Australia. Twenty one of the recruited outpatients had a primary diagnosis of OCD and 39 a primary diagnosis of anxiety and depression without OCD. The aim of the study was to compare the two groups on the actions facet, which corresponds with the construct of risk-aversion/harm-avoidance, in the Five Factor Model (FFM) of personality. Therefore, the Revised NEO personality inventory (NEO PI-R; Costa and McCrae as cited in Rees et al., 2005)) was used for personality assessment. The NEO personality inventory consists of five domains namely: Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness.Each domain is made up of six discrete scales that measure its facet traits. Analysis of variance (ANOVA) was conducted to compare the mean scores of the two groups (Rees et al., 2005). As predicted, the OCD group scored significantly lower on the actions facet of the openness domain than the non-OCD group. They also scored significantly lower on both competence and self-discipline facets of the conscientiousness domain than their non-OCD counterparts. Hence, the results of their study supported the unique relationship of OCD with the construct of risk-aversion/ harm-avoidance. In other words, the results demonstrated that patients with OCD have lower opinions of their abilities than anxious or depressive patients and experience greater difficulty in performing tasks that they may wish to perform.

Rector et al. (2002) conducted their study on 196 psychiatric outpatients who were referrals to either the Anxiety Disorders Clinic or the Depression Clinic. Both clinics are part of the Mood and Anxiety Program (MAP) in the Centre for Addiction and Mental Health. MAP is a tertiary care facility affiliated to the Department of Psychiatry in the University of Toronto. Out of the 196 outpatients, 98 had a primary diagnosis of OCD and 98 had a primary diagnosis of major depression (MDD). The first aim of the study was to assess the

domains and facets of the five factor model (FFM) in patients diagnosed with OCD. The second was to examine whether their personality configuration was different from that of MDD patients and, the third was to compare the distribution of personality traits in both groups, while controlling for depression severity. To assess FFM personality domains and facets in the two groups, the revised NEO personality inventory (NEO PI-R; Costa & McCrae as cited in Rector et al., 2002) was used. Five discrete multivariate analysis of variance (MANOVA) tests were conducted for the facets of the five domains. To assess the differences between the two groups' trait facet, and determine the multivariate significance at the domain level, a two-tailed alpha set was conducted.

Results demonstrated that patients with OCD scored significantly higher than MDD patients on the NEO PI-R extraversion, agreeableness and conscientiousness domains, while MDD patients scored significantly higher than patients with OCD on the neuroticism domain (Rector et al., 2002). Considering the neuroticism facets, patients with OCD scored higher on its anxiety facet, and lower on its depression facet than MDD patients. Furthermore, patients with OCD scored significantly higher than MDD patients on the warmth, activity, and positive emotions facets of the extraversion domain. They also scored significantly higher than their MDD counterparts on the altruistic facet of the agreeableness domain and the competence and order facets of the consciousness domain.

After controlling for depression severity, scores of patients with OCD remained higher than MDD patients on the extraversionand agreeableness domains, but not consciousness. Their scores also remained lower than their MDD counterparts on the neuroticism domain. At the facet level, the scores of patients with OCD remained higher on neuroticism's anxiety facet, and lower on its depression facet than the MDD patients. With regards to the extraversion domain, patients with OCD remained higher than MDD only on

its warmth facet. As before, OCD patient's scores also remained higher than MDD patients on the altruism facet of agreeableness.

Wu et al. (2005) conducted their study on three groups. The first group consisted of 87 psychiatric outpatients, most of whom met the criteria for mood disorders, from the University of Iowa Hospitals and Clinics (UIHC) and St. John's Macomb Hospital; the second group consisted of 52 patients with OCD who were diagnosed with OCD at UIHC and experienced elevated OCD symptomatology and; the third group consisted of 418 psychology undergraduates. One aim of their study was to examine the dimensional trait patterns of the patient with OCD participants and compare them with the patterns of the general outpatient participants and student participants. To measure the personality trait dimensions of the three participant samples, the Big Five Inventory (BFI; John & Srivastava, 1999) and the SNAP-2 were used.

Then, ANOVAs was conducted to compare the data of the three groups (Wu et al., 2005). Results showed that patients with OCD and general outpatients scored significantly higher than students on the Neuroticism and significantly lower than students on the Extraversion and Openness domains of the BFI. The two patient groups, however, differed from each other on the Agreeableness domain. While patients with OCD scored at the normative average on this domain, non-OCD outpatients' scored lower than the normative average on it. Also, on the SNAP-2 traits both patient groups scored higher than students on the Negative Temperament factor and lower than students on the Positive Temperament factor, which is consistent with their BFI findings on the Neuroticism and Extraversion domains. Hence, scores on both measures supports the conclusion that the broad domains of Negative and Positive Affectivity distinguish patients from non-patients (Wu et al. , 2005).

Summary. The reviewed studies were either conducted on one group (Gutiérrez-Zotes et al., 2013; Salmanpour & Issazadegan, 2012), or on more groups (Frost et al., 1994; Fullana, Mataix-Cols, Trujillo, et al., 2004; Fullana, Mataix-Cols, Caseras et al. 2004; Rector et al., 2002; Rees et al., 2005; Wu et al., 2005). For example, there were multiple group studies conducted on patients with OCD groups, healthy control groups and subclinical OCS groups (Fullana, Mataix-Cols, Trujillo, et al., 2004; Fullana, Mataix-Cols, Caseras et al., 2004), or on subclinical OCS groups and non-OC healthy participant groups only (Frost et al., 1994). There were similar studies which were conducted on patients with OCD groups and mood disorders patients groups (Rector et al., 2002; Rees et al., 2005), or on patients with OCD group, mood disorder patient groups and healthy control groups (for e.g. Wu et al., 2005).The aim of examining more than one group was to compare the results of the groups.

With regards to the relationships examined, some studies investigated the relationship of the personality dimension traits with OC symptoms generally (Fullana, Mataix-Cols, Trujillo, et al., 2004; Wu et al., 2005), while other studies examined their relationship with a particular OCS dimension (Fullana, Mataix-Cols, Caseras et al., 2004) or a particular OCS theme (Salmanpour & Issazadegan, 2012; Gutiérrez-Zotes et al., 2013). There were also studies which investigated not only the relationships of personality dimensions, but also the relationships of their facets with OCS generally (Rector et al., 2002). Some studies were also interested in the relationship between selected facets of specific personality domains and OCS in general (Frost et al., 1994; Rees et al., 2005).

Considering the personality measures used, with the exception of one study (Frost et al., 1994) all the reviewed studies administered five factor model (FFM) personality measures, which included the Eysenck Personality Questionnaire (EPQ, the Eysenck Personality Questionnaire Revised (EPQ-R), the NEO Five-Factor Inventory Revised, the NEO personality inventory (NEO PI-R), the revised NEO personality inventory and the Big

Five Inventory (Fullana, Mataix-Cols, Trujillo, et al., 2004; Gutiérrez-Zotes, et al., 2013; Rector et al., 2002; Rees et al., 2005; Salmanpour & Issazadegan, 2012; and Wu et al., 2005).

With regards to data analysis, most studies employed ANOVA (Fullana, Mataix-Cols, Trujillo, et al., 2004; Rees et al., 2005; Wu et al., 2005), MANOVA (Rector et al., 2002) and one or two tailed t-tests (Frost et al., 1994; Rector et al., 2002) as they were only interested in comparing the scores obtained by the groups on the measures administered. Some studies, however, employed logistic regression analyses, as they were also interested in determining the relative predictive value of personality factors for OC symptom severity versus other disorders, in some cases (Fullana, Mataix-Cols, Trujillo, et al., 2004; Gutiérrez-Zotes et al., 2013; Salmanpour & Issazadegan, 2012). So far, only one of the studies, which conducted regression analysis, examined religiosity level along with personality factors as predictors of OCS (Salmanpour & Issazadegan, 2012). It is important to note, that this was the only OCS-personality study which was conducted on eastern participants.

The association of parenting styles with OCS. Several studies were also conducted to examine the association of parental bonding styles with OC symptoms. For example, Yoshida, Taga, Matsumoto and Fukui (2005) conducted their study on four groups. A patients with OCD group, a depressive patients with severe obsessive traits group, a depressive patients with mild obsessive traits group and a healthy volunteers group. Each of the four groups consisted of 50 participants. The depressive patients were divided into severe and mild groups based on scores they obtained on the Mausdley Obsessional-Compulsive Inventory (MOCI).

The OCD group participants were outpatients who attended the Department of Neuropsychiatry, Kyoto Prefectural University of Medicine and the Department of Psychiatry, Kyoto Second Red Cross Hospital (Yoshida et al. 2005). The depression group

participants were also outpatients who attended the Department of Psychiatry, Kyoto First Red Cross Hospital in addition to the University and hospital attended by OCD outpatients. The control group participants were healthy volunteers who attended the Complete Medical Check-Up Department, Kyoto Second Red Cross Hospital. The aim of the study was to compare the parental rearing attitudes of the four groups. Therefore, the Parental Bonding Instrument (PBI; Parker et al., 1979), which measures recollections of parental rearing practices, was administered for collecting data. The maternal care, maternal protection, paternal care and paternal protection scores on PBI were analyzed using the Tukey multiple comparative test.

Results showed no significant difference in the paternal care scores of the severe OC traits depression group, the mild OC traits depression group and the OCD group. However, all the three groups scored significantly lower than the healthy control group on paternal care. Moreover, the scores of severe OC traits depression group and the OCD group on paternal protection were significantly higher than those of the mild OC traits depression group and the control groups. Furthermore, the severe OC traits depression group scored significantly lower than the control group on maternal care. The scores of the other groups did not differ significantly. Also, the scores of the severe OC traits depression group and OCD groups were significantly higher than the control group on maternal protection. The score of the mild OC traits depression group were also relatively higher than the control group's on it.

Alonso et al. (2004) compared the results of 40 OCD outpatients from the OCD Clinic of Bellvitge University Hospital (Barcelona, Spain) and 40 matched healthy controls from local community residents on perceived parental child-rearing practices. The EMBU (Egna Minnenav Barndoms Uppfostran or Own Memories of Parental Rearing Experiences in Childhood; Arrindell and Van der Ende, 1984) was used to assess the rearing practices of the participants' parents, as were remembered. The translated version of EMBU used consists of

three dimensions: rejection, emotional warmth and overprotection which are determined for both parents independently. Differences between the OCD and control groups on these dimensions for both parents as well as each parent were investigated with one-way analyses of variance (ANOVAs). The value of certain parental child-rearing patterns in predicting the presence of specific OCS dimensions was also examined with stepwise multiple regression analyses. Furthermore, the correlations of perceived parental child-rearing patterns with OCD symptoms severity were examined with Pearson correlation coefficients.

ANOVA results showed that patients with OCD scored higher than controls on perceived paternal rejection. The scores of both groups on emotional warmth were not different. When parents were considered jointly, no difference was found between the two groups on all the EMBU dimensions. Results of the multiple linear regression analyses revealed a strong negative partial relationship between perceived parental emotional warmth and the hoarding dimension of OCD. No significant relationship was found between the other OCD symptom dimensions and perceived parental child-rearing patterns. Also, the Pearson correlation coefficients did not indicate significant correlations between perceived parental traits patterns and OCD severity.

Myhr, Sookman, Pinard. (2004) conducted their study on 36 OCD out-patients referrals at the Obsessive-Compulsive Disorder Clinic of the McGill University Health Centre; 16 unipolar depression or dysthymia out-patients referrals at the same centre and; 26 healthy controls recruited from a sample of general hospital employees. The recollections of early parental interactions by each groups' participants were assessed using the Parental Bonding Instrument (PBI; Parker et al. as cited in Yoshida et al. 2005). Group differences on PBI dimensions of care and protection for each parent were assessed with two-way univariate ANOVAs. Results showed a higher score for OCD outpatients than depressed outpatients on maternal care. The scores of the two outpatient groups' on maternal care were not

significantly different from the control group's maternal care score which took an intermediate position between the two outpatient groups' scores. Compared to the OCD group and control group, the depressed group had the lowest care scores for both parents.The father's score on this dimension, however, was not significantly low. Protection scores for both parents did not differ significantly in the three groups (Yoshida et al. 2005).

Turgeon, O'Connor, Marchand and Freeston (2002) conducted their study on 43 patients with OCD, 38 PDA (patients with panic disorder with agoraphobia) and 120 healthy controls. While the OCD and PDA were out-patients seeking treatment at clinics specialized in anxiety disorders, the healthy controls were residence of a large metropolitan area. The aim of this study was to compare the three groups' recalled parental behaviours, which was assessed using the PBI and the EMBU. The PBI consists of Care and Overprotection scales, while the EMBU comprises of the rejection, emotional warmth and overprotection factors.

Multivariate analyses of variance (MANOVAs) were performed to compare recollections of parental practices in the OCD group and PDA group (Turgeon et al., 2002). Results showed no differences between the two groups. The two patient groups, however, scored higher than the healthy control on the PBI overprotection scale for both parents. Hence, Turgeon et al. (2002) concluded that parental overprotection in child rearing may be a potential risk factor in the development of both OCD and PDA.

Wilcox et al. (2008) examined the association between parenting factors and a lifetime DSM-IV diagnosis of OCD in approximately 1200 adults with OCD, from 465 families, whose data were obtained from the OCD Family Study (Nestadt et al. as cited in Wilcox et al, 2008) and its extension, the OCD Collaborative Genetics Study (OCGS). In the OCD Family Study, participants were recruited from five OCD specialty clinics in the Baltimore, MD and Washington, DC area, while in OCGS participants were recruited from

six sites in the United States, which have not been specified by Wilcox et al. (2008). The Parental Bonding Instrument (PBI; Parker et al. as cited in Wilcox et al., 2008) was used to assess recollections of parental rearing practices. To examine the relationship between PBI factor dimensions with DSM-IV diagnosis of OCD, Wilcox et al. (2008) conducted a logistic multiple regression analyses. Results indicated a significant positive association of both maternal and paternal overprotection with offspring OCD. On the other hand, paternal care was negatively related with offspring OCD. Wilcox et al. (2008) concluded that parenting factors may contribute to the development of OCD in offspring.

Vogel, Stiles, Nordahl (1997) conducted their study on 26 OCD outpatients, 34 major depressive disorder (MDD) outpatients, and 41 healthy controls (HC). Most OCD and MDD patients were recruited from a general psychiatric out-patient clinic. The HC group were residents of the local community. The study's aim was to compare the three groups' parental bonding experiences. Accordingly, theParental Bonding Inventory (PBI), which consists of the paternal care, maternal care, paternal overprotection and maternal overprotection subscales, was administered for the groups. Three-group analyses of variance (ANOVAs) were conducted with each of the PBI subscales as outcomevariables. Three of four PBI subscales were found to be significantly different in the three groups (Vogel et al., 1997).

MDD Patients scored significantly lower on parental care and significantly higher on maternal overprotection than HC (Vogel et al., 1997).. Paternal overprotection was the subscale on which the three groups did not differ. Scores of patients with OCD on all four PBI subscales fell at an intermediate position between MDD patients' scores and HC scores. In addition to ANOVA, a series of separate hierarchical multiple regression analyses were conducted to determine the relationships of OCD and MDD diagnostic presence with each of the PBI subscales. MDD diagnostic presence was found to be negatively related with parental care and positively related with parental overprotection. OCD diagnostic presence, however,

was not associated with abnormal patterns of parental bonding on the PBI. Such results of patients with OCD were not significantly different from the results of HC on parental bonding (Vogel et al., 1997).

Summary.   With the exception of one study (Wilcox et al., 2008) in all of the reviewed studies, patient with OCD groups were compared with other groups on parental rearing attitudes (Alonso et al., 2004; Myhr et al., 2004; Turgeon et al., 2002; Vogel et al., 1997; Yoshida et al., 2005). While most of the studies compared patients with OCD with MDD patients and healthy controls (Alonso et al., 2004; Myhr et al., 2004; Vogel et al., 1997; Yoshida et al., 2005), only one study compared them with PDA patients and healthy controls (Turgeon et al., 2002). Most studies administered the Parental Bonding Inventory (PBI) only to assess recollections of parental rearing practices (Myhr et al., 2004; Vogel et al., 1997; Yoshida et al., 2005). Turgeon et al. (2002), however, used both PBI and EMBU to assess perceived parental rearing experiences. Alonso et al. (2004), on the other hand, used only the EMBU. None of the studies used the Parental Authority Questionnaire (PAQ; Buri, 1991) to examine the relationship of parental authority styles (permissive, authoritarian and authoritative) with OCS/D.

A number of statistical methods were performed to compare the mean scores obtained by the different groups on different parenting dimensions (for both mother & father), and their predictive value for OCD diagnostic presence. For example, in some studies, analyses of variance (ANOVAs) were conducted with multiple regression analyses (Alonso et al., 2004; Vogel et al., 1997), or without it (Myhr et al., 2004). Wilcox et al., 2008 conducted multiple regression analyses only. While Turgeonet al. (2002) conducted multivariate analyses of variance (MANOVAs) only, Yoshida et al. (2005) simply performed the Tukey multiple comparative test. None of the reviewed studies which conducted multiple regression analysis, examined religiosity level and personality factors along with parenting dimensions as

predictors of OCS(Alonso et al., 2004; Myhr et al., 2004; Turgeon et al., 2002; Vogel et al., 1997; Wilcox et al., 2008; Yoshida et al., 2005).

The association of specific personality and parenting variable dimensions with clinical or subclinical OCS were demonstrated in most of the studies reviewed above. Links of the two variable dimensions with OCS, however, were examined discretely in separate studies. So far, the links of personality and parenting variables with OCS have not been examined simultaneously in a single study. Moreover, only one personality-OCD study (Salmanpour & Issazadegan, 2012) examined religiosity as a predictor of OCD with personality. None of the other personality-OCD studies or parenting-OCD studies examined the link of religiosity with OCD simultaneously. Hence, so far, personality traits, parenting styles and religiosity level have not been examined as predictors of OCS simultaneously in a single study, thus validating the need to include personality and parenting variables as predictors in the research models of religiosity-OCS.

Their absence from past religiosity-OCD research models may have yielded results which explained OCS variations insufficiently. Therefore, in the current study, a multivariate religiosity-OCD model has been developed in which both personality traits and parenting styles were included as potential predictors of religious and non-religious OCS alongside religiosity level, and obsessive beliefs was added as a potential mediator. The aim was to examine the predictive ability of religiosity level for religious and non-religious OCS variations in the presence of other potential predictors, parenting style and personality traits. Then, to compare the explanatory powers of the predictors which showed a significant relationship/s with religious and non-religious OCS and subsequently to examine obsessive beliefs (OB) as a mediator in the significant relationship/s found.

In past personality-OCD and parenting-OCD studies that employed regression analyses, potential mediators like obsessive beliefs have also not been examined in the association between the predictor variables and OCS. Furthermore, the separate links of parenting or personality factors with religious and non-religious OCS remained unexamined, since OCS was generically examined in previous studies. Therefore, in the present multivariate religiosity-OCS study, the relationships of religiosity level, as well as personality traits and parenting styles with OCS will be analysed in greater depth. It is important to note that the present study is interested in examining parental authority styles (permissive, authoritarian & authoritative) as a predictor of religious and non-religious OCS rather than parental bonding style (care & overprotection) or parental rearing style (rejection, emotional warmth and overprotection), which have been examined in past studies. As mentioned earlier, none of the past studies examined the link between parental authority styles (permissive, authoritarian & authoritative) with OCD. Therefore, examining the relationship between the dimensions of parental authority (permissive, authoritarian & authoritative) and religious and non-religious OCS, in this study, was an explorative investigation.

Unequal exposure of the high-religiosity and low-religiosity/atheist groups to OCD themes

The participants of high-religiosity and low-religiosity/atheist groups in past studies were not "*equally exposed*" to contents identified as OCD themes because of the dissimilar approaches taken while selecting/classifying them. While past researchers ensured that all participants of their highly-religious groups met the religiousness criteria of being exposed to (i.e were recieving or had recieved teachings/instructions on) contents like prayers, morality, blasphemy etc., which were also identified as OCD themes, they did not ensure that all participants of their low-religiosity groups were exposed to (i.e were recieving or had recieved teachings/instructions on) any non-religious contents identified as OCD themes, for

example, contamination/germs and diseases (Abramowitz et al., 2004; Gonsalvez et al., 2010; Hermesh et al., 2003; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Seive & Cohen, 2007; Sica, et al., 2002;Tek & Ulug, 2001; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar et al., 2005). The approaches adopted in previous studies for selecting/classifying participants for the high religiosity and low religiosity/atheist groups are reviewed below.

Selection/classification of participants for high-religiosity and low-religiosity/atheist groups. To examine the relationship between religiosity and OC phenomena, participants in many past studies were commonly categorized as highly religious or less religious on the basis of global aspects such as occupation, religious denomination, religious status or more specific aspects of religiosity such as strength of affiliation, strength of faith, observance of religious values and practices, etc. (Abramowitz et al., 2004; Hermesh, et al., 2003; Seive & Cohen, 2007; Sica, et al., 2002; Tek & Ulug, 2001; Yorulmaz, et al., 2009; Zohar, et al., 2005). For example, Sica et al. (2002) chose three groups with different occupations in order to have three religiosity levels across their Italian Catholic sample. Nuns were selected to represent high level religiosity because their job is to exemplify religious devotion. Individuals enrolled in well-known Catholic associations were selected to represent medium level religiosity because they were well-founded in religious habits and practices and regularly attended church activities. As reported on a religiosity scale, they spent most of their free time in religious activities such as praying, religious oratories and catechisms and assisting priests in routine activities of the church. College students who were assumed to be not at all interested in religious practices were e selected to represent low level religiosity. As described on a scale, their manners were just a bit or not at all influenced by religious principles. Moreover, they spent not more than two hours a week

in religious activities and did not attend religious activities such as oratory, church activities, Catholic schools, Catholic associations and seminary regularly (Sica et al., 2002).

Siev and Cohen (2007) conducted their study on Jewish and Christian participants. Their Jewish participants were classified into three religiosity groups, which were: Orthodox Jewish, Conservative Jewish and Reform Jewish (Siev & Cohen, 2007). Their Christian participants, however, were not classified into religiosity groups. They consisted of individuals from traditionally conservative and liberal sects. Catholics were also included. Similarly, Zohar et al. (2005) categorized their Jewish participants as secular, traditional, orthodox or ultra-orthodox using a four-category global indicator.

On the other hand, Abramowitz et al. (2004), firstly classified participants into agnostics/atheists and protestants using a religious affiliation scale. Next, they further classified their Protestant participants into highly religious Protestants and moderately religious Protestants on the basis of their responses to another scale that consisted of three religiosity related items. The first item was on the strength of religious affiliation. The second was on the strength of religious beliefs, and the third was on the strength of agreement with the teachings of their religion. In order to have homogenous groups, only participants who gave consistent answers to the three items were included. For the highly religious group, only participants who responded 5 (*very strong*) for each item were selected, whereas, for the moderately religious group only those who responded 3 (*somewhat strong*) on the three were chosen (Abramowitz et al., 2004).

Likewise, Tek and Ulug (2001) classified their Muslim participants into religiosity groups on the basis of a religiosity scale. They developed the Religious Practices Index (RPI) which addressed the strength of religious affiliation and level of religious activity. The RPI consisted of four religiosity level indicators which were; (1) no religious affiliation except by

culture, no religious activity, (2) Specific religious affiliation with limited religious activity, (3) significant religious activity, but religious rules do not dictate all areas of daily life, and (4) very religious. *Use of alcohol* was included as an anchor to disqualify an individual from the rating of *very religious*. This anchor was not used to disqualify individuals from the other three categories, as alcoholic beverages are readily available in Turkey, despite their prohibition by Islam and are consumed occasionally by some Muslims (Tek & Ulug, 2001).

Hermesh et al. (2003) classified their Jewish participants into religiosity groups using the Jewish Religiosity Questionnaire scales and the Relscale. Both instruments were developed by Ben-Meir and Kedem (1979). Participants were also classified on the basis of a global rating scale of religiosity. The Jewish Religiosity Questionnaire scales consist of items covering faith and behavioral aspect of religiosity. Whereas, the Relscale consists of 23 items which cover six religiosity domains namely, faith, dynamics of connection to religion, religious education at home, type of schooling, reference group and, ritualistic behavior (Hermesh et al., 2003).

Similarly, Yorulmaz et al. (2009) designed the Religiousness Screening Questionnaire (RSQ) to classify their Muslim Turkish and Christian Canadian participants into religiosity levels. The RSQ was a self-report instrument which consisted of one open-ended item on religious affiliation and seven items on degree of personal religiousness and religious commitment such as degree of involvement in religion, religious activities, impact of religious principles on life, etc. Participants responded to these items on a five-point Likert scale, where the response options ranged from *none* to *very much/daily*. Hence both global and specific scales were used for classification of participants (Yorulmaz et al., 2009).

Siev et al. (2010) classified their Catholic, Protestant and Jewish participants into religiosity levels on the basis of their responses on 6 items. The items addressed their' level

of religiosity, level of spirituality, extent of practicing religious requirements, level of believing in the teachings of religion, importance of religion for their identity and, importance of religion for others to understand them. Each item was rated on a 5-point scale. Using the same items, Siev et al, (2011) determined the religiosity levels of OCD scrupulous and non-scrupulous patients who were from diverse religious backgrounds.

Inozu, Karanci and Clark (2012) and Inozu, Clark and Karanci (2012) in two studies classified their Turkish Muslim and Canadian Christian participants into highly religious and low religious groups on the basis of one out of five items on religious behaviour and beliefs. The item was, "How important are religious beliefs in guiding your decisions and behaviours?" It was rated on a 5-point rating scale (i.e., 1 = *not at all*, 2 = *somewhat*, 3 = *important*, 4 = *very important*, 5 = *extremely important*). Participants who indicated that religion was *not at all important* in guiding their decisions and behaviours (i.e., rating = 1) composed the low-religious group, while participants who rated religious beliefs as *very important* (4) or *extremely important* (5) in guiding their decisions and behaviour constituted the high-religious group.

Gonsalvez et al. (2010) classified their Protestant and Catholic participants into high and low religiosity groups on the basis of their responses on the Santa Clara Strength of Religious Faith Questionnaire (SCSRFQ; Plante & Boccaccini as cited in Gonsalvez et al., 2010). The SCSORFQ is a self-report valid measure of religious faith. It consists of 10-items which gage faith regardless of one's religious orientations. Examples of the items are; "I look to my faith as providing meaning and purpose in my life" and, "my religious faith is extremely important to me". The items are rated on a 4-point scale ranging from *strongly disagree* to *strongly agree*. A higher total score indicates greater level of religiosity. Williams et al. (2013) also used the Santa Clara Strength of Religious Faith Questionnaire (SCSRFQ; Plante & Boccaccini as cited in Williams et al., 2013) to classify their Christian (Protestant &

Catholic) and Jewish participants into high and low religiosity groups. Besides this questionnaire, their participants also completed three additional questions which were, "What is your religious background?"; "On average, how many hours/week are you involved in religious activities"; and "Please provide examples of your involvement".

Hence, in these studies individuals who belonged to occupations or denominations socially considered as less religious, or those who had no religious affiliation or had a religious affiliation but scored low on its various domains were, regardless of their pursuits, classified as low religiosity or atheist participants. In contrast, individuals who belonged to occupations or denominations socially accepted as religious, or those who were affiliated to a particular religion and scored high on items addressing its various domains, were classified as high religiosity participants. It is important to note that none of the studies have classified and recruited university students who are pursuing a degree in religion as their high-religiosity participants. Given the potential diversity of pursuits in low religiosity/atheist groups, exposure of all their participants to contents identified as non-religious OCD themes (e.g. disease, contamination etc.) was uncertain. In contrast, the exposure of all participants in high religiosity groups to contents identified as religious OCD themes (e.g. prayers, morality, etc.) was certain; given that being religious was a common pursuit. Hence, the unequal exposure of the two groups to contents identified as OCD themes.

The exposure of all high-religiosity group participants to subjects identified as religious OCD themes may have been the reason for them, in studies which showed a difference between the groups, to have a significantly higher mean score on OCS scales as compared to their non-religious counterparts, whose exposure to subjects identified as OCD themes was indefinite. In the present study, the relationship of religiosity level with religious and non-religious OCS was examined using two low-religiosity groups and two high-religiosity groups; one Christian and the other Muslim. The participants of all the four groups

were university students. Three groups were equally exposed to (i.e were equally recieving teachings/instructions on) subjects identified as OCD themes while one is not. The exposed groups were the high-religiosity Christian group, the high-religiosity Muslim group and one of the low-religiosity groups. To ensure that all students in the three groups were formally exposed to (i.e. formally receiving teachings/instructions on) subjects identified as OCD themes, they were all selected from programs that exposed them to (i.e. provided teachings/instructions on) such OCD themes. While participants for the low-religiosity group were recruited from medical degree programs/schools, participants for the high-religiosity groups (Muslim & Christian) were selected from religious studies degree programs and a church. Besides being the first to adopt this rigorous participant selection approach, the present study was also the first to recruit university students from religious studies degree programs for their high-religiosity groups.

Rare use of scales designed for measuring religious OCS

Despite the presentation of a wide variety of religious OCS across cultures (Abramowitz et al., 2004; Greenberg, 1984; Greenberg & Shefler, 2002; Karadag et al., 2006; Mahgoub & Abdel-Hafeiz, 1991; Okasha et al., 1994), few studies have used scales specifically designed to measure religious OCS along with the standard OCD scales (Gonsalvez et al., 2010; Siev et al., 2011; Inozu, Karanci & Clark, 2012). The scales used to measure religious and non-religious OCS in past religiosity-OCS/OCD studies are reviewed below.

Scales used to measure religious and non-religious OCS in past studies. Most religiosity-OCD studies, relied solely on standard OCD scales such as the Yale-Brown Obsessive Compulsive Scales (Y-BOCS; Di-Nardo as cited in Hermesh et al., 2003), Yale-Brown Obsessive Compulsive Checklist (Y- BOCC), Padua Inventory (PI; Sanavio, 1988), Obsessive Compulsive Inventory-Revised (OCI-R; Foa et al., 2002) and Maudsley's

Obsessive-Compulsive Inventory (MOCI; Hodgeson and Rachman, 1977), to measure both religious and non-religious OC symptoms in their religiosity groups (Abramowitz et al., 2004; Hermesh, et al., 2003; Sica, et al., 2002; Siev et al., 2010; Tek & Ulag, 2002; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar, et al., 2005). For example, Sica and colleagues (2002) relied on the Padua Inventory (PI; Sanavio, 1988) to assess OC symptoms in Catholics with high religiosity level, medium religiosity level and low religiosity level. The PI is a self-report instrument assessing four factors, namely impaired mental control, checking, contamination, urges and worries (Abramowitz et al., 2004; Sica et al., 2002). Similarly, Yorulmaz and colleagues (2009) measured OCD symptoms in Muslim and Christian groups with different religiosity levels using only the Padua Inventory-Washington State University Revision (PI-WSUR; Burns, Formea, Koertge & Sternberger, 1995) which evaluates the five factors of checking, compulsions, contamination obsessions, washing compulsions, dressing/grooming compulsions and obsessions involving harming the self or others. Likewise, Zohar and colleagues (2005) depended mainly on the Maudsley Obsessive Compulsive Inventory (MOCI; Hodgeson and Rachman, 1977) to measure OC behaviour in secular, traditional, orthodox or ultra-orthodox Jewish groups. The MOCI is a self-report inventory which evaluates four OC factors namely checking, cleaning, doubt and slowness. To complement the MOCI, they also used the Obsessive Thought Checklist (OTQ) for their groups (Yorulmaz et al., 2009; Zohar et al., 2005).

Hermesh et al. (2003) relied on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS; Di-Nardo as cited in Hermesh et al., 2003) to assess obsessive compulsive symptomatology in the Jewish religiosity groups of their study. However, for the religious content of the symptomatology, they added an item to the scale which was: "the religiosity of the central obsession during the previous last month". Tek and Ulug (2001) also used the Y-BOCS with the Yale-Brown Obsessive Compulsive Checklist (Y-BOCC) and the MOCI for

examining OC symptoms in four Muslim religiosity groups. Contamination obsessions and/or cleaning, checking and counting compulsions related to religious rituals of the participants were rated on the Y-BOCC's corresponding class rather than as religious obsessions (Hermesh et al., 2003; Tek & Ulug; 2001). Himle et al. (2012) relied solely on the Composite International Diagnostic Interview short-form (CIDI-SF), which is an obsessive-compulsive disorder diagnostic module (Kessler, Andrews, Mroczek, Ustun, & Witchen as cited in Himle et al., 2012) to diagnose their Catholic and Baptist participants. The CIDI-SF is a short form version of the World Mental Health Composite International Diagnostic Interview [WMH-CIDI] (Kessler & Ustan as cited in Himle et al., 2012), which is a structured diagnostic interview.

Abramowitz et al. (2004), measured OCD symptoms in highly religious Protestants, moderately religious Protestants and atheist/agnostic participants using only the Obsessive Compulsive Inventory-Revised (OCI-R; Foa et al., 2002). The OCI-R assesses OCD symptoms across the six factors of washing, checking/doubting, obsessing, mental neutralization, ordering and hoarding. Also, Williams et al. (2013) and Siev et al. (2010) used the OCI-R to measure OCD symptoms of their Catholic, Protestant, Jewish and Atheist participants. The OCI-R was also used by Siev et al. (2011), but with the Penn Inventory of Scrupulosity (PIOS) to measure both OCD and scrupulosity in patients with OCD who were from diverse religious backgrounds. Gonsalvez et al. (2010) also used the PIOS with PI-WSUR to measure both scrupulosity and OC symptoms of their Catholic, Protestant and Non-religious participants. Similarly, Inozu, Karanci and Clark (2012) used the PIOS with the Clark Beck Obsessive Compulsive Inventory (CBOCI) to measure both scrupulosity and OC symptoms of their Turkish Muslim and Canadian Christian participants. Although in another study, they used only the Clark Beck Obsessive Compulsive Inventory (CBOCI).

With the exception of the Y-BOCS and Y-BOCC, it is evident that none of the OCD standard scales included subscales to specifically measure religious OC symptoms as an independent factor. Although the Y-BOCS and Y-BOCC contain subscales to measure religious OC symptoms, their subscales are not sufficiently equipped with items that would adequately capture the wide variety of religious OC symptoms identified in OCD phenomenological studies (Abramowitz et al., 2004; Greenberg, 1984; Greenberg & Shefler, 2002; Karadag et al., 2006; Mahgoub & Abdel-Hafeiz, 1991; Okasha et al., 1994). This is evident from the fact that while some researchers had to add items to address their subjects' religious OC symptoms, others had to rate rituals related religious OC symptoms of their participants on Y-BOCC's corresponding classes such as those assessing contamination obsessions, and cleaning, checking and counting compulsions (Hermesh et al., 2003; Tek & Ulug; 2001).

Apparently, there are limitations in using standard OCD scales for measuring religious OC symptoms. Despite these limitations, only three studies have used the Penn Inventory of Scrupulosity (PIOS) along with the standard OCD scales to measure religious OCS in their Christian and Muslim groups (Gonsalvez et al., 2010; Inozu, Karanci & Clark, 2012; Siev et al., 2011). It is important to note that the PIOS was designed to tap mainly the religious symptoms of Christians. It is not equipped with sufficient items specifically on religious rituals to adequately capture the religious OCS identified by OCD phenomenological studies in Muslims. Therefore, while the PIOS may have been adequate for the Christian groups it may have been inadequate for the Muslim groups.

The lack of religious OCS related scales or items may have been the reason for religious groups to score low, akin to their non-religious counterparts in studies which did not show a difference between the groups, given that much of their potentially experienced religious OCS may have remained untapped. Therefore, in the current study, both generic

OCD scales and scales specifically designed to measure religious OCS have been used for the high-religiosity and low-religiosity groups to adequately measure their non-religious and religious OCS. The Penn Inventory of Scrupulosity (PIOS) was used to quantify religious OCS of Christians in the high-religiosity Christian group (HRCG) and Christians/non-Christians (Muslims excluded) in the low-religiosity groups (LRGs). For Muslims in the high-religiosity Muslim group (HRMG) and the low-religiosity groups (LRGs), however, another scale that could adequately capture their religious OCS was developed and used. The scale has 28 items and is named the Religious Obsessive-Compulsive Symptoms Scale (ROCSS). No study in the reviewed literature, thus far, was identified as using a scale which adequately measures the religious OCS prevalent in Muslims. On the other hand, non-religious OCS was measured in the four sample groups using the Obsessive Compulsive Inventory (OCI).

Cultural diversity in Muslim vs. Christian cross-religious studies

Cultural diversity in Muslim vs. Christian cross-religious studies was not controlled for in past studies. Therefore the higher OCS prevalence found in Muslims as compared to Christians in these studies could have been due the differences in their cultures rather than the dissimilarities in their religions. Past Muslim vs. Christian cross-religious studies are reviewed below.

Muslims vs. Christian's cross-religious studies. Only three cross religious studies were identified from the literature review as being conducted on Muslim and Christian samples (Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Yorulmaz et al., 2009) demonstrating the need for conducting another cross-religious study on the two religious groups, hence the present study. Inozu, Karanci and Clark (2012) compared OC symptoms and scrupulosity in Muslims and Christians and found that compulsions accompanied obsessions in religious Muslims, but not religious Christians. They attributed

such variance to the emphasized themes of their respective religions. Also, the higher scores of Muslims on the fear of God subscale in PIOS were attributed to Islam's emphasis on fearing God. Likewise, Yorulmaz et al. (2009) attributed the different scores of religious Muslims and Christians in OC symptoms, importance of thought and control of thought to the different characteristics of their religions. The variations of OC prevalence, OC beliefs and OCS contents of the two samples in the three studies were attributed to the differences in the central themes of their religions.

A review of the two samples, however, revealed that they were different, not only in faith, but also in culture. The Muslims were from Turkey while the Christians were from Canada. Therefore, the results of the two religious groups on OC prevalence, OC beliefs and OCS contents may have been confounded by regional and cultural diversity. None of the Christians *versus* Muslims studies, so far identified for review, have controlled cultural diversity in their samples by recruiting Christian and Muslim participants from the same cultural or regional background. Therefore, in the present study, the participants of the four groups were sampled from regions with similar cultures to minimize confounding due to cultural/regional diversity. The aim of the present study was to investigate whether the OC prevalence in the Muslim group would be similar to its prevalence in the Christian group, when cultural diversity between the groups is controlled.

Conceptual Framework

The conceptual framework of the present study is a modification of Inozu, Clark and Karanci's (2012) model. It includes personality traits and parental authority styles as predictors along with religiosity level. The outcome variables are religious and non-religious obsessive compulsive symptoms (OCS). Like Inozu, Clark and Karanci's (2012) model, this framework also has two religiosity levels: the high-religiosity level and the low-religiosity level. Personality traits and parental authority styles have different dimensions, rather than

levels. Personality includes the extrovert, neurotic and psychotic dimensions. Likewise, parental authority styles includes the authoritative, permissive and authoritarian dimensions. The potential mediator in the significant relationship of any predictor/s with the outcome variables is obsessive beliefs. The conceptual framework of this study is illustrated in Figure 1.

PREDICTOR VARIABLES   MEDIATING VARIABLE   OUTCOME VARIABLE

RELIGIOSITY LEVEL
High-Religiosity
Low-Religiosity

PERSONALITY TRAIT
Extravert
Neurotic
Psychotic

OBSESSIVE
BELIEFS

OBSESSIVE-COMPULSIVE
SYMPTOMS
Religious OCS
Non-Religious OCS

PARENTAL AUTHORITY
STYLE
Authoritative
Permissive
Authoritarian
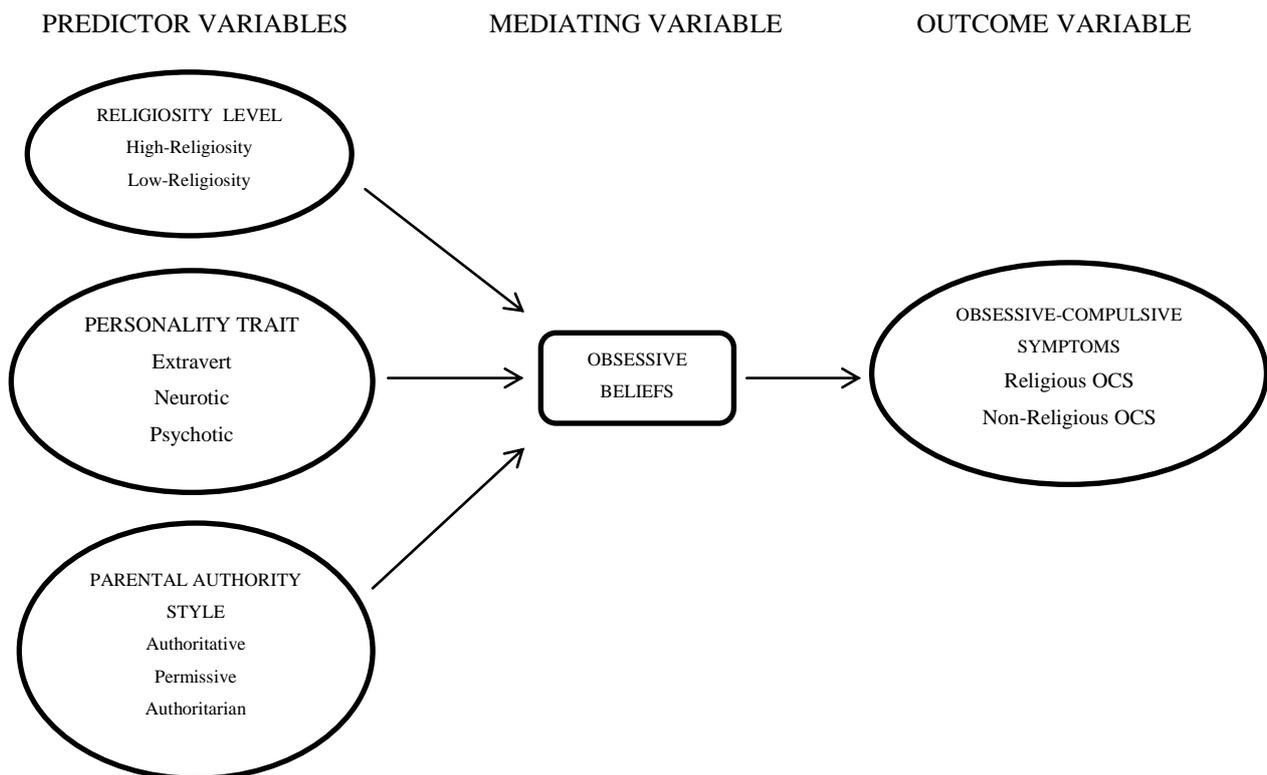
Figure 1 : Conceptual Framework

Conceptual and Operational Definitions of Variables

The model of the present study includes six variables. The conceptual and operational definitions of each variable are presented below:

Non-religious obsessive-compulsive symptoms (NROCS). Conceptually, obsessive-compulsive symptoms are defined as unwanted intrusive ideas, images and impulses which recur to the person persistently and behaviors that a person feels compelled to perform repeatedly according to specific rules or in ritualistic, stereotyped manner, with the aim of

neutralizing or reducing the anxiety resulting from the unpleasant unwanted intrusions (APA, 2013). For the purpose of this study obsessive-compulsive symptoms has been operationally defined as persistent occurrence of unwanted doubts and obsessions and repeated compulsive urges to wash, check, order, hoard and/or neutralize while performing non-religious practices such as turning off the lights, washing the hands, setting the table, etc. The Obsessive-Compulsive Inventory-Revised (OCI-R) will be used to measure the severity of obsessive compulsive symptoms.

Religious obsessive-compulsive symptoms (ROCS). Religious OCS are conceptually defined as being excessively concerned about religious teachings and principles and observing them far beyond what is practiced in the individual's religious reference group. It is also defined as intrusive and repetitive thoughts about sacrilege, blasphemy and sin (Tek & Ulug, 2002). Considering the differences between Muslims and Christians in religious symptom content, two operational definitions have been developed. One definition is for religious OCS found in Muslims and the other is for religious OCS found in Christians. Religious OCS in Muslims are persistent occurrence of unwanted doubts and obsessions and repeated compulsive urges to check/wash during or after performing the religious practices of purification (*taharah*), ablution (wudhu'), prayer (*salah*), purification bathing (*ghusl at-taharah*).

Persistent occurrences of unwanted doubts/images of being immoral or blasphemous are also subjects of religious OCS. The self-tailored Religious Obsessive Compulsive Symptoms scale (ROCSS) will be used to gauge religious OCS in Muslims. Religious OCS in Christians is persistent occurrence of unwanted doubts, images or impulses of being immoral or blasphemous and excessive fear of sinning and of God. The Penn Inventory of Scrupulosity (PIOS) will be used to measure religious OCS in Christians.

Religiosity level. Conceptually, religiosity level in Christians was defined on the basis of church membership and the frequency of church attendance, private prayer, bible reading, and devotional intensity to Christianity (Mookherjee, 1993). On the other hand, religiosity level in Muslims was conceptually defined as the degree of empirical and theoretical commitment to the fundamentals of Islam by following *Allah's* orders, avoiding bad acts, performing worship and protecting others rights (Al-Goaib, 2003). For the purpose of the current research, religiosity level is operationally defined as the frequency of performing prayers privately and in congregation, fasting, reading the Quran/Bible and reciting du'as/graces, helping and serving others without expecting a reward from them, forgiving others, repenting and asking *Allah*/God for forgiveness, reading religious literature, watching and listening to religious programs and trying to apply religious beliefs in all dealings of life. The Religiosity Commitment Scale (RCS) will be used to measure religiosity level.

Personality. Conceptually, personality is defined as the differences between individuals in their characteristics and their patterns of feeling, thinking and behaving. The study of personality is interested in (a) understanding a particular personality characteristic of an individual, such as irritability, sociability etc. and (b) understanding how the numerous parts of an individual combine to make a whole (APA, 2015). Operationally, personality is defined in terms of the dominant trait (extravert, neurotic or psychotic). Hence, there is the extravert trait personality, the neurotic trait personality and the psychotic trait personality. In the present study, personality traits of the participants will be measured using the short-form revised Eysenck Personality Questionnaire (EPQR-S) to identify the personality type (Eysenck, Eysenck & Barrett, 1985).

Parenting styles. Conceptually defined, parenting styles refers to "a constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parent's behaviors are expressed" (Darling & Steinberg,

1993. p. 488). Operationally, parental authority styles refer to any of the three parental behavior prototypes: The permissive parental behavior which is relatively warm, non-demanding and non-controlling; the authoritarian parental behaviors which demands unquestioning obedience and attempts to control the child's behavior using disciplining or punitive approaches; and the authoritative parental behavior which is firm yet flexible (Buri, 1991). The Parental Authority Questionnaire (PAQ; Buri, 1991) will be used to measure parental authority styles.

Obsessive-Compulsive (OC) Beliefs. OC beliefs are conceptually defined as the dysfunctional beliefs that are thought to play fundamental roles in the etiology and maintenance of obsessive compulsive symptoms (Tolin et al., 2006). Operationally, OC beliefs are defined as the maladaptive cognitions related to the domains of responsibility and threat estimation, perfectionism and tolerance to uncertainty, and importance and control of thought that play an important part in the development and maintenance of obsessive compulsive symptoms (Tolin et al., 2006). Obsessive-compulsive beliefs will be measured using the Obsessive Beliefs Questionnaire-44 (OBQ-44).

The Research Hypotheses

H₁ There will be a significant positive relationship between religiosity level and religious OCS in the high-religiosity exposed Christian group and high-religiosity exposed Muslim group, but no significant relationship between religiosity level and religious OCS in the low-religiosity exposed group and low-religiosity non-exposed group.

H₂ There will be a significant relationship between parental authority styles and religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group.

H₃ There will be a significant relationship between personality traits and religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group

H₄ There will be a significant positive relationship between religiosity level and non-religious OCS in the high-religiosity exposed Christian group and high-religiosity exposed Muslim group, but no significant relationship between religiosity level and non-religious OCS in the low-religiosity exposed group and low-religiosity non-exposed group.

H₅ There will be a significant relationship between parental authority styles and non-religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group.

H₆ There will be a significant relationship between personality traits and non-religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group.

Chapter 3

Methods Applied in the Study

This chapter is divided into seven sections. The first section explains the research design of the current study. The second section discusses about the research population and the research sample. The third and fourth sections deal with the sampling design and sample size respectively. Section five presents the demographic characteristics of the participants, while sections six and seven discuss about the scales used in the research instrument and the procedure used for data collection.

Research Design

The present study adopted the non-experimental quantitative method with the aim of determining whether, and to what degree, relationships exist between obsessive compulsive symptoms (OCS) as an outcome variable and the three predictor variables of religiosity level, personality traits and parental authority styles in the high-religiosity Christian group, the high-religiosity Muslim group, and the exposed and non-exposed low-religiosity groups of the research sample. Specifically, multiple regression analyses were conducted to investigate the relationships between religious and non-religious OCS as outcome variables and the three predictor variables namely, religiosity level, personality traits and parental authority styles.

Population and Sample

Since the goal of the present study was to investigate the relations of religiosity level, personality traits and parental authority styles with religious and non-religious OCS severity in young adults who are residing in South-East Asia, the population for this study was South-East Asian young adults. This region was specifically targeted because: (a) few religiosity-OCD studies have been conducted on its population, and (b) its population comprises of diverse religious groups, hence facilitating for the present cross-religious study. Individuals

residing in other regions of the world, South-East Asian children and older adults were not included in the survey sample. To achieve the aim of examining religiosity level as a predictor for OCS in a mostly South-East Asian young adult sample, individuals with both high-religiosity and low-religiosity levels from the South-East Asian young adult population were included in the research sample. The high-religiosity individuals belonged to the Muslim and Christian faiths and the low-religiosity individuals were of diverse religions/ideologies.

Sampling Design

Not every high-religiosity Christian, high-religiosity Muslim and low-religiosity young adult in the research population was offered the opportunity of being selected for inclusion in the sample groups. Only high-religiosity Christians, high-religiosity Muslims and low-religiosity individuals with specific pursuits were targeted for inclusion. Hence, in this study, the purposive, non-probability sampling method was used (Sekaran, 2003). As mentioned earlier, the aim was to ensure that both the high-religiosity Muslim and Christian participant groups and one of the two low-religiosity participant groups were equally exposed to subjects identified as OCD themes. In the present thesis "exposed participants" referred to individuals who were receiving teachings/instructions on topics which were found to be the symptom themes of many patients with OCD.

The individuals targeted for inclusion in the high-religiosity Muslim and Christian groups, were Muslim and Christian students who were pursuing a university degree in religious studies. The sample frame for the targeted Christian students included a Christian University in Indonesia, and a church in Malaysia, while the sample frame for the Muslim students was the International Islamic University Malaysia. Initially, the aim of the researcher was to recruit the Christian participants from religious institutions/universities in Malaysia. However, the available Christian religious institutions were very reluctant to grant permission

for sampling. Therefore, the Christian participants for the present study were recruited from an Indonesian Christian university and a church in Malaysia. Among other countries, Indonesia was specifically chosen because of its close cultural resemblance with Malaysia, given that both countries fall in the same region, constitute similar racial demographics, share similar religious faiths, and speak the same language etc. There were a number of past religiosity-OCS/OCD studies that sampled their Muslim and Christian groups from countries with extensively diverse cultures, thus possibly confounding cultural differences with religious differences. For example, in the studies of Yorulmaz et al. (2009), Inozu, Clark and Karanci (2012), and Inozu, Karanci and Clark (2012) the Muslim participants were sampled from Turkey, while the Christian participants were sampled from Canada.

On the other hand, the individuals targeted for the low-religiosity exposed group, were students of diverse religions/ideologies who were pursuing a degree in medicine, whereas those targeted for the low-religiosity non-exposed group were also students of mixed religions/ideologies but were pursuing a degrees in information computer and technology (ICT). The sample frames for the former low-religiosity group were the University of Malaya and the International Medical University Malaysia, while the sample frame for the latter low-religiosity group was the Multimedia University in Malaysia.

With this sampling approach, exposure bias in participant classification was minimized by maximizing homogeneity of pursuits in participants of three groups (high-religiosity Christian group, high-religiosity Muslim group & low-religiosity exposed group). All participants in the high-religiosity Christian and Muslim groups were religiously exposed to subjects identified as OCD themes (e.g., blasphemy, immorality, prayers, etc.). Similarly, all participants in one low-religiosity group were medically exposed to subjects identified as OCD themes (e.g. dirt, disease, contamination, etc.). Among the religiously exposed Muslim and Christian students, only those who scored above 2.50 on the religious commitment scale were selected for the study, while among the medically exposed students, only those who

scored below 2.50 on the religious commitment scale were chosen for participation. Similarly, only the non-exposed ICT students who scored below 2.50 on the religious commitment scale were recruited for the study. The author chose 2.50 as a cut-off point because 2.50 is the mean in the four points Likert scale of the religious commitment scale. The religious commitment scale will be discussed later in this chapter.

Inclusion and Exclusion Criteria

After presenting the population and sample of this study and its sampling design above, the more precise inclusion criteria for the research sample would be: South-East Asian young adults who were of different religions and religiosity levels, and were pursuing a university degree. The high-religiosity young adults being Muslim and Christian students who were pursuing a degree in religious studies, while the low-religiosity young adults being students of diverse religions/ideologies who were pursuing degrees in medicine and ICT. Accordingly, the exclusion criteria for the research sample would be: young adults residing in regions other than South-East Asia, South-East Asian children, South-East Asian older adults and South-East Asian young adults who were not pursuing a university degree in religious studies, medicine or ICT.

Sample Size

Initially, 123 religiously exposed Muslim students, 114 religiously exposed Christian students, 118 medically exposed low-religiosity students, and 98 non-exposed ICT low-religiosity students volunteered to participate in the study. The survey was completed by 120 out of 123 religiously exposed Muslim students, 96 out of 114 religiously exposed Christian students, 104 out of 118 medically exposed low-religiosity students, and 74 out of 98 non-exposed ICT low-religiosity students. Three from the 120 religiously exposed Muslim participants, and 8 from the 96 religiously exposed Christian participants were excluded from

the study, as they scored below 2.50 on the religious commitment scale. Also, 15 from the 104 medically exposed low-religiosity participants, and 24 from the 74 non-exposed ICT low-religiosity participants were excluded from the study, as they scored 2.50 and above on the religious commitment scale.

Hence the final sample comprised 344 participants after exclusions. One hundred and seventeen (34%) of the participants were high-religiosity exposed Muslims, 88 (26%) were high-religiosity exposed Christians, 89 (26%) were low-religiosity exposed individuals, and 50 (14%) were low-religiosity non-exposed individuals. This last group was the smallest because many of the participants did not complete the survey. In most cases, they did not complete the religious OCS section of the survey, indicating their difficulty in reporting religious OCS or the absence of religious OCS. The pie chart of the sample composition is illustrated below in Figure 2.
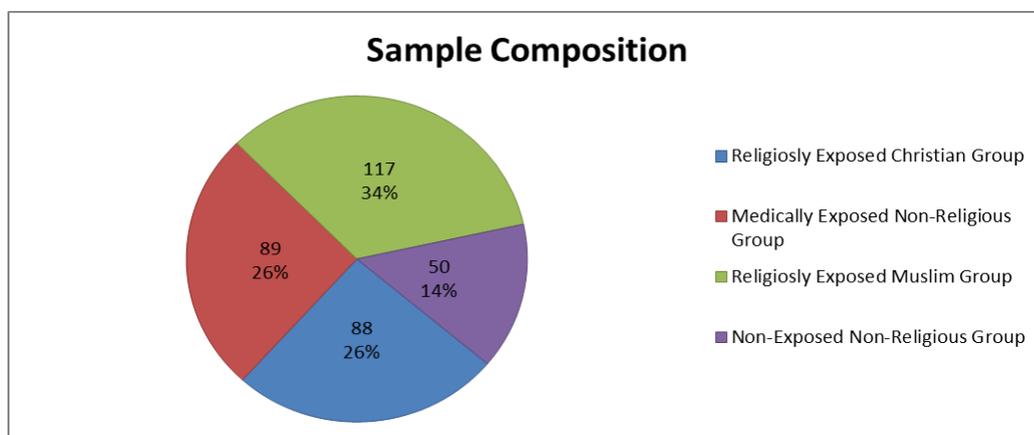
Figure 2: Pie chart of the sample composition

It is necessary to consider the size of the research sample to minimize the potential random error in the sampling process (Burton, 2000). The ideal sample size has been determined on the basis of several factors. Hu and Bentler (1999) as well as Hair, Tatham, Anderson & Black (1998) regarded a sample size that ranges from 200-400 as ideal for

multivariate technique studies. Hair et al. (1998) determined the sample size in a multivariate study on the basis of the number of predictors. They set the general rule of a minimum 15-20 observations per predictor.

In the present study, the sample size ($n = 344$) falls within the ideal sample size range (200-400) determined by Hu and Bentler (1999) and Hair et al. (1998). Moreover, if we consider the four groups of interest; high-religiosity exposed Christian group ($n = 88$), high-religiosity exposed Muslim group ($n = 117$), low-religiosity exposed group ($n = 89$), and low-religiosity non-exposed group ($n = 50$) separately, then based on Hair et al.'s (1998) general rule of a minimum 15 to 20 observations per predictor, the number of observations in each group satisfies the minimum requirement (45-60 observations) for its three predictors.

Participants

Participants included both, male and female, Malaysian and non-Malaysian university students between the ages of 20 and 30 years. They belonged to the Christian and Muslim faiths as well as other ideologies, and were classified into high-religiosity and low-religiosity groups on the basis of their mean score on the religious commitment scale. The high-religiosity groups comprised Muslim and Christian participants who were exposed to subjects identified as religious OCD themes. The low-religiosity groups comprised participants of diverse ideologies who were either exposed or not exposed to subjects identified as non-religious OCD themes. The participants were sampled from four universities and one church in Malaysia and, one Indonesian university.

Demographic characteristics of high-religiosity exposed Muslim participants. Data of the high-religiosity exposed Muslim group was collected from undergraduate and postgraduate students who were majoring in Islamic Revealed Knowledge at the International Islamic University Malaysia. Eighty (68.4%) of the students were undergraduate degree students, 28 (23.9%) were master degree students and 9 (7.7%) were doctoral degree

students. Among the eighty undergraduate degree students, 26 (22.2%) were first year students, 10 (8.5%) were second year students and 43 (36.8%) were fourth year students. In total, the high-religiosity exposed Muslim group comprised 117 participants whose mean age was 24.3 years. Forty eight (41%) of the participants were male students and 69 (59%) of the participants were female students. Ninety six (82.1%) of the participants were Malaysians while 21(17.9%) were international students, who were mainly from Indonesia and Thailand. The international students were not excluded from participation because they were also from the South East Asian region and had cultural similarities with Malaysians.

Fifty nine (50.4%) of the participants had attended religious schools for their secondary education, 54 (46.2%) had attended public schools and 4 (3.4%) had attended private schools. Ninety six (82.1%) of the participants reported coming from a religious family background, while 21 (17.9%) of them reported coming from a less-religious family background. Fifteen (12.8%) of the participants reported having family members who suffered from obsessive thoughts, whereas 102 (87.2%) reported not having family members who suffered from the symptoms. The frequency distributions of this group's demographic characteristics are illustrated in Tables 1 and 2.

Table 1

Frequency Distributions of Gender, Program and Nationality ($n = 117$)

		f	%
Gender	Male	48	41.0
	Female	69	59.0
Program	PhD	9	7.7
	Master	28	23.9
	Undergraduate	80	68.4
Year of Study (UG)	Year 1	26	22.2
	Year 2	10	8.5
	Year 3	-	-
	Year 4	43	36.8
Nationality	Malaysian	96	82.1
	International	21	17.9

Table 2

Frequency Distributions of School and Family Background (*n* = 117)

		F	%
Family Background	Public	54	46.2
	Religious	59	50.4
	Private	4	3.4
School Background	Religious	96	82.1
	Non-Religious	21	17.9

Demographic composition of high-religiosity exposed Christian participants.
Data of the high-religiosity exposed Christian group was collected from undergraduate
students who were majoring in Theology and Bible Studies at the Christian University of
Indonesia, and young Christian adults who regularly attended a Church in Malaysia. All
student participants, sampled from the university and the church, were undergraduate
students. Twenty (22.7%) of them were first year students, 13 (14.8%) were second year
students, 33 (37.5%) were third year students and 15 (17%) were fourth year students and,
1(1.1%) was a fifth year student. 6 (6.8) participants did not state their year of study. In total,
the high-religiosity exposed Christian group comprised 88 participants with a mean age 21.6
years. Forty seven (53.4%) of the participants were male students and 40 (45.5%) of the
participants were female students. One participant did not report his/her gender. Thirty seven
(42%) of the participants were Indonesians, 33 (37.5%) were Malaysians, and 18 (20.5%)
were international students, mainly from the neighboring countries of the Philippines and
Singapore. The international students were not excluded from participation because they were
also from the South East Asian region and had cultural similarities with Indonesians and
Malaysians.

Eight (9.1%) of the participants had attended religious schools for their secondary education, 33 (37.5%) had attended public school and 45 (51.1%) had attended private schools. One participant did not state the type of school he/she had attended. Seventy (79.5%) of the participants reported coming from a religious family background, while 18 (20.5%) of them reported coming from a non-religious family background. Seventeen (19.3%) of the participants reported having family members who suffered from obsessive thoughts, whereas 71 (80.7%) reported not having any family members who suffered from such thoughts. The frequency distributions of this group's demographic characteristics are illustrated in Tables 3 and 4.

Table 3

Frequency Distributions of Gender, Program and Nationality ($n = 88$)

		f	%
Gender	Male	47	53.4
	Female	40	45.5
Year of Study	Year 1	20	22.7
	Year 2	13	14.8
	Year 3	33	37.5
	Year 4	15	17.0
	Year 5	1	1.1
Nationality	Malaysian	33	37.5
	Indonesian	37	42.0
	International	18	20.5

Table 4

Frequency Distributions of School and Family Background ($n = 88$)

		f	%
School Background	Public	33	37.5
	Religious	8	9.1
	Private	45	51.1
Family Background	Religious	70	79.5
	Non-Religious	18	20.5

Demographic composition of low-religiosity exposed participants. Data of the low-religiosity exposed group was collected from undergraduate students who were pursuing a degree in medicine at the University of Malaya and the International Medical University Malaysia, a public and private university respectively. Nine (10.1%) of the students were first year students, 23 (25.8%) were second year students, 51 (57.3%) were third year students and, 4 (4.5%) of the participants were fourth year students. Two (2.2%) did not state their year of study. In total, the low-religiosity exposed group comprised 89 participants with a mean age 22.4 years. Forty seven (52.8%) of the participants were male students and 42 (47.2%) of the participants were female students. Eighty six (96.6) of the participants were Malaysians while 3 (3.4) were from the Singapore and middle-eastern countries. The international students were not excluded from participation because their number was negligible and they were also from culturally similar nationalities.

Only, three (3.4%) of the participants had attended for their secondary education religious schools, 51 (57.3%) had attended a public school and 35 (39.3%) had attended private schools. Fifty nine (66.3%) of the participants reported coming from a religious family background, while 29 (32.6%) of them reported coming from a less-religious family background. One participant did not report his family background. Eleven (12.4%) of the participants reported having family members who suffered from obsessive thoughts, whereas 77 (86.5%) reported not having any family members who suffered from such thoughts. One participant did not provide information on this matter. The frequency distributions of this group's demographic characteristics are illustrated in Tables 5 and 6.

Table 5

Frequency Distributions of Gender, Program and Nationality (*n* = 89)

		f	%
Gender	Male	47	52.8
	Female	42	47.2
Year of Study (UG)	Year 1	9	10.1
	Year 2	23	25.8
	Year 3	51	57.3
	Year 4	4	4.5
Nationality	Malaysian	86	96.6
	International	3	3.4

Table 6

Frequency Distributions of School and Family Background (*n* = 89)

		F	%
School Background	Public	51	57.3
	Religious	3	3.4
	Private	35	39.3
Family Background	Religious	59	66.3
	Non-Religious	29	32.6

Demographic composition of low-religiosity non-exposed participants. Data of the low-religiosity non-exposed group was collected from undergraduate students who were pursuing a degree in disciplines other than medicine at the Multimedia University in Malaysia. Fifteen (30%) of the students were first year students, 12 (24%) were second year students, 11 (22.0%) were third year students and, 9 (18%) of the participants were fourth year students. Three (6%) did not state their year of study. In total, the low-religiosity non-exposed group comprised 50 participants with a mean age 22.6 years. Twenty seven (54%) of the participants were male students and 22 (44%) of the participants were female students. One participant did not indicate his/her gender. Twenty seven (54%) of the participants were Malaysians while 23 (46%) were international students. Most of the international students

were from South East Asian countries like Indonesia, Singapore and the Thailand. They were

not excluded because of cultural similarities with Malaysians.

Twenty two (44%) had attended public schools, 24 (48%) had attended private

schools, and two (4%) of the participants had attended religious schools for their secondary

education. One participant did not report his/her school background. Thirty one (62%) of the

participants reported coming from a religious family background, while 19 (38%) of them

reported coming from a non-religious family background. Twelve (24%) of the participants

reported having family members who suffered from obsessive thoughts, whereas 38 (76%)

reported not having any family members who suffered from such thoughts. The frequency

distributions of this group's demographic characteristics are illustrated in Tables 7 and 8.

Table 7

Frequency Distributions of Gender, Program and Nationality (*n*=50)

		f	%
Gender	Male	27	54
	Female	22	44
Year of Study (UG)	Year 1	15	30
	Year 2	12	24
	Year 3	11	22
	Year 4	9	18
Nationality	Malaysian	27	54
	International	23	46

Table 8

Frequency Distributions of School and Family Background (*n* = 50)

		f	%
School Background	Public	22	44
	Religious	2	4
	Private	24	48
Family Background	Religious	31	62
	Non-Religious	19	38

Scales Used in the Research Instrument

Two survey instruments were prepared for the present research, one for all the Muslim participants and the other for all the Christian and non-Christian (Muslims excluded) participants (See Appendix A). The Muslims' instrument was used for the Muslims of the International Islamic University Malaysia, most of who were highly religious. It was also used for the Muslims of the University of Malaya and Multimedia University, most of who were less religious. On the other hand, the Christians/non-Christians' instrument was used for the Christians of the Christian university in Indonesia. Most of them were highly religious. In addition, it was used for the Christians/non-Christians (Muslims excluded) of the International Medical University and Multimedia University, most of who were less religious.

The Muslims' instrument consisted of 174 items, whereas the Christians and non-Christians' instrument consisted of 162 items. The items were related to the variables under study. In addition, each instrument contained six items for demographic data. In both instruments, the Obsessive-Compulsive Inventory-Revised (OCI-R), the Obsessive Beliefs Questionnaire-44 (OBQ-44), the short-form revised Eysenck Personality Questionnaire (EPQR-S), the Parental Authority Questionnaire (PAQ) and the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) were used. The instruments differed only in the scales that measured religious OCS. While the Penn Inventory of Scrupulosity (PIOS) was included in the instrument for Christians and non-Christians (Muslims excluded), the Religious Obsessive Compulsive Symptoms Scale (ROCSS), which was developed by the author, was included in the instrument for Muslims. The PIOS was designed only to address morality and faith related symptoms, which were found to be prevalent among Christians and non-Christians (Siev & Cohen, 2007; Okasha et al., 1994; Zohar et al., 2005). The ROCSS,

on the other hand, was designed to adequately capture rituals related symptoms which were found to be prevalent only among Muslims, along with morality and faith related symptoms.

All Muslims regardless of their religiosity level were required to complete the ROCSS. Likewise, all Christians and participants of other faiths/ideologies, regardless of their religiosity level were required to complete the PIOS. The assumption was that; like the high-religiosity participants, low-religiosity participants may also present with religious symptoms. After a comprehensive review of the published literature, no religiosity-OCS/OCD study that investigates possible religious symptoms in low-religiosity participants was found. All past studies investigated potential religious symptoms in high-religiosity participants only. Most of the scales have been successfully used in previous OCD studies to capture participant information that was required to fulfil the research objectives. In other words, these scales were successfully used in past studies to tap participant information that was needed to answer the research questions.

The Obsessive-Compulsive Inventory-Revised (OCI-R). The OCI-R is an 18-item self-report instrument which was developed and validated by Foa et al. (2002). It is a shortened version of the 42-item Obsessive-Compulsive Inventory (OCI) created by Foa, Kozak, Salkovskis, Coles, and Amir (1998). The OCI-R measures the severity and determines the diagnosis of obsessive-compulsive disorder (OCD). An illustrative example of an item includes the statement, "I repeatedly check doors, windows, drawers, etc." The items are rated on a 5-point Likert scale ranging from 0 (*Not at all*) to 4 (*Extremely*) (Foa et al., 1998; Foa et al. 2002). A study investigating the psychometric properties of OCI-R using a sample of Icelandic student population (Smari, Olason, Eyporsdottir & Frolunde, 2007) showed a high internal consistency for it with a Cronbach's alpha coefficient 0.87. Its items loaded on six factors namely Washing, Checking, Ordering, Obsessing, Hoarding, and Mental Neutralizing with coefficients ranging from 0.5 to 0.86. Furthermore, convergent and divergent validity was supported when correlations between OCI-R and two obsessive-

compulsive symptoms inventories (Maudsley Obsessive Compulsive Inventory MOCI & Padua Inventory-Washington State University Revision PI-WSUR) were compared to the correlation between OCI-R and the Penn State Worry Questionnaire PSWQ (Smari et al., 2007).

Penn Inventory of Scrupulosity (PIOS). The PIOS was developed by Abramowitz et al. (2002) to measure religious OCS. The 19 item self-report scale has two subscales, namely fear of sin (12 items) and fear of God (7 items). The items are rated on a four-point Likert scale ranging from 0 (*never*) to 4 (*constantly*). An illustrative example of items included is "I feel urges to confess sins over and over again" (fear of sin) and "I worry I must act morally at all times or I will be punished (fear of God). Cronbach's alphas for fear of sin and fear of God subscales were .90 and .88 respectively (Abramowitz et al., 2002). The alpha coefficient for the full scale was .93 (Abramowitz et al., 2002). An assessment of the convergent validity of the PIOS showed a significant relationship between it and the MOCI. The strongest relationship (.36) was between the fear of sin subscale of PIOS and the doubting subscale of MOCI. The PIOS total score was also significantly related with the MOCI total score with a coefficient .36. The correlation between PIOS and the discriminant validity measure of Anger Expression Scale (AX) was weak and insignificant (Abramowitz et al., 2002). In the present study, the PIOS was adapted for use by the non-Christian participants as well.

Religious OC Symptoms Scale (ROCSS). The ROCSS is a self-tailored 28 items self-report scale for Muslims. The ROCSS measures the obsessive-compulsive experiences of persistent doubts, repeated checking and repeated washing during or after performing the religious practices of purification (*taharah*), ablution (*wudhu'*), prayer (*salah*) and purification bathing (*ghusl at-taharah*). Items to measure obsessive immoral and blasphemous thoughts were also included. An illustrative example of the items is, "At times I doubt having performed a certain part (*rukn*) of my prayer (*salah*) even though I know I have

performed it". The items are rated on a 5-point Likert scale ranging from 0 (*Never*) to 4 (*Constantly*).

   Pilot Study. A pilot study on 50 International Islamic University Malaysia students was conducted to test the ROCSS's internal reliability and construct validity. Twenty nine of the students were females and 21 were males. There mean age was 22.6 years. The scale was found to have a high internal consistency with a Cronbach alpha coefficient .87. An exploratory factor analysis showed that the items of this scale loaded on nine components with moderate to high coefficients ranging from .51 to .88. Items 21, 22, 23, 24, 25, 26, 27 and 28 loaded on the first component with coefficients ranging from .64 to .84. Items 14, 15, 16, 17, 18 and 19 loaded on the second component with coefficients ranging from .62 to .75. Items 9, 11 and 12 loaded on the third component with coefficients ranging from .67 to .79. Items 10 and 13, 5 and 8, 4 and 7, 1 and 2 loaded on the fourth, fifth, sixth and eighth components respectively. Their coefficients ranged from .51 to .88. Items 3 and 20 loaded on the seventh and ninth components and their coefficients were .85 and .77 respectively. The scale's content validity was evaluated by three experts in the area before use. Based on the feedback from experts, minor adjustments in some of the items' wording and/or their length were done. After the adjustment the scale was reviewed by experts, demonstrating good content validity (See Appendix B).

   Obsessive Beliefs Questionnaire-44 (OBQ-44). The OBQ-44 is a self-report scale which was developed by the Obsessive Compulsive Cognitions Working Group (OCCWG, 2005). It is a shorter version of the OBQ-87 which was created earlier by the same group (1997, 2001). The OBQ-44 gauges dysfunctional beliefs that are considered to play fundamental roles in the aetiology and maintenance of OC symptoms. These beliefs are related to the domains of responsibility/threat estimation, perfectionism/certainty and

importance/control of thoughts (OCCWG, 2005). Items of the OBQ-44 are rated on a seven-point Likert scale ranging from 1 (*disagree very much*) to 7 (*agree very much*). Illustrative examples of items included are: "For me, not preventing harm is as bad as causing harm" (responsibility/ threat estimation), "Having a bad thought is morally no different than doing a bad deed" (importance/control of thoughts) and, "I must be certain of my decisions" (perfectionism/certainty; Frost & Steketee, 2002). A good internal consistency with Cronbach alphas of .93, .93 and .90 for the three domain subscales were reported (Tolin, Worhunsky & Maltby, 2006). An exploratory factor analysis indicated a four-factor solution, two of which represented perfectionism/certainty and importance/control of thoughts. The other two represented responsibility and threat estimation separately. Although the fourth factor consisted predominantly of threat estimation items, it also had items from the other domains. Coefficients of all items loading on the four factors were above 0.5. All factors of the OBQ-44 showed significant positive correlations with OC symptom measures, hence supporting its convergent validity (Myers, Fisher & Wells, 2008).

Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) 1999. The BMMRS was part of the General Social Survey (GSS) 1997-1998 conducted in America. It was designed by Fetzer Institute and the National Institute of Aging (NIA) for use in research relating to health (Fetzer Institute, 1999). It is a 38 items self-report questionnaire with Likert scale formats. The BMMRS measures eleven domains namely, Daily Spiritual Experience, Values / Beliefs, Forgiveness, Private Religious Practices, Religious and Spiritual Coping, Religious Support, Religious/Spiritual History, Commitment, Organizational Religiousness, Religious Preference, Overall Self-Ranking. Previous studies have established high internal reliability for each subscale of the BMMRS, ranging from .71 to .87 (Kendler et al.; Mokuau et al.; Pargament; Pargament et al.; Underwood & Teresi; & Yoon & Lee, as cited by Johnstone, Yoon, Franklin, Schopp, Hinkebein, 2009)

In a test of known-groups validity, most BMMRS measures accurately differentiated participants who were expected to differ based on their self-reported religious descriptions (Harris, Sherritt, Holder, Kulig, Shrier & Knight, 2008). Participants who reported ''having a religion'' had significantly higher scores on most BMMRS measures compared to those reporting ''No religion/Atheist,'' hence construct validity was supported. Construct validity was also established when a moderate but significant positive correlations between BDI-II scores and those BMMRS measures addressing negative R/S experiences were demonstrated (Harris et al., 2008).

In order to maintain a reasonable length for the research instrument in the present study, only the Private Religious Practices subscale (PRPS); one item from the Forgiveness subscale and one item from the Commitment subscale were selected to measure participants' degree of religious commitment. The selected BMMR subscale and items were put together to form the present study's Religious Commitment Scale (RCS). The RCS was included in both the Muslims' instrument and the Christians/non-Christians' instrument. In the Muslims' instrument the items of RCS were adapted to suit Muslims, while in the Christians'/non-Christians' instrument the items of RCS were adapted to suit non-Christians. For example the item "How often do you read the Bible?" was adapted as, "How often do you read the Qur'an?" to suit Muslims, and "How often do you read your Holy/Sacred book?" to suit all non-Christians.

Beside the RCS, an additional three items to measure fundamental fasting and praying practices unique to Muslims were created for Muslim participants. An illustrative example of the created items is, "How often do you complete the fasting of *Ramadan*?" For the purpose of analysis, these items were included in the RCS of the Muslims' instrument. As such, the scale was longer in the Muslims' instrument than it was in the Christian' instrument. While, in the Christians' instrument the RCS constituted 11 items, in the Muslim' instrument it constituted 14 Items.

All item in the RCS were rated on a standardized 4-point Likert scale ranging from 1 (*Never*) to 4 (*Always or almost always*). Pilot studies were conducted on 41 Muslim and 28 Christian university students to test the reliability of the Muslim and Christian versions of this scale. The Cronbach alpha of the RCS for Christians was .86 and that of the RCS for Muslims was an acceptable .61.

The Short-Form Revised Eysenck Personality Questionnaire (EPQR-S). The EPQR-S was designed by Eysenck, Eysenck and Barrett (1985) to assess the personality traits of a person. The 48 item (EPQR-S) has four subscales namely Extraversion, Neuroticism, Psychoticism and Lie scale. Each subscale has 12 items which are answered on a Yes/No response format. Illustrative examples of items included are: "Are you a talkative person?" (Extraversion), "Are you a worrier?" (Neuroticism), "Do you always practice what you preach?" (Lie Scale), and "Do you try not to be rude to people?" (Psychoticism). Eysenck et al. (1985) reported reliabilities of the subscales for men and women separately. The reliabilities of the extraversion, neuroticism, psychoticism and lie subscales for men were .88, .84, .61 and .77, and for women were .84, .80, .61 and .73 respectively (Eysenck, Eysenck & Barrett 1985).

The Parental Authority Questionnaire (PAQ). The Parental Authority Questionnaire is a 30-item multidimensional instrument designed by John R. Buri (1991) to gauge parental authority from the child's point of view. The PAQ has three subscales for measuring prototypes of parental authority. They are the Permissive subscale (10 items), the Authoritarian subscale (10 items) and the Authoritative subscale (10 items). The permissive subscale measures parental behaviour which is relatively warm, non-demanding and non-controlling. The authoritarian subscale measures parental behaviour which demands unquestioning obedience and attempts to control the child's behaviour using disciplining or punitive approaches. The authoritative subscale measures parental behaviour that fall between the two dimensions, like using firm but flexible and rational parental style. The

items are rated at a five-point Likert scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Illustrative examples of the items included are "While I was growing up my mother felt that in a well-run home the children should have their way in the family as often as the parents do" (Permissive), "Even if her children didn't agree with her, my mother felt that it was for our own good if we were forced to conform to what she thought was right" (authoritarian), and "As I was growing up, once family policy had been established, my mother discussed the reasoning behind the policy with the children in the family" (authoritative). A study of the PAQ showed good internal consistency of its subscales with alphas ranging from .74 to .87 (Buri, 1991). It also showed good stability with two week test-retest reliabilities ranging from .77 to .92 (Buri, 1991). An inverse correlation of authoritarianism and a positive correlation of authoritativeness with the respondents' self-esteem showed a fairly good construct validity of the PAQ (Buri, 1991). No relation was found between permissiveness and self-esteem of the respondents (Buri, 1991).

Validity of the Instruments

According to Sekaran (2003), validity tests examine whether an instrument is measuring what it intends to measure. There are four procedures to test the validity of the instrument, namely face validity, content validity, criterion validity, and construct validity (Burton & Mazerolle, 2011). In the present study, the instruments' face validity and content validity were tested. To test the face validity of the instruments, six persons (3 Christians & 3 Muslims) assessed the instruments to see their understanding of the instruments and how long they took to answer all the items. In addition, the content validity of the questionnaires/scales included in the research instrument was evaluated by the research supervisors and two experts in the area. Content validity was conducted to detect any errors or unnecessary questions.

Reliability of the instruments

Since some form of Likert-type-scale was used for items in most of the questionnaires, it is important to test for the reliability of the result (Sekaran, 2003). One of the most commonly used tests is the Cronbach's Alpha coefficient. This test is designed to measure a scale's internal consistency. In other words, it refers to the degree to which the items that make up the scale "hang together" (Pallant, 2002). The closer Cronbach's alpha is to 1, the higher the internal consistency reliability (Sekaran, 2003). Hence, the instrument is generally considered reliable when the alpha value exceeds 0.70 (McMillan & Schumacher, 1984).

Using the data collected from the entire sample of the present study, the reliability of each scale in the instrument was tested. Data from the four sample groups ($n = 344$) were combined for testing the alpha coefficients of Obsessive Compulsive Inventory Revised (OCI-R), Obsessive Beliefs Questionnaire-44 (OBQ-44), the Permissive, Authoritative and Authoritarian subscales of the Parental Authority Questionnaire's (PAQ) and, the Extraversion, Neuroticism and Psychoticism subscales of the short-form revised Eysenck Personality Questionnaire (EPQR-S). The reliability alphas of OCI-R and OBQ-44 were .90 & .93 respectively. The Cronbach alphas of Permissive, Authoritative and Authoritarian subscales of the PAQ were .84, .88 and .87 respectively. Likewise, the Cronbach alphas of the Extraversion, Neuroticism and Psychoticism subscales of the EPQR-S were .71, 72 and .68 respectively.

The Cronbach alphas of the Religious Commitment Scale used for Muslims (RCS2) and the Religious Obsessive Compulsive Scale (ROCSS) were tested using data from the Muslim participants (n=117) only. The coefficients were .84 and .94 respectively. On the other hand, to test the reliability of the Religious Commitment Scale used for Christians and others (RCS1) and the Penn Inventory of Scrupulosity (PIOS) only data from Christian

participants (*n*=88) were used. The Cronbach alphas were .86 and .96. The reliability
coefficients are illustrated in Table 9.

Table 9

Reliability Coefficients of Scales

Scales	Number of Items	Cronbach Alphas
OCI-R	18	0.90
PIOS	19	0.96
ROCSS	28	0.94
OBQ-44	44	0.93
RCS1	11	0.86
RCS2	14	0.84
PAQ(Psive)	20	0.84
PAQ(Autive)	20	0.88
PAQ(Aurian)	20	0.87
EPQR-S(Neutic)	12	0.72
EPQR-S(Exvert)	12	0.71
EPQR-S(Psytic)	12	0.68

Data Collection Procedure

In this study, data was collected using the survey method. According to Burns and
Bush (2000) a survey is a suitable method for collecting data about attitudes and opinions. It
allows for quantitative analysis to be conducted in the testing of inferences and also permits
generalisation of findings (Neuman, 2003). There are several ways of conducting a survey,
including face-to-face interviews, telephones surveys, self-administered surveys and more
recently the internet, i.e. via e-mail and the World Wide Web (Burns & Bush, 2000; Dillman,
1978; Frankfort, Nachmias & Nachmias, 1993; & Neuman, 2003). After taking into
consideration the merits and demerits of each technique, this study adopted the in-person self-
administered questionnaire survey method for three primary reasons. Firstly, it was suitable
for collecting data about attitudes and opinions (Burns & Bush, 2000). Secondly, the self-
administered approach was appropriate for covering a large number of respondent groups and

at diverse locations as intended in this study. Finally, by using the self-administered approach, the researcher can overcome several major constraints such as limitation of time and financial resources, unavailability and inaccessibility of information. The procedural phases for data collection in the present study were as follows:

Phase I. After getting the permission from concerned authorities to recruit participants from the selected universities and a church, the student researcher agreed with them on a date and time to meet the students for announcing about the research. She also provided her email and mobile phone number for interested students to inform about the convenient time for conducting the survey. In addition, the researcher also asked administrative and research assistants to advertise about the research to relevant teachers and students by providing them with information about the research.

Phase II. In order to manage the participants effectively, the researcher met only 5 to 7 of the interested students at a time in classrooms and hostel lounge rooms. On the day of the meeting, the explanatory statement of the research was distributed to the participants and questions for further clarification were entertained. The participants were then given the self-report research instrument which included the Obsessive-Compulsive Inventory-Revised (OCI-R), the Penn Inventory of Scrupulosity (PIOS), the Religious OC Symptoms Scale (ROCSS), the Obsessive Beliefs Questionnaire-44 (OBQ-44), the short-form revised Eysenck Personality Questionnaire (EPQR-S), the Parenting Authority Questionnaire (PAQ) and the Religious Commitment Scale (RCS). One hour was allocated for each participant to complete the research instrument. In completing the questionnaire participants were required to provide information about their age, gender, nationality, degree program, year of study, school background, family background, whether religious or less religious, and family history of OCS for demographic data. To preserve anonymity, the participants placed the completed questionnaires in a box. Return of the questionnaires implied consent. All participants completed the questionnaire in approximately one hour.

This study was a cross-sectional study, as the data was collected from each participant during a single, relatively brief time period (one hour). The second procedural phase was repeated several times for each category (students pursuing a degree in religion and students pursuing a degree in medicine and other disciplines) so as to obtain the required sample size of 200-400 participants and the group sizes that satisfied the minimum requirement of 45 to 60 participant. The data was tabulated, coded and analysed using SPSS version 20 by the doctoral student herself. The process of data collection took nearly 10 months due to a number of difficulties encountered, which were as follows:

a)   Sensitivity of the Research Topic

Particularly gaining access to religiously exposed Christians from Malaysia was extremely difficult. Most of the attempts were unsuccessful. The organizations and institutions contacted for the purpose are stated below:

•   The Bible College of Malaysia.

•   The International Centre for the Alliance of Civilizations, International Islamic University Malaysia

•   Sabah media, Kuala Lumpur, Malaysia.

•   The Parish Ministry of Ecumenical and Interreligious Affairs, Holy Rosary Church, Malaysia.

•   The Christian Students' Society, Monash University Malaysia.

•   The Malaysian Baptist Theological Seminary, Penang, Malaysia.

•   Alpha Omega International College, Petaling Jaya, Malaysia.

b)   Items addressing sensitive & personal aspects in religious practice

Getting permission from authorities and consent from religiously exposed Muslims was not a significant problem, but many participants showed slight discomfort while

responding to the items, especially items of the RCS & ROCS, as they address personal and sensitive aspects of religious practices. Five of the participants withdrew from participation, since all participants were informed earlier that they were allowed to immediately withdraw if they felt uncomfortable and to notify the researcher if they needed psychological assistance for the discomfort. None of the five participants who withdrew required psychological counselling.

c)   Lengthiness of the questionnaire

As reported by the administrative and research assistants of the institutions, many students were reluctant to volunteer for the study, as they were unwilling to give 60 minutes of their time for completing the instruments. The students were familiar with volunteering to complete relatively shorter scales, so they were not motivated to complete a longer scale. There were also students who agreed to participate but didn't complete the instrument properly. Overall, 59 students who begun the questionnaire did not complete it. The return of incomplete questionnaires was most prevalent among the non-exposed ICT low-religiosity students.

Data Testing and Analyses

Firstly, four data sets which were obtained from the high-religiosity exposed Christian group [HRECG], the high-religiosity exposed Muslim group [HREMG], the low-religiosity exposed group [LREG] and, the low-religiosity non-exposed group [LRNEG] were screened. The aim was to ensure that they are suitable and reliable for statistical analysis and inferences. Since this study mainly used the multiple regression analysis, a number of assumptions, among others, were verified through the data screening process for specifying the model correctly. The assumptions were normality, homoscedasticity, equality of variance, linearity, independence of the error terms, and absence of outliers. These assumptions were examined using a number of data screening techniques. Normality was examined using the

skewness and kurtosis tests, the histogram and Normal Q-Q Plot. Absence of outliers was tested using the Box Plot. Linearity and equality of variance were tested using Q-Q Plot, and independence of the error terms, homoscedasticity and homogeneity of variance were verified using the Durbin-Watson statistics.

Secondly, the Pearson product-moment correlation (r) test was conducted to measure the relationships among the two outcome variables [ROCS & NROCS] and the seven predictor variables [RL, Psive, Aurian, Autive, OB, Neutic, Psytic & Exvert] in all the four groups. The statistical association between the variables were measured using the Pearson product-moment correlation (r)   to predict the nature of relationships that would be found between the variables when multiple regression analysis is used. The correlations between the variables were also examined to predict the presence and absence of multi-collinearity among the predictor variables by looking at the coefficient sizes obtained.

Thirdly, a one-way between categories analysis of variance [ANOVA] was conducted to explore the mean differences in the two outcome variables, namely Religious obsessive compulsive symptom (ROCS) and non-religious obsessive compulsive symptom (NROCS) which occur with variations in the participants' group as well as demographic factors of gender, year of study, school type, unwanted disturbing thoughts and religious background.

Fourthly, a series of simultaneous multiple regressions analyses (SMRA) with multicolinearity tests were conducted for testing the research hypotheses in the four groups. The SMRA series sequence conducted to test hypotheses 1, 2, 3 with ROCS as outcome variable and hypothesis 4, 5, 6 with NROCS as outcome variable was the same. Firstly, two simultaneous multiple regression analyses were performed for each group to examine the direct relationships of parental authority styles and personality traits with the outcome variable (ROCS or NROCS). Secondly, in each group, the outcome variable (ROCS or

NROCS) was regressed on religiosity level (RL) along with the parental authority styles and personality traits which showed significant relationship/s in the previous regressions. Obsessive beliefs (OB) variable was then examined as a potential mediator in the significant direct relationships found between the outcome variables (ROCS or NROCS) and the three predictors in each group.

In the present study the multiple regressions technique has been selected for testing the research hypotheses because it is one of the most widely used statistical techniques in social sciences (Lunenburg & Irby, 2008; Mason & Perreault 1991). It is an extension of bivariate regression, where several predictor variables are combined to predict a value for the outcome variable. According to Pallant (2007) it is used when the predictive ability of a set of predictor variables on one continuous outcome variable is to be explored.

Unlike other analysis methods (e.g. multivariate analysis of variance), multiple regression analysis can be used for data in which the predictor variables are correlated with one another and even to an extent with the outcome variable. Moreover, it can show at a glance, changes in quantitative terms and effects that each predictor variable has on the outcome variable. Furthermore, it does not only provide coefficients for the relationships between variables but also for the magnitude of the relationships between them (Mason and Perreault 1991; Lunenburg and Irby, 2008).

Chapter 4
Results of the Study

The results chapter is divided into four sections. The first section presents the findings of the data screening tests, which have verified most of the assumptions. This has facilitated for the model to be used in a multiple regression analysis, the main focus of this study, and to be correctly specified. The second section provides results of the one-way ANOVAs, which have enriched the study showing that, the two outcome variables, religious OCS and non-religious OCS may differ within the four groups with differences in the demographic factors of participants. Section three focuses on the findings of the Pearson Product-Moment Correlation (r) tests. The results in all the four groups have shown small size ($r = .10 - .29$) of the value of correlation coefficient among most of the predictor variables, which confirms the absence of multi-collinearity. The final section, four, dwells on the results of the multiple regression analyses. There are a few interesting pioneering findings from this section that have set a new direction for future research in the area of religiosity-OCS relationship.

Data Screening

As mentioned earlier, the multiple regression analysis (MRA) assumptions of normality, homoscedasticity, equality of variance, linearity, independence of the error terms, and absence of outliers in the four data sets obtained from the four research groups (HRECG, HREMG, LREG & LRNEG) were examined using a number of statistical screening techniques. Normality was examined using the skewness and kurtosis tests, the histogram, and the Normal Q-Q Plot. Absence of outliers was tested using the Box Plot. Linearity and equality of variance were tested using the Q-Q Plot, and independence of the error terms, homoscedasticity and homogeneity of variance were verified using the Durbin-Watson statistics.

These screening procedures examined the individual variables of the four data sets. Each set of data comprised two outcome variables which are; religious OCS and non-religious OCS and, five predictor variables which are; religiosity level, obsessive beliefs and the three PAQ subscales; permissive parental style, authoritative parental style, authoritarian parental style. Meanwhile one predictor variable, personality traits, with its three sub-scales were excluded from these tests as they are categorical data. Overall, the tests showed that all the individual outcome and predictor variables in the four data sets have satisfied the conditions of assumptions mentioned above. Below are the main results of tests for the four data sets individually.

High-religiosity exposed Christian group [HRECG]

Normality. As shown in Table 10 below, a review of skewness for the four variables and the three sub-scales (-.152,-.114, .206, -.184, -.198, -.200, -.287), and kurtosis (-.641, -.584, -.255, -.241, .402, -.554, .352) statistics suggest that normality is a reasonable assumption at the acceptable level.

Table 10

Skewness and Kurtosis Statistics for High-Religiosity Exposed Christian Group [HRECG] Variables

	Variables						
Statistics	**Dependent**		**Independent**				
	ROCS	NROCS	RL(h)	OB	Psive	Aurian	Autive
Mean	2.2806	2.2513	3.0645	4.3897	3.0423	3.1970	3.4898
Std. Error	0.07158	.05910	.03388	.09645	.06901	.05800	.05488
Skewness	-.152	-.114	.206	-.184	-.198	-.200	-.287
Std. Error	.257	.257	.257	.257	.257	.257	.257
Kurtosis	-.641	-.584	-.255	-.241	.402	-.554	.352
Std. Error	.508	.508	.508	.508	.508	.508	.508

Note: Where ROCS=Religious obsessive compulsive symptom, NROCS=non-religious obsessive compulsive symptom, RL(h)=High religiosity level, OB=Obsessive beliefs and [Psive, Aurian and Autive] =Parenting sub-scales where Psive=Permissive, Aurian=Authoritarian and Autive=Authoritative

According to Tabachnick and Fidell (2007), data distribution are better evaluated using graphical methods due to their ability to allow researchers to examine the overall shape of the distribution and to help them determine the data transformation techniques when necessary. Therefore, histograms for all the variables under investigations were also presented, which suggested that normality was reasonable. See Appendices C (i-iv) for detail.

Outliers and Extreme Values. According to Studenmund (2006), an outlier is an observation that lies outside the range of other observations. Checking for outlier is useful for detecting errors in data entry. Therefore boxplots for all the variables under investigations were charted, which suggested relatively normal distributional shapes, with no outliers in all cases, except for the authoritative parenting style, where two outliers were detected and later, removed. Refer to Appendix D (i-iv) for details on the boxplots of the four variables and the three sub-scales.

Linearity. The Normal QQ plot charts observed values against a known distribution, in this case a normal distribution. If our distribution is normal, the plot would have observations distributed closely around the straight line. The QQ plots in all the variables being tested indicated that the assumption of linearity was reasonable with a random display of points clustering around the straight line. The slight exceptions were in the plots of two variables, namely obsessive beliefs (OB) and authoritarian parenting style (Aurian), where the distributions deviated somewhat from normality at the low end. Refer to Appendices E (i-iv) for detail.

High-religiosity exposed Muslim group [HREMG]

Normality. In Table 11 below, the skewness statistics (011, .070, .162, .000,-.200,-.148, .078) for the four variables and the three sub-scales, as well as their kurtosis statistics (-.676, .023,-.855, .487,-.010,-.432, .081) suggest that normality is a reasonable assumption at the acceptable level.

Table 11

Skewness and Kurtosis Statistics for High-Religiosity Exposed Muslim Group [HREMG] Variables

Statistics	Variables						
	Dependent		Independent				
	ROCS	NROCS	RL(h)	OB	Psive	Aurian	Autive
Mean	1.0637	2.0353	3.0916	4.3945	3.0231	3.0611	3.6744
Std. Error	.04615	.05470	.03079	.06556	.05134	.04093	.04170
Skewness	.011	.070	.162	000	-.200	-.148	.078
Std. Error	.224	.224	.224	.224	.224	.224	.224
Kurtosis	-.676	.023	-.855	.487	-.010	-.432	.081
Std. Error	.444	.444	.444	.444	.444	.444	.444

Note: Where ROCS=Religious obsessive compulsive symptom, NROCS=non-religious obsessive compulsive symptom, RL(h)=High religiosity level, OB=Obsessive beliefs and [Psive, Aurian and Autive]=Parenting sub-scales where Psive=Permissive, Aurian=Authoritarian and Autive=Authoritative

Furthermore, the results of the skewness and kurtosis tests are supported by examining the overall shape of the data distribution using the histograms. Histograms of all the variables under investigations suggested that normality was reasonable. See Appendices F (i-iv) for detail.

Outliers and Extreme Values. The box plot was used to investigate all the relevant variables for outliers and extreme values. The results suggested a relatively normal distributional shape, with no outliers in all cases, but NROCS, with one high value outlier (above the mean), Psive, with one low value outlier (below the mean), and OB, with two

outliers; one with high value and the other with low value. The outliers detected were later removed. Refer to Appendices G (i-iv) for details on the box plots for the four variables and the three sub-scales.

Linearity. The Normal QQ plots in all the variables investigated indicated that the assumption of linearity was reasonable with a random display of points clustering around the straight line. The exceptions are in the plots of three variables, namely obsessive beliefs (OB) where the distribution deviated somewhat from normality at the low and high ends, religiosity level (h) in which the deviation was at the lower end and, permissive parenting style (Psive), where the distribution deviated at the high end. Refer to Appendices H (i-iv) for detail.

Low-religiosity exposed group [LREG]

Normality. The statistics of skewness (.197, .004, .109, -.674, -.445, -.574, -.308) for the four variables and the three sub-scales respectively, and their kurtosis statistics (-.255, -.261, -1.058, .891, .839, .977, 1.726) presented in Table 12 below suggest that normality is a reasonable assumption. As shown in Table 12, one of the variables [Psive] was transformed using logarithm to base ten through SPSS software. The variable had shown a reasonable negative skewness (-.581), but a sharp kurtosis (1.794) as shown in Appendix I. Although the kurtosis for Autive (1.726) as shown in the table below is also sharp, transforming the data worsened their skewness. Most studies consider the significance of skewness more than kurtosis for determining normality, therefore Autive was not transformed.

Table 12

Skewness and Kurtosis Statistics for Low-Religiosity Exposed Group [LREG] Variables

Statistics	Variables						
	Dependent		Independent				
	ROCS	NROCS	RL(l)	OB	PsiveLOG	Aurian	Autive
Mean	1.6545	1.8324	1.9445	4.0964	.3087	2.9562	3.3938
Std. Error	.09098	.07593	.03839	.10366	.01133	.06607	.06939
Skewness	.197	.004	-.459	-.674	-.445	-.427	-.308
Std. Error	.255	.255	.255	.255	.255	.255	.255
Kurtosis	-.255	-.261	-.639	.891	.839	.692	1.726
Std. Error	.506	.506	.506	.506	.506	.506	.506

Note: Where ROCS=Religious obsessive compulsive symptom, NROCS=non-religious obsessive compulsive symptom, RL(l)=Low religiosity level, OB=Obsessive beliefs and [PsiveLOG, Aurian and Autive]=Parenting sub-scales where PsiveLOG=LOG Permissive, Aurian=Authoritarian and Autive=Authoritative

The results of the skewness and kurtosis tests are further enhanced by examining the overall shape of the data distribution using the histograms. All the variables under investigations suggested normality was reasonable. See Appendices J (i-iv) for detail.

Outliers and Extreme Values. All the relevant variables were tested for outliers and extreme values using boxplot. The results have shown a relatively normal distributional shape in few cases. Outliers were detected in the cases of four variables, namely: OB, with three low value outliers (below the mean); PsiveLOG and Autive, each with one high value, and three low value outliers and; AurianLOG, with one high value outlier and five low value outliers (below the mean). All the outliers detected were later removed. Refer to Appendices K (i-iv) for the detail of the boxplots for the four variables and the three sub-scales.

Linearity. The Normal QQ plots in all the variables investigated indicated that the assumption of linearity is reasonable with a random display of points clustering around the

straight line. The exceptions were in the plots of five variables that where OB, PsiveLOG and AurianLOG. They showed distributions somewhat deviating from normality at the low ends. Meanwhile Religiosity level (l) showed a deviation at the higher end, while Autive depicted its distribution deviation at both the low and high ends. Refer to Appendices L (i-iv) for detail.

Low-religiosity non-exposed group [LRNEG]

Normality. The statistics of skewness (-.108, .267, -.692, -.144, -.098, .036, -.068) for the four variables and the three sub-scales respectively, and their kurtosis statistics (-.889, -.130, .340, -.525, -.499, -.985, -.716) presented in Table 13 below suggest that normality is a reasonable assumption.

Table 13

Skewness and Kurtosis Statistics for Low-religiosity Non-Exposed Group [LRNEG] Variables

Statistics	Variables						
	Dependent		Independent				
	ROCS	NROCS	RL(l)	OB	Psive	Aurian	Autive
Mean	1.8268	2.0294	1.9536	4.1328	.30390	3.1702	3.2540
Std. Error	.10166	.01668	.00720	.11557	.07367	.00328	.08921
Skewness	-.108	.267	-.692	-.144	-.098	.036	-.068
Std. Error	.337	.337	.337	.337	.337	.337	.337
Kurtosis	-.889	-.130	.340	-.525	-.499	-.985	-.716
Std. Error	.662	.662	.662	.662	.662	.662	.662

Note: Where ROCS=Religious obsessive compulsive symptom, NROCS=non-religious obsessive compulsive symptom, RL(l)=High religiosity level, OB=Obsessive beliefs and [Psive, Aurian and Autive]=Parenting sub-scales where Psive= Permissive, Aurian=Authoritarian and Autive=Authoritative

The results of the skewness and kurtosis tests are further enhanced by examining the overall shape of the data distribution using the histograms. Histograms of all the variables under investigations suggested normality was reasonable. See Appendices J (i-iv) for detail.

Outliers and Extreme Values. All the relevant variables were tested for outliers and extreme values using boxplot. The results have shown a relatively normal distributional shape in almost all the cases. Outliers were not detected in all the cases. Refer to Appendices K (i-iv) for the detail of the boxplot for the four variables and the three sub-scales.

Linearity. The Normal QQ plots in all the variables investigated indicated that the assumption of linearity is reasonable with a random display of points clustering around the straight line. The exceptions were in the plots of two variables, namely NROCS and RL(l). The former showed distributions somewhat deviating from normality at the high ends while the latter RL(l) showed deviation at both the high and low ends. Refer to Appendices L (i-iv) for detail.

Independence of the error terms. The results of random display of points around the straight line shown in the QQ plot also provided evidence of equality of variance as well as the independence of the error terms. The independence of errors of the variables under investigation was also examined for each group using the Durbin-Watson's test while conducting multiple regression analyses for them. The test implicitly suggested the assumption of homogeneity of variance and constant variance of the error term (homoscedasticity) as well.

Pearson Product-Moment Correlation (*r*) Test

The screening process discussed above ensured that the data were suitable for the multiple regression analysis as well as for conducting the Pearson product-moment correlation (*r*) test, which is the most commonly applied correlation test for measuring a

linear association (Pallant, 2007). Hence the Pearson product-moment correlation (r) was conducted to assess the relationships among the two outcome variables [ROCS & NROCS] and the seven predictor variables [RL, Psive, Aurian, Autive, OB, Neutic, Psytic & Exvert] in all the four research groups namely; the high-religiosity exposed Christian group [HRECG], the high-religiosity exposed Muslim group [HREMG], the low-religiosity exposed group [LREG] and, the low-religiosity non-exposed group [LRNEG].

As mentioned earlier, the aim of conducting this test was to examine the inter-correlations between the variables in each group, which in turn would help in predicting the nature of relationships that would be found between the variables when multiple regression analysis is conducted, as well as in predicting the presence or absence of multi-collinearity among the predictor variables.

Results of the Correlation Tests

The correlation between ROCS and most of the predictor variables was moderate and positive, ranging from $r = .30 - .49$, p<.05. However, there are also moderately correlated predictors with negative coefficients. For example, the moderate correlation of ROCS is negative with high religiosity level ($r = -.361$, p<.05) in the HRECG, and with high religiosity level ($r = -.359$, p<.05) in the HREMG [See Tables 14, 15 and 16 below]. There are three cases of slight, positive correlation ranging from $r = .10 - .29$, p<.05; two cases in HRECG and one case in the HREMG. There are three cases of strong positive correlation ranging from $r = .50 - 1.0$, p<.05 between ROCS and OB [obsessive belief] in three groups; $r = .599$ in HRECG, $r = .560$ in LREG, and $r = .583$ in LRNEG [See Tables 14, 16 and 17 below] indicating that OB might display a strong, positive relationship with ROCS, when examined using regression analysis.

Table 14

Pearson Product-Moment Correlations (*r*) in the HRECG

Variables	ROCS	NROCS	RL(h)	Psive	Aurian	Autive	OB	Neutic	Psytic	Exvert
ROCS	1									
NROCS	469**	1								
HR	-.361**	-.218**	1							
Psive	.301**	.461**	-.130*	1						
Aurian	.273**	.441**	-.085	.376**	1					
Autive	.404**	.202**	-.187*	.388**	.256**	1				
OB	.599**	.607**	-.373**	.491**	.460**	.376**	1			
Neutic	.489**	.384**	-.283**	.240**	.141	.228**	.373**	1		
Psytic	-.026	.145*	-.092	.330**	.200**	-.045	.001	.016	1	
Exvert	.201**	.172*	-.233**	.058	-.049	.121*	.114*	.117*	-.299**	1

Note: * Correlation is significant at the 0.05 level (2-tailed)
    **Correlation is significant at the 0.01 level (2-tailed)

Table 15

Pearson Product-Moment Correlations (r) in the HREMG

Variables	ROCS	NROCS	RL(h)	Psive	Aurian	Autive	OB	Neutic	Psytic	Exvert
ROCS	1									
NROCS	.360**	1								
HR	-.359**	-.011	1							
Psive	.119*	.398**	.084	1						
Aurian	.025	.188*	.001	.216**	1					
Autive	.015	.147*	.195*	.284**	.153*	1				
OB	.319**	.564**	-.038	.298**	.281**	.297**	1			
Neutic	.285**	.345**	-.229**	.228**	.052	.172*	.231**	1		
Psytic	.144*	-.014	-.235**	-.007	-.002	-.159*	-.010	.135*	1	
Exvert	.017	.088	.027	.072	.010	-.059	.086	-.096	-.167*	1

Note: * Correlation is significant at the 0.05 level (2-tailed)
    **Correlation is significant at the 0.01 level (2-tailed)

On the other hand, the correlation of NROCS with most of the predictor variables is slight and positive, ranging from $r = .10$ - .29, p< .05. For example, the correlation of NROCS is slight and positive with Autive ($r = .202$, p<.05) in the HRECG, with Aurian ($r = .188$, p< .05) in the HREMG, and with Exvert ($r = .132$, p< .05) in the LREG [See Tables 15, 16 and 17]. There are moderate positive correlation, ranging from $r = .30$ - .49, p< .05 in three groups, and strong positive correlation ranging from $r = .50$ - 1.0, p<.05 in two groups. The latter correlation is of NROCS with OB; ($r = .607$) in HRECG, and ($r = .564$) in HREMG [See Tables 14 and 15 above], indicating that OB might display a strong, positive relationship with NROCS, when examined using regression analysis.

Table 16

Pearson Product-Moment Correlations (r) in the LREG

Variables	ROCS	NROCS	RL(l)	Psive	Aurian	Autive	OB	Neutic	Psytic	Exvert
ROCS	1									
NROCS	.553**	1								
HR	.472**	.167*	1							
Psive	.334**	.251**	.173*	1						
Aurian	.326**	.293**	.148*	.470**	1					
Autive	.324**	.113*	.210**	.510**	.358**	1				
OB	.560**	.397**	.385**	.575**	.484**	.539**	1			
Neutic	.268**	.286**	.187*	.178*	.237**	-.081	.258**	1		
Psytic	-.302**	.070	-.320**	-.133*	-.035	-.353**	-.327**	-.092	1	
Exvert	.151*	.132*	.175*	.175*	.118*	.117*	-.057	.016	-.154*	1

Note: * Correlation is significant at the 0.05 level (2-tailed)
   **Correlation is significant at the 0.01 level (2-tailed)

Table 17

Pearson Product-Moment Correlations (r) in the LRNEG

Variables	ROCS	NROCS	RL(l)	Psive	Aurian	Autive	OB	Neutic	Psytic	Exvert
ROCS	1									
NROCS	.045	1								
HR	.082	.027	1							
Psive	.212	.166	.198	1						
Aurian	-.148	-.100	.027	-.026	1					
Autive	.341*	.232	.305*	-.432**	-.008	1				
OB	.583**	.199	-.004	.514**	-.211	.455**	1			
Neutic	-.259	-.062	-.012	.112	-.052	.047	-.326*	1		
Psytic	-.134	-.055	-.064	-.144	.184	-.270	-.120	.004	1	
Exvert	.340*	-.138	.055	.051	-.060	-.145	.138	-.361**	-.194	1

* Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

The slight positive and negative coefficients, mostly of predictor variables, in three groups also indicate the absence of multi-collinearity. Table 18 below provides VIF Collinearity statistics.

Table 18

VIF Collinearity Statistics in the four Groups

Groups	Independent Variables				
	RL	OB	Psive	Aurian	Autive
HREC	1.184	1.769	1.458	1.335	1.225
HREM	1.054	1.231	1.175	1.111	1.200
LREG	1.180	2.041	1.739	1.414	1.546
LRNEG	1.165	1.667	1.505	1.064	1.499

One-way Analysis of Variance

As mentioned in the method chapter, a one-way between categories analysis of variance [ANOVA] was conducted for each of the four groups namely; the high-religiosity exposed Christian group [HRECG], the high-religiosity exposed Muslim group [HREMG], the low-religiosity exposed group [LREG] and, the low-religiosity non-exposed group [LRNEG]. The aim was to explore the mean differences in the two outcome variables, namely Religious obsessive compulsive symptom (ROCS) and non-religious obsessive compulsive symptom (NROCS) which occur with variations in the participants' group as well as demographic factors of gender, year of study, school type, unwanted disturbing thoughts and religious background.

The subjects were divided into the following categories:

a. The groups were divided into four categories (HRECG, HREMG, LREG and LRNEG).

b. The gender was divided into two categories (male and female).

c. The year of study was divided into 4 categories (Year 1, Year 2, Year 3 and Year 4). Only one group (HREMG) has five categories in its year of study.

d. School type was categorized into three categories: Public, Religious and Private.

e. Unwanted disturbing thought had two categories: Yes and No.

f. Similarly, religious background was categorized into two categories: Yes and No.

ANOVA Results of the Four Groups (HRECG, HREMG, LREG & LRNEG)

A one-way analysis of variance reveals that the four groups have significant differences in their levels of Religious Obsessive Compulsive Symptom (ROCS), F (3, 340) = 54. 94, $p < .001$ [Table 20]. In other words, the four groups have significant differences in the severity of religious obsessive compulsive symptom. Table 19 below shows the descriptive statistics of the impact of the four groups on ROCS.

Table 19

Descriptive Statistics Showing the Impact of the four groups on ROCS

		N	Mean	Std. Deviation
	HREC	88	2.2806	.67152
	HREM	117	1.0637	.49923
Groups	LREG	89	1.6545	.85827
	LRNEG	50	1.8268	.71887
	Total	344	1.6388	.82776

Table 20

One-way ANOVA for the four groups in Relation to ROCS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	76.733	3	25.578	54.941	$p < .001$
Within Groups	158.288	340	.466		
Total	235.022	343			

The Post-hoc comparison using the Tukey HSD test indicate that the mean scores for all the four groups are significantly different from one another [$p < .001$ in Table 21 below]; except LREG and LRNEG [$p = .482$], which do not significantly differ from one another.

The effect size, calculated using eta squared [Between Groups/Total Groups] is 0.48, indicating a moderate to strong effect size. Table 21 below presents the Post-hoc tests of the four groups with multiple comparisons using the Tukey HSD test.

Table 21

Post Hoc Tests of the four groups

(I) HREC/ HREM/ LREG/LRNEG	(J) HREC/ HREM/ LREG/LRNEG	Mean Difference (I-J)	Sig.
HREM	HREC	-1.21689[*]	*p*<.001
	LREG	-.59082[*]	p<.001
	LRNEG	-.76312[*]	p<.001
HREC	HREM	1.21689[*]	p<.001
	LREG	.62607[*]	p<.001
	LRNEG	.45377[*]	p<.001
LREG	HREM	.59082[*]	p<.001
	HREC	-.62607[*]	p<.001
	LRNEG	-.17231	.482
LRNEG	HREM	.76312[*]	p<.001
	HREC	-.45377[*]	p<.001
	LREG	.17231	.482

Note: *. The mean difference is significant at the *p*<0.05 level

On the other hand, the results of the one-way analysis of variance show that there are significant differences in the levels of two groups [HREC & LREG] with Non-Religious Obsessive Compulsive Symptom (NROCS), F (3, 340) = 6. 555, p < .001 [Table 23]. In other words, the two groups have significant differences in the severity of non-religious obsessive compulsive symptom. Meanwhile the results show no significant differences in the means of the other two groups [HREMG & LRNEG] with one another and with the two

groups above. Table 22 below shows the descriptive statistics of the impact of the four groups on NROCS.

Table 22

Descriptive Statistics Showing the Impact of the four groups on NROCS

		N	Mean	Std. Deviation
Groups	HREC	88	2.2512	.55443
	HREM	117	2.0353	.59172
	LREG	89	1.8324	.71634
	LRNEG	50	2.0512	.66810
	Total	344	2.0403	.64379

Table 23

One-way ANOVA for the four groups in Relation to NROCS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.733	3	2.591	6.555	p<.001
Within Groups	134.387	340	.395		
Total	142.161	343			

The Post-hoc comparison using the Tukey HSD test indicate that the mean scores for two groups, namely HREG and LREG are significantly different from one another [$p < 001$ as shown in Table 24 below]. The effect size, calculated using eta squared [Between Groups/Total Groups] is 0.06, indicated a small effect size.

Table 24

Post Hoc Tests of the four groups

(I) HREC/ HREM/ LREG/LRNEG	(J) HREC/ HREM/ LREG/LRNEG	Mean Difference (I-J)	Sig.
HREM	HREC	-.21595	.073
	LREG	.20294	.101
	LRNEG	-.01590	.999
HREC	HREM	.21595	.073
	LREG	.41889*	p<.001
	LRNEG	.20005	.277
LREG	HREM	-.20294	.101
	HREC	-.41889*	p<.001
	LRNEG	-.21884	.202
LRNEG	HREM	.01590	.999
	HREC	-.20005	.277
	LREG	.21884	.202

Note: *. The mean difference is significant at the *p*<0.05 level

With regards to variations in the participants' demographic factors of gender, year of study, school type, unwanted disturbing thoughts and religious background, results showed that, generally, the ROCS and NROCS severity in the participants of three groups did not differ significantly on the basis of gender, year of study, school type, religious background and presence/absence of unwanted disturbing thought.

The one-way ANOVA showed that ROCS and NROCS severity was significantly different in the male and female participants of the high-religiosity exposed Muslim group (HREMG). The NROCS severity also significantly differed on the basis of their year of study. Also, ROCS severity in participants of the high-religiosity exposed Christian group (HRECG) significantly differed on the basis of their school type. Likewise, there was a

significant difference in NROCS severity in the participants of low-religiosity non exposed group (LRNEG) based on their religious background.

The gender category (male/female). Results have shown that ROCS severity was not significantly different in the male and female participants of HRECG, LREG and LRNEG. Similarly, NROCS severity was not significantly different in male and female participants of these groups. Hence, the male and female participants of HRECG, LREG and LRNEG did not differ significantly in their ROCS and NROCS severity.

In contrast, ANOVA reveals that the male and female participants of the HREMG indicated significantly different severity levels of ROCS $F(1,115) = 5.796$, $p = .018$ (see Table 26), as well as of NROCS $F(1,115) = 4.885$, $p = .029$ (see Table 28). The means and standard deviations demonstrating the severity of ROCS and NROCS in the two genders of the HREMG are presented in Tables 25 and 27 below. The two tables depict that the mean values of ROCS and NROCS for females are higher than males indicating that ROCS and NROCS are more severe in females than male.

Table 25

Descriptive Statistics of ROCS in relation to gender in HREMG

		N	Mean	Std. Deviation
	Male	48	.9331	.53877
Gender	Female	69	1.1545	.45180
	Total	117	1.0637	.49923

Table 26

One-way ANOVA for ROCS in relation to gender in HREMG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.387	1	1.387	5.796	.018

	Sum of Squares	df	Mean Square	F	Sig.
Within Groups	27.523	115	.239		
Total	28.911	116			

Table 27

Descriptive Statistics of NROCS in relation to gender in HREMG

		N	Mean	Std. Deviation
Gender	Male	48	1.8927	.65838
	Female	69	2.1345	.52283
	Total	117	2.0353	.59172

Table 28

One-way ANOVA for NROCS in relation to gender in HREMG

	Sum of Squares	f	Mean Square	F	Sig.
Between Groups	1.655	1	1.655	4.885	.029
Within Groups	38.960	115	.339		
Total	40.615	116			

The year of study (Year 1, Year 2, Year 3, Year 4). The one-way analysis of variance reveals that ROCS severity in participants of each group (HRECG, HREMG, LREG & LENEG) did not differ significantly on the basis of their year of study. Similarly, NROCS severity in participants of all the groups, but the HREMG, did not differ significantly on the basis of their year of study.

Participants from years 1, 2, 3 and 4 in the HREMG indicated significantly different levels of NROCS severity $F (3,112) = 4.667$, $p = .004$ (see Table 30). Table 29 shows the

descriptive statistics of NROCS severity for participants of different years in the HREMG. The NROCS mean value is highest for Year 2 participants, followed by Year 1 participants, then Year 4 and lastly Year 3, indicating that, NROCS is most severe in Year 2 participants, and least severe in Year 3 participants, with Year 1 and Year 4 participants in between.

Table 29

Descriptive Statistics of NROCS in relation to year of study in HREMG

		N	Mean	Std. Deviation
	year1	45	2.0898	.66326
	year2	20	2.3750	.59539
Year of Study	year3	5	1.6340	.59007
	year4	46	1.8702	.43474
	Total	116	2.0322	.59336

Table 30

One-way ANOVA for NROCS in relation to year of study in HREMG

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.499	3	1.500	4.667	.004
Within Groups	35.989	112	.321		
Total	40.488	115			

The Post-hoc comparison using the Tukey HSD test indicated that the mean score for Year 2 ($M = 2.3750$, $SD = .59539$) was significantly different from Year 3 ($M = 1.6340$, $SD = .59007$) and Year 4 ($M = 1.8702$, $SD = .43474$). Year 1 ($M = 2.0898$, $SD = .66326$) did not differ significantly from Year 2, Year 3 or Year 4. Given the statistical significance, the actual difference in mean scores between the categories is quite large. The effect size,

calculated using eta squared [Between Groups/Total Groups] is 0.11. Table 31 presents the Post-hoc tests of the Year of Study category with multiple comparisons using the Tukey HSD test.

Table 31

Post Hoc Tests of the Year Study Category

(I) 1st year/2nd year/3rd year/4th year	(J) 1st year/2nd year/3rd year/4th year	Mean Difference (I-J)	Sig.
year1	year2	-.28522	.246
	year3	.45578	.326
	year4	.21956	.257
year2	year1	.28522	.246
	year3	.74100[*]	.049
	year4	.50478[*]	.006
year3	year1	-.45578	.326
	year2	-.74100[*]	.049
	year4	-.23622	.813
year4	year1	-.21956	.257
	year2	-.50478[*]	.006
	year3	.23622	.813

Note: * The mean difference is significant at the 0.05 level

School type (public, religious, private). The one-way ANOVA results show that the ROCS and NORCS severity of participants in HREMG, LREG and LRNEG did not differ significantly on the basis of their secondary school type. In the HRECG, however, participants from different types of secondary schools indicated significantly different levels

of ROCS severity F (2, 84) = 7.400, $p < .001$. Table 32 shows the descriptive statistics of ROCS severity in participants of HRECG on the basis of their school type. The mean value of ROCS for participant from private schools was the highest, followed by participants from religious schools and lastly participants from public schools. Table 33 presents one-way ANOVA for school type in relation to ROCS in the HRECG.

Table 32

Descriptive Statistics Showing for ROCS in relation to school type in HREC

		N	Mean	Std. Deviation
	Public	33	1.9497	.65310
School Type	Religious	9	2.2867	.85434
	Private	45	2.4896	.52300
	Total	87	2.2638	.65661

Table 33

One-way ANOVA for ROCS in relation to school type in HREC Group

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.554	2	2.777	7.400	.001
Within Groups	31.524	84	.375		
Total	37.078	86			

The Post-hoc comparison using the Tukey HSD test indicated that the mean score for Public School category (M = 1.9497, SD = .65310) was significantly different from the Private School category (M = 2.4896, SD = .52300). The Religious School category (M = 2.2867, SD = .85434) did not differ significantly from the Public School category or the Private School category. Given the statistical significance, the actual difference in mean scores between the categories is noteworthy. The effect size, calculated using eta squared

[Between Groups/Total Groups] is 0.15, indicating a small effect size. Table 34 presents the Post-hoc tests of the School Type category with multiple comparisons using the Tukey HSD test.

Table 34

Post Hoc Tests of the School Type Category

(I) School Type	(J) School Type	Mean Difference (I-J)	Sig.
Public	Religious	-.33697	.314
	Private	-.53986*	.001
Religious	Public	.33697	.314
	Private	-.20289	.637
Private	Public	.53986*	.001
	Religious	.20289	.637

Note: *. The mean difference is significant at the 0.05 level

Unwanted disturbing thought (Yes/No). The one-way ANOVA results show that across the four groups, participants who indicated YES and participants who indicated NO for "Any family member disturbed by unwanted thoughts?" were not significantly different in their ROCS and NROCS severity. Table 35 presents the results of the ANOVA tests on the four groups.

Table 35

One-way ANOVA for ROCS and NROCS in relation to unwanted disturbing thoughts in all the Four Groups

Group	Df	ROCS		NROCS	
		F	Sig	F	Sig
HREMG	2, 115	.489	.486	.373	.543

HRECG	1, 86	.915	.341	2.420	.123
LREG	1, 87	.513	.476	3.108	.081
LRNEG	1, 48	1.344	.262	1.421	.239

Religious background (Yes/No). The one-way ANOVA has shown that within the four groups, participants with and without religious background did not indicate a significant difference in ROCS severity; HREMG, F (2, 115) = .114, p = .736; HRECG, F (1, 86) = .052, p= .821; LREG, F (1, 86) = .093, p = .726 and; LRNEG, F (1, 48) = 2.470, p = .123. Hence, there is no significant difference in ROCS severity of participants with and without religious background across the four groups. Table 36 presents the results of the one-way ANOVA for religious background in relation to the four groups.

Similarly, the results have shown that within the three groups; HREMG, HRECG and LREG, participants with and without religious background did not indicate a significant difference in NROCS severity. Table 36 shows the One-way ANOVA for Religious Background in relation to ROCS and NROCS in all the Four Groups

Table 36

One-way ANOVA for ROCS and NROCS in relation to religious background in all the Four Groups

Group	df	ROCS		NROCS	
		F	Sig	F	Sig
HREM	2, 115	.114	.736	.061	.805
HREC	1, 86	.052	.821	.331	.566
LREG	1, 86	.093	.762	1.434	.234
LRNEG	1, 48	2.470	.123	5.011	.03*

Note: *p < .05

In contrast, the ANOVA result has shown that participants with and without religious background in the LRNEG indicated a significant difference in their NROCS severity, F (1, 48) = 5.011, p = .03. Table 37 presents the means and standard deviations of NROCS in relation with participants' religious background in the LRNEG. The Table depicts that the mean value for NROCS is higher for participants without religious background than participants with religious background. The following Table 38 presents one-way ANOVA for religious background in relation to NROCS in the LRNEG.

Table 37

Descriptive Statistics Showing the means of NROCS in relation to religious background in LRNEG

		N	Mean	Std. Deviation
Religious	Yes	31	2.0013	.10999
Background	No	19	2.0753	.11890
	Total	50	2.0294	.11797

Table 38

One-way ANOVA of NROCS in relation to religious background in LRNEG

	Sum of Squares	f	Mean Square	F	Sig.
Between Groups	.064	1	.064	5.011	.030
Within Groups	.617	48	.013		
Total	.682	49			

Multiple Regression Analyses for Testing the Research Hypotheses in the Four Sample Groups

In the present study a series of simultaneous multiple regressions analyses were conducted for testing the research hypotheses 1, 2, 3, 4, 5 and 6 in the high-religiosity exposed Christian group [HRECG], the high-religiosity exposed Muslim group [HREMG], the low-religiosity exposed group [LREG] and, the low-religiosity non-exposed group [LRNEG]. Multicolinearity tests were also conducted with simultaneous multiple regression analyses.

Simultaneous Multiple Regression Analyses for Testing H_1, H_2, H_3.

A series of simultaneous multiple regression analyses were conducted in a particular sequence to test hypotheses 1, 2 and 3 in the four groups. Firstly, two simultaneous multiple regression analyses were performed for each group to examine the direct relationships of parental authority styles and personality traits with religious OCS. Secondly, in each group, the outcome variable religious obsessive compulsive symptoms (ROCS) were regressed on religiosity level (RL) along with the parental authority styles and personality traits which showed significant relationship/s in the previous regressions. Obsessive beliefs (OB) variable was then examined as a potential mediator in the significant direct relationships found in each group. Religiosity level (RL) was examined as a predictor collectively with other predictor variables (parental authority styles & personality traits) with the aim of comparing the explanatory powers of the predictors. The equation used for testing the hypotheses was as follows:

$$ROCS = \beta_0 + \beta_1 RL + \beta_2 PS + \beta_3 PT + \varepsilon \qquad \qquad (1)$$

Where,

ROCS = Religious OC Symptoms

RL = Religiosity Level

PAS = Parental authority Styles (permissive, authoritarian or authoritative)

PT = Personality Trait (Neurotic, Psychotic or Extrovert)

$\beta_0 \dots \beta_3$ = Regression Coefficients

ε = Error Term

To examine OB as a potential mediator in the significant direct relationships found in each group, it was first regressed on the predictor variables using the equation below:

$$OB = \beta_0 + \beta_1 RL + \beta_2 PS + \beta_3 PT + \varepsilon \qquad (2)$$

Where OB = Obsessive Beliefs

Then the outcome variable (religious OCS) was regressed on obsessive beliefs and the predictor variables using the following equation.

$$ROCS = \beta_0 + \beta_1 RL + \beta_2 PS + \beta_3 PT + \beta_4 OB + \varepsilon \qquad (3)$$

Testing H_1, H_2 and H_3 in the high-religiosity exposed Christian group (HRECG). The outcome variable (ROCS) was first regressed on parental authority styles (permissive, authoritarian, authoritative), as well as personality traits (neurotic, psychotic, extrovert) in the HRECG. The regression results are presented in Tables 39 and 40.

Table 39

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	T	P	R^2
1 Permissive	.122	.103	.273	.206
2 Authoritarian	.145	1.375	.173	
3 Authoritative	.320	3.004	.004***	

Note: (F = 7.262; R = .454; ΔR^2 = .206)

Table 39 presents the results of a simultaneous multiple regression analysis in which ROCS was regressed on parental authority styles (permissive, authoritarian and authoritative). Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance = .767, .844, .835) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, β = .122, t = 1.103, p = .273, n.s; authoritarian, β = .145, t = 1.375, p = .173 n.s; and authoritative, β = .320, t = 3.004, p< 0.01. The regression equation was significant (R = .454, R^2 = .206, F (3, 84) = 7.262, p< 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 21% of the variation in ROCS. The signs of the regression weights indicated a positive relationship of ROCS with authoritative parenting.

Table 40

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	P	R^2
1 Neurotic	.471	4.979	.000***	.260
2 Psychotic	.011	.110	.913	
3 Extrovert	.149	1.506	.136	

Note: (F = 9.841; R = .510; ΔR^2 = .260)

Table 40 shows results of the simultaneous multiple regression analysis in which ROCS was regressed on personality traits (neurotic, psychotic and extrovert).

Multicollinearity tests indicated the presence of low level multicollinearity (tolerance = .983, .908, .896) for neurotic, psychotic and extrovert personality respectively. Beta coefficients for the three predictors were; neurotic, β = .471, t = 4.979, $p <$ 0.01; psychotic, β = .011, t = .110, p = .913 n.s; and extrovert, β = .149, t = 1.506, p = .136, n.s. The regression equation was significant (R = .510, R^2 = .260, F (3, 84) = 9.841, $p <$ 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 26% of the variation in ROCS symptoms. The signs of the regression weights indicated a positive relationship of ROCS with neurotic personality.

Next, the outcome variable (ROCS) was regressed on religiosity level along with authoritative parenting and neurotic personality as they showed significant relationship/s with the outcome variables in previous regressions. The regression results are presented in table 41.

Table 41

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Religiosity	-.205	-2.246	.027**	.368
2 Authoritative	.283	3.147	.002***	
3 Neurotic	.366	3.980	.000***	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 16.272; R = .606; ΔR^2= .368)

Table 41 shows the results of a simultaneous multiple regression analysis in which ROCS was regressed on religiosity level, authoritative parenting and neurotic personality traits. Tests for multicollinearity indicated low levels of multicollinearity (tolerance = .904,

.932, and .888) for religiosity level, authoritative parenting and neurotic personality respectively. Beta coefficients for the three predictors were; religiosity, $\beta = -.205$, $t = -2.246$, $p < 0.05$; authoritative, $\beta = .283$, $t = 3.147$, $p < 0.01$; neurotic, $\beta = .366$, $t = 3.980$, $p < 0.01$. The signs of the regression weights indicated a negative relationship of ROCS with religiosity level hence, with every 1% increase in religiosity level within the group, ROCS decreased by 21%. Contrastingly, they indicated positive relationships with authoritative parenting and neurotic personality. Hence, with every 1% increase in authoritative parenting, ROCS increased by 28% and for every 1% increase in neurotic personality, ROCS increased by 37%. So, neurotic personality displayed the strongest explanatory power ($\beta = .366$) for variations in ROCS severity of the HRECG. As indicated in the equation, the combination of the three predictors accounted for nearly 37% of the variation in religious OCS.

Examining obsessive beliefs as a mediator. Three subsequent regression analyses were conducted to examine Obsessive beliefs (OB) as a potential mediator in the direct relationships of religiosity level, authoritative parenting and neurotic personality with ROCS. First, OB was regressed simultaneously on religiosity level, authoritative parenting and neurotic personality. Then, religious OCS was regressed on OB. Coefficients of the two regression stages are presented in tables 42 and 43.

Table 42

Simultaneous Multiple Regression Analysis with OB as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Religiosity	-.254	-2.623	.010**	.287
2 Authoritative	.275	2.878	.005***	
3 Neurotic	.239	2.443	.017**	

*** Statistically significant $p < 0.01$

** Statistically significant $p < 0.05$
* Statistically significant $p < 0.1$
Note: (F = 11.283; R = .536; ΔR^2 = .287)

Table 42 shows the results of a simultaneous multiple regression analysis in which the

mediating variable (OB) was regressed on religiosity level, authoritative parenting and

neurotic personality. Multicollinearity tests indicated low levels of multicollinearity

(tolerance = .904, .932, .888) for religiosity level, authoritative parenting and neurotic

personality respectively. Beta coefficients for the predictors were; religiosity, $\beta = -.254$, $t = -$

2.623, $p = 0.01$; authoritative, $\beta = .275$, $t = 2.878$, $p < 0.01$ and, neurotic, $\beta = .239$, $t = 2.443$,

$p < 0.05$. The signs of the regression weights indicated a negative relationship of OB with

religiosity level, but a positive association with authoritative parenting style and neurotic

personality. The regression equation was significant ($R = .536$, $R^2 = .287$, $F (3, 84) = 11.283$,

$p < 0.01$). As indicated in the equation, the combination of the three predictors accounted for

nearly 29% of the variation in OB.

Table 43

Bivariate Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	T	P	R^2
1 Obsessive Beliefs	.599	6.942	.000***	.359

*** Statistically significant $p < 0.01$
** Statistically significant $p < 0.05$
* Statistically significant $p < 0.1$
Note: (F = 48.188; R = .599; ΔR^2 = .359)

Table 43 presents the results of a bivariate regression analysis in which the outcome

variable (ROCS) was regressed on the mediating variable (OB). A multicollinearity test

indicated low level of multicollinearity with tolerance = 1.000 for OB. Beta coefficient for

the mediator was; obsessive beliefs, $\beta = .599$, $t = 6.942$, $p < 0.01$. The sign of the regression

weight indicated a positive relationship of religious OCS with OB. The regression equation was significant ($R = .599$, $R^2 = .359$, F (1, 86) $= 48.188$, $p< 0.01$). As indicated in the equation, the mediator accounted for nearly 36% of the variation in ROCS.

Lastly, religious OCS was regressed on OB with religiosity level, authoritative parenting and neurotic personality. Results of the regression analysis are presented in table 44.

Table 44

Simultaneous Multiple Regression Analysis with Religious OCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.392	4.174	.000***	.477
2 Religiosity	-.105	-1.212	.229	
3 Authoritative	.175	2.032	.045**	
4 Neurotic	.273	3.130	.002***	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 18.945; R = .691; ΔR^2= .477)

Table 44 presents the results of a simultaneous multiple regression in which ROCS was regressed on the mediating variable (OB) and predictors (religiosity level, authoritative parenting & neurotic personality). Tests for multicollinearity indicated the presence of low multicollinearity levels (tolerance = .713, .836, .848 & .829) for obsessive beliefs, religiosity level, authoritative parenting & neurotic personality respectively. Beta coefficients for the four predictors were; obsessive beliefs, $\beta = .392$, $t = 4.174$, $p < 0.01$; religiosity, $\beta = -.105$, $t = -1.212$, $p =.229$ n.s; authoritative, $\beta = .175$, $t =-2.032$, $p< 0.05$ and neurotic, $\beta = .273$, $t =3.130$, p < 0.01. The signs of the regression weights indicated a negative relationship of

ROCS with religiosity level, but positive relationships with the mediator (OB), authoritative parenting and neurotic personality. The regression equation was significant ($R = .691$, $R^2 = .477$, $F(4, 83) = 18.945$, $p < 0.01$). As indicated in the equation, the combination of the four predictors accounted for nearly 48% of the variation in ROCS.

The beta coefficient of OB is $\beta = .392$, which is significant at α 0.01. With its inclusion in the model, the beta coefficient of religiosity level ($\beta = -.105$) becomes insignificant with $p = .229$. Its presence also slightly lowers the significance level of authoritative parenting and ROCS relationship from $p=.002$ to $p =.045$. Similarly, it lowers the significance level of neurotic personality and ROCS relationship from $p=.000$ to $p =.002$. Hence, OB was validated as a complete mediator for the direct negative relationship between religiosity level and ROCS and, a partial mediator in the positive relationships of authoritative parenting and neurotic personality with the outcome variable.

Testing H_1, H_2 and H_3 in the high-religiosity exposed Muslim group [HREMG]. The outcome variable (ROCS) was regressed on parental authority styles (permissive, authoritarian and authoritative) and personality traits (neurotic, psychotic and extrovert) in the HREMG. The regression results are presented in Tables 45 and 46.

Table 45

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.124	1.254	.212	.014
2 Authoritarian	.001	.012	.990	
3 Authoritative	-.021	-.212	.833	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = .552; R = .120; ΔR^2= .014)

Table 45 shows results of a simultaneous multiple regression analysis in which ROCS was regressed on parental authority styles (permissive, authoritarian and authoritative). Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance = .889, .944, .910) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, β = .124, t = 1.254, p = .212, n.s; authoritarian, β = .001, t = .012, p = .990 n.s; and authoritative, β = -.021, t = -.212, p = .833 n.s. The regression equation was insignificant (R = .120, R^2 = .014, F (3, 113) = .552, p = .648 n.s). As indicated in the equation, the combination of the three predictors accounted for a negligible 1% of the variation in ROCS.

Table 46

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	t	p	R^2
1 Neurotic	.275	3.038	.003***	.096
2 Psychotic	.117	1.285	.201	
3 Extrovert	.063	.692	.490	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 4.013; R = .310; ΔR^2 = .096)

Table 46 shows results of a simultaneous multiple regression analysis in which ROCS was regressed on personality traits (neurotic, psychotic and extrovert). Multicollinearity tests indicate the presence of low levels of multicollinearity (tolerance = .976, .958, .967) for neurotic, psychotic and extrovert personality respectively. Beta coefficients for the three predictors were; neurotic, β = .275, t = 3.038, p < 0.01; psychotic, β = .117, t = 1.285, p = .201 n.s; and extrovert, β = .063, t = .692, p = .490 n.s. The regression equation was significant (R

= .310, R^2 = .096, F (3, 113) = 4.013, p< 0.01). As indicated in the equation, the combination

of the three predictors accounted for nearly 10% of the variation in religious OCS. The signs

of the regression weights indicated a positive relationship of ROCS with neurotic personality.

The outcome variable (ROCS) was then regressed on religiosity level along with

neurotic personality as it showed a significant relationship with the outcome variable in the

previous regressions. The regression results are presented in table 47.

Table 47

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	t	p	R^2
1 Religiosity	-.311	-3.549	.001***	.173
2 Neurotic	.214	2.443	.016**	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 11.883; R = .415; ΔR^2= .173)

Table 47 shows the results of a simultaneous multiple regression analysis in which

ROCS was regressed on religiosity level and neurotic personality as predictors. Tests for

multicollinearity indicated that a low level of multicollinearity was present with tolerance =

.948 for both religiosity level and neurotic personality. Beta coefficients for the two

predictors were; religiosity, β = -.311, t = -3.549, p< 0.01; neurotic, β = .214, t = 2.443, p<

0.05. The signs of the regression weights indicated a negative relationship of ROCS with

religiosity level, but a positive relationship with neurotic personality. Hence for every 1%

increase in religiosity level within the group, ROCS decreased by 31% while, for every 1%

increase in neurotic personality, ROCS increased by 21%. As such, religiosity level (β = -

.311) explained the variations in ROCS better than neurotic personality. The regression

equation was significant ($R = .415$, $R^2 = .173$, $F (2,114) = 11.883$, $p < 0.01$). As indicated in

the equation, the combination of the two predictors accounted for nearly 17% of the variation

in ROCS.

Examining obsessive beliefs as a mediator. Subsequently, three regression analyses

were conducted to examine OB as a potential mediator in the direct relationships of

religiosity level, and neurotic personality with ROCS.

First, OB was regressed simultaneously on religiosity level and neurotic personality.

Then, ROCS was regressed on OB. Coefficients of the two regression stages are presented in

tables 48 and 49.

Table 48

Simultaneous Multiple Regression Analysis with OB as Outcome Variable

Predictor Variables	Standardized B	t	p	R^2
1 Religiosity	.016	.167	.868	.054
2 Neurotic	.235	2.506	.014**	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 3.228; R = .232; $\Delta R^2 = .054$)

Table 48 shows the results of a simultaneous multiple regression analysis in which the

mediating variable (OB) was regressed on religiosity level and neurotic personality.

Multicollinearity tests indicated low levels of multicollinearity with tolerance = .948 for both

religiosity level and neurotic personality. Beta coefficients for the predictors were; religiosity,

$\beta = .016$, $t = .167$, $p = .868$ n.s, and neurotic, $\beta = .235$, $t = 2.506$, $p < 0.05$. The sign of the

neurotic personality regression weight indicated its positive relationship with OB. The

regression equation was significant ($R = .232$, $R^2 = .054$, $F (2,114) = 3.228$, $p< 0.05$). As indicated in the equation, the combination of the two predictors accounted for nearly 5% of the variation in OB.

Table 49

Bivariate Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	T	p	R^2
1 Obsessive Beliefs	.319	3.606	.000***	.102

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 13.004; R = .319; ΔR^2= .102)

Table 49 presents the results of a bivariate regression analysis in which the outcome variable (ROCS) was regressed on the mediating variable (OB). A multicollinearity test indicated a low level of multicollinearity with tolerance = 1.000 for obsessive beliefs. Beta coefficients for the mediator was; obsessive beliefs, $\beta = .319$, $t = 3.606$, $p < 0.01$. The sign of the regression weight indicated a positive relationship of ROCS with OB. The regression equation was significant ($R = .319$, $R^2 = .102$, $F (1, 115) = 13.004$, $p< 0.01$). As indicated in the equation, the mediator accounted for nearly 10% of the variation in ROCS.

Lastly, ROCS was regressed on OB with neurotic personality. Results of the regression analysis are presented in table 50.

Table 50

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.267	3.008	.003***	.149
2 Neurotic	.223	2.511	.013**	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 9.955; R = .386; ΔR^2= .149)

Table 50 presents the results of a simultaneous multiple regression in which ROCS was regressed on the mediating variable (OB) and neurotic personality. Tests for multicollinearity indicated the presence of low multicollinearity levels (tolerance = .947) for both obsessive beliefs & neurotic personality. Beta coefficients for the two predictors were; obsessive beliefs, β = .267, t = 3.008, $p < 0.01$ and neurotic, β = .223, t =2.511, $p < 0.05$. The signs of the regression weights indicated positive relationships of ROCS with the mediator (OB) and neurotic personality. The regression equation was significant (R = .386, R^2 = .149, F (2,114) = 9.955, $p < 0.01$). As indicated in the equation, the combination of the two predictors accounted for nearly 15% of the variation in ROCS.

The beta coefficient of OB (β = .267) is significant at α 0.01. However, the significance level of neurotic personality and ROCS relationship did not drop with its inclusion in the model. Therefore OB was found to be neither a complete nor a partial mediator in the direct relationships of religiosity level and neurotic personality with ROCS.

Testing H_1, H_2 and H_3 in the low-religiosity exposed group [LREG]. The outcome variable (ROCS) was regressed on parental authority styles and personality traits in the LREG. The regression results are presented in tables 51 and 52.

Table 51

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.153	1.246	.216	.171
2 Authoritarian	.190	1.678	.097*	
3 Authoritative	.178	1.531	.129	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 5.836; R = .413; ΔR^2 = .171)

Table 51 shows results of a simultaneous multiple regression analysis in which ROCS was regressed on parental authority styles (permissive, authoritarian and authoritative) as predictors. Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance = .645, .760, .722) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, β = .153, t = 1.246, p = .216, n.s; authoritarian, β = .190, t = 1.678, p = .097 n.s; and authoritative, β = .178, t = 1.531, p = .129 n.s. The regression equation was significant (R = .413, R^2 = 171, F (3, 85) = 5.836, p < 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 17% of the variation in ROCS.

Table 52

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	t	p	R^2
1 Neurotic	.242	2.428	.017**	.161
2 Psychotic	-.263	-2.606	.011**	

3 Extrovert	.107	1.065	.290	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 5.426; R = .401; ΔR^2 = .161)

Table 52 shows results of a simultaneous multiple regression analysis performed in which ROCS was regressed on personality traits (neurotic, psychotic and extrovert) as predictors. Multicollinearity tests indicated low levels of multicollinearity (tolerance = .991, .968, .976) for neurotic, psychotic and extrovert personality respectively. Beta coefficients for the three predictors were; neurotic, β = .242, t = 2.428, $p < 0.05$; psychotic, β = -.263, t = -2.606, $p < 0.05$; and extrovert, β = .107, t = 1.065, p = .290, n.s. The regression equation was significant (R = .401, R^2 = .161, F (3, 85) = 5.426, $p < 0.01$). As indicated in the equation, the combination of the three predictors accounted for nearly 16% of the variation in ROCS. The signs of the regression weights indicated a positive relationship of ROCS with neurotic personality, but negative with psychotic personality.

The outcome variable (ROCS) was then regressed on religiosity level along with neurotic and psychotic personality as they showed a significant relationship with the outcome variables in previous regressions. The regression results are presented in table 53.

Table 53

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	t	P	R^2
1 Religiosity	.386	3.917	.000***	.280
2 Psychotic	-.162	-1.662	.100*	
3 Neurotic	.181	1.933	.057*	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 10.994; R = .529; ΔR^2 = .280)

Table 53 shows the results of a simultaneous multiple regression analysis in which ROCS was regressed on religiosity level, psychotic and neurotic personality as predictors. Tests for multicollinearity indicated that low levels of multicollinearity were present (tolerance =.872, .964 & .896) for religiosity level, psychotic and neurotic personality respectively. Beta coefficients for the three predictors were; religiosity, β = .386, t = 3.917, p < 0.01; psychotic, β = -.162, t = -1.662, p < 0.1; neurotic, β = .181, t = 1.933, p < 0.1. The signs of the regression weights indicated a positive relationship of ROCS with religiosity level and neurotic personality. Hence, for every 1% increase in religiosity level within the group, ROCS increased by 39% and, for every 1% increase in neurotic personality, ROCS increased by 18%. Contrastingly, the beta coefficient signs indicated a negative relationship of ROCS with psychotic personality. Hence, for every 1% increase in psychotic personality, ROCS decreased by 16%. The regression equation was significant (R = .529, R^2 = .280, $F_{(3, 85)}$ = 10.994, p < 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 28% of the variation in ROCS.

Examining obsessive beliefs as a mediator. Subsequently, three regression analyses were conducted to examine OB as a potential mediator in the direct relationship of religiosity level with ROCS. OB was first regressed on religiosity level. Then, ROCS was regressed on OB. Coefficients of the two regression stages are presented in tables 54 and 55.

Table 54

Bivariate Regression Analysis with OB as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Religiosity	-.364	-3.651	.000***	.133

Table 54 shows the results of a bivariate regression analysis in which the mediating variable (OB) was regressed on religiosity level. Multicollinearity tests indicated a low level of multicollinearity with tolerance = 1.000 for low religiosity. The beta coefficient for the predictor; religiosity, β = -.364, t = -3.651, $p < 0.01$. The sign of the regression weight indicated a negative relationship of OB with religiosity level. The regression equation was significant (R = .364, R^2 = .133, F (1, 87) = 13.327, $p < 0.01$). As indicated in the equation, religiosity level accounted for nearly 13% of the variation in OB.

Table 55

Bivariate Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	T	p	R^2
1 Obsessive Beliefs	.560	6.308	.000***	.314

Table 55 presents the results of a bivariate regression analysis in which the outcome variable (ROCS) was regressed on the mediating variable (OB). A multicollinearity test indicated low level of multicollinearity with tolerance = 1.000 for OB. The beta coefficient for the mediator was; obsessive beliefs, β = .560, t = 6.308, p < 0.01. The sign of the regression weight indicated a positive relationship of ROCS with OB. The regression equation was significant (R = .560, R^2 = .314, F (1, 87) = 39.791, $p < 0.01$). As indicated in

the equation, the mediator accounted for nearly 31% of the variation in religious OCS. Lastly, ROCS was regressed on OB with low religiosity. Results of the regression analysis are presented in table 56.

Table 56

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.458	5.033	.000***	.382
2 Religiosity	-.280	-3.070	.003***	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 26.537; R = .618; ΔR^2= .382)

Table 56 presents the results of a simultaneous multiple regression in which ROCS was regressed on the mediating variable (OB) and religiosity level. Tests for multicollinearity indicated the presence of low multicollinearity levels (tolerance = .867) for both OB and religiosity level. Beta coefficients for the two predictors were; obsessive beliefs, β = .458, t = 5.033, p < 0.01; religiosity, β = -.280, t = --3.070, p < 0.01. The signs of the regression weights indicated negative relationships of religious OCS with religiosity level, but a positive relationship with the mediator (OB). The regression equation was significant (R = .618, R^2 = .382, F (2, 86) = 26.537, p < 0.01). As indicated in the equation, the combination of the two predictors accounted for nearly 38% of the variation in ROCS.

The beta coefficient of OB is β = .458 which is significant at α 0.01. With its presence in the model, the significance level of religiosity level and ROCS relationship decreased from p =.001 to p =.003. Hence, OB is validated as a partial mediator in the relationship of religiosity level with ROCS.

Testing H_1, H_2 and H_3 in the low-religiosity non-exposed group [LRNEG]. The outcome variable (ROCS) was regressed on parental authority styles and personality traits in the LRNEG. The regression results are presented in tables 57 and 58.

Table 57

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	t	p	R^2
1 Permissive	.076	.500	.620	.142
2 Authoritarian	-.144	-1.052	.298	
3 Authoritative	.307	2.030	.048**	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 2.544; R = .377; ΔR^2= .142)

Table 57 shows results of a simultaneous multiple regression analysis in which religious OCS was regressed on parental authority styles (permissive, authoritarian and authoritative) as predictors. Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance = .813, .999, .813) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, β = .076, t = .500, p = .620, n.s; authoritarian, β = -.144, t = -1.052, p = .298 n.s; and authoritative, β = .307, t = 2.030, $p < 0.05$. The regression equation was significant (R = .377, R^2 = .142, F (3, 46) = 2.544, $p < 0.1$). As indicated in the equation, the combination of the three predictors accounted for nearly 14% of the variation in ROCS.

Table 58

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	t	p	R^2
1 Neurotic	-.163	-1.113	.271	.143
2 Psychotic	-.082	-.587	.560	
3 Extrovert	.265	1.772	.083*	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 2.567; R = .379; ΔR^2= .143)

Table 58 shows results of a simultaneous multiple regression analysis performed in which ROCS was regressed on personality traits (neurotic, psychotic and extrovert) as predictors. Multicollinearity tests indicated low levels of multicollinearity (tolerance .865, .957, .832) for neurotic, psychotic and extrovert personality respectively. Beta coefficients for the three predictors were; neurotic, β = -.163, t = -1.113, p = .271, n.s.; psychotic, β = -.082, t = -.587, p = .560 n.s.; and extrovert, β = .265, t = 1.772, p < 0.1. The regression equation was significant (R = .379, R^2 = .143, F (3, 46) = 2.567, p < 0.1). As indicated in the equation, the combination of the three predictors accounted for nearly 14% of the variation in ROCS. The signs of the regression weights indicated a positive relationship of ROCS with extrovert personality. The outcome variable (ROCS) was then regressed on religiosity level along with authoritative parenting and extrovert personality. The regression results are presented in table 59.

Table 59

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized B	t	p	R^2
1 Religiosity	-.069	-.519	.606	.276
2 Authoritative	.421	3.150	.003*	
3 Extrovert	.405	3.175	.003*	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 5.839; R = .525; ΔR^2= .276)

Table 59 shows the results of a simultaneous multiple regression analysis in which ROCS was regressed on religiosity level, authoritative parenting and extrovert personality as predictors. Tests for multicollinearity indicated that low levels of multicollinearity were present (tolerance = .897, .881, .968) for religiosity level, authoritative parenting and extrovert personality respectively. Beta coefficients for the three predictors were; religiosity, β = -.069, t = -.519, p =*.606 n.s.;* authoritative, β = .421, t = 3.150, p < 0.01; extrovert, β = .405, t = 3.175, $p < 0.01$. The signs of the regression weights indicated positive relationship of ROCS with authoritative parenting and extrovert personality.

Hence, for every 1% increase in authoritative parenting within the group, ROCS increased by 42% and for every 1% increase in extrovert personality, ROCS increased by 41%. The two predictors had almost equal explanatory powers for ROCS variations in the low-religiosity non-exposed group. The regression equation was significant (R = .525, $R2$ = .276, F (3, 46) = 5.839, p < 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 28% of the variation in ROCS.

Examining obsessive beliefs as a mediator. Subsequently, three regression analyses were conducted to examine OB as a potential mediator in the direct relationships of authoritative parenting and extrovert personality with ROCS. OB was first regressed on

authoritative parenting and extrovert personality. Then, ROCS was regressed on OB. Coefficients of the two regression stages are presented in tables 60 and 61.

Table 60

Multivariate Regression Analysis with OB as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Authoritative	.486	3.803	.000***	.250
2 Extrovert	.208	1.630	.110	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 7.824; R = .500; ΔR^2= .250)

Table 60 shows the results of a multivariate regression analysis in which the mediating variable (OB) was regressed on authoritative parenting and extrovert personality. Multicollinearity tests indicated a low level of multicollinearity with tolerance = .979, .979 for authoritative parenting and extrovert personality respectively. The beta coefficient for the predictors were; authoritative, β = .486, t = 3.803, $p < 0.01$; extrovert, β =.208, t = 1.630, p = 0.11 n.s. The signs of the regression weight indicated a positive relationship of OB with authoritative parenting. The regression equation was significant ($R = .500$, $R^2 = .250$, F (2, 47) = 7.824, $p < 0.01$). As indicated in the equation, authoritative parenting and extrovert personality accounted for nearly 25% of the variation in OB.

Table 61

Bivariate Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.583	4.967	.000***	.340

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 24.673; R = .583; ΔR^2= .340)

Table 61 presents the results of a bivariate regression analysis in which the outcome variable (ROCS) was regressed on the mediating variable (OB). A multicollinearity test indicated low level of multicollinearity with tolerance = 1.000 for OB. The beta coefficient for the mediator was; obsessive beliefs, β = .583, t = 4.967, p < 0.01. The sign of the regression weight indicated a positive relationship of ROCS with OB. The regression equation was significant (R = .583, R^2 = .340, F (1, 48) = 24.673, p < 0.01). As indicated in the equation, the mediator accounted for nearly 34% of the variation in ROCS. Lastly, ROCS was regressed on OB with authoritative parenting. Results of the regression analysis are presented in table 62.

Table 62

Simultaneous Multiple Regression Analysis with ROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.539	4.071	.000***	.347
2 Authoritative	.096	.724	.473	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 12.477; R = .589; ΔR^2= .347)

Table 62 presents the results of a simultaneous multiple regression in which ROCS was regressed on the mediating variable (OB) and authoritative parenting. Tests for multicollinearity indicated the presence of low multicollinearity levels (tolerance = .793, .793) for both OB and authoritative parenting. Beta coefficients for the two predictors were;

obsessive beliefs, $\beta = .539$, t = 4.071, p < 0.01; authoritative, $\beta = .096$, $t = .724$, p = .473 n.s. The signs of the regression weights indicated a positive relationship of ROCS with the mediator (OB) and authoritative parenting. The regression equation was significant ($R = .589$, $R^2 = .347$, $F (2, 47) = 12.477$, p < 0.01). As indicated in the equation, the combination of the two predictors accounted for nearly 35% of the variation in ROCS.

The beta coefficient of OB is $\beta = .539$ which is significant at α 0.01. With its presence in the model, the significance level of authoritative parenting relationship with ROCS changed from being significant at α 0.01 to being insignificant p= .473. Hence, OB is validated as a complete mediator in the relationship of authoritative parenting with ROCS.

Simultaneous Multiple Regression Analyses For Testing H_4, H_5 and H_6

A series of simultaneous multiple regression analyses were conducted in a particular sequence to test hypotheses 4, 5 and 6 in the four groups. Firstly, two simultaneous multiple regression analyses were performed for each group to examine the direct relationships of parenting styles and personality traits with non-religious obsessive compulsive symptoms (NROCS). Secondly, in each group, the outcome variable (NROCS) was regressed on religiosity level along with the parenting style/s and personality trait/s which showed significant relationship/s in previous regressions. The obsessive beliefs (OB) variable was then examined as a potential mediator in the significant direct relationships found in each group.

Religiosity level was examined as a predictor collectively with other predictor variables (parenting styles & personality traits) with the aim of comparing the explanatory powers of the predictors. The equation used for testing the hypotheses was as follows:

$$NROCS = \beta_0 + \beta_1 RL + \beta_2 PS + \beta_3 PT + \varepsilon \qquad (1)$$

Where,

NROCS = Non-Religious OC Symptoms

RL = Religiosity Level

PS = Parenting Style (permissive, authoritarian or authoritative)

PT = Personality Trait (Neurotic, Psychotic or Extrovert)

β_0 …. β_3 = Regression Coefficients

ε = Error Term

To examine obsessive beliefs (OB) as a potential mediator in the significant direct relationships found in each group, it was first regressed on the predictor variables using the equation below

$$OB = \beta_0 + \beta_1 RL + \beta_2 PS + \beta_3 PT + \varepsilon \qquad (2)$$

Where OB = Obsessive Beliefs

Then the outcome variable (non-religious OC symptoms) was regressed on obsessive beliefs and the predictor variables using the following equation.

$$NROCS = \beta_0 + \beta_1 RL + \beta_2 PS + \beta_3 PT + \beta_4 OB + \varepsilon \qquad (3)$$

Testing H_4, H_5 and H_6 in the high-religiosity exposed Christian group [HRECG]. The outcome variable (NROCS) was regressed on parental authority styles and personality traits in the HRECG. The regression results are presented in tables 63 and 64.

Table 63

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.349	3.337	.001***	.297
2 Authoritarian	.314	3.147	.002***	
3 Authoritative	-.013	-.133	.894	

Note: (F = 11.804; R = .545; ΔR^2 = .297)

Table 63 shows results of a simultaneous multiple regression analysis in which non-religious OCS was regressed on parental authority styles (permissive, authoritarian and authoritative) as predictors. Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance = .767, .844, .835) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, β = .349, t = 3.337, p < 0.01; authoritarian, β = .314, t = 3.147, p < 0.01; and authoritative, β = -.013, t = -.133, p = .894 n.s. The regression equation was significant (R = .545, R^2 = .297, F (3, 84) = 11.804, p < 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 30% of the variation in NROCS. The signs of the regression weights indicated a positive relationship of NROCS with permissive and authoritarian parenting.

Table 64

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Neurotic	.359	3.648	.000***	.199
2 Psychotic	.196	1.909	.060	
3 Extrovert	.189	1.829	.071	

Note: (F = 6.957; R = .446; ΔR^2 = .199)

Table 64 shows results of a simultaneous multiple regression analysis in which NROCS was regressed on personality traits (neurotic, psychotic and extrovert) as predictors. Multicollinearity tests indicated low levels of multicollinearity (tolerance = .983, .908, .896) for neurotic, psychotic and extrovert personality respectively. Beta coefficients for the three predictors were; neurotic, β = .359, t = 3.648, p < 0.01; psychotic, β = .196, t = 1.909, p = .060, n.s; and extrovert, β = .189, t = 1.829, p = .071 n.s. The regression equation was significant (R = .446, R^2 = .199, F (3, 84) = 6.957, p < 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 20% of the variation in NROCS. The signs of the regression weights indicated a positive relationship of NROCS with neurotic personality. The outcome variable (NROCS) was regressed on religiosity level along with permissive parenting, authoritarian parenting and neurotic personality. The regression results are presented in table 65.

Table 65

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Religiosity	-.085	-.941	.349	.374
2 Permissive	.280	2.916	.005***	
3 Authoritarian	.293	3.123	.002***	
4 Neurotic	.252	2.715	.008***	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 12.395; R = .612; ΔR^2= .374)

Table 65 shows the results of a simultaneous multiple regression analysis in which NROCS regressed on religiosity level, permissive parenting, authoritarian parenting and

neurotic personality as predictors. Tests for multicollinearity indicated low levels of multicollinearity (tolerance = .915, .820, .855 and .876) for religiosity level, permissive parenting, authoritarian parenting and neurotic personality respectively. Beta coefficients for the four predictors were religiosity, β = -.085, t = -.941, p =.349 n.s; permissive, β = .280, t = 2.916, $p < 0.01$; authoritarian, β = .293, t = 3.123, $p < 0.01$ and, neurotic, β = .252, t = 2.715, $p < 0.01$. The signs of the regression weights indicated positive relationships of NROCS with permissive parenting, authoritarian parenting and neurotic personality. Hence, for every 1% increase in permissive parenting, NROCS increased by 28% and, for every 1% increase in authoritarian parenting, NROCS increased by 29%. Similarly, for every 1% increase in neurotic personality trait, NROCS increased by 25%. The regression equation was significant (R = .612, R^2 = .374, F (4, 83) = 12.395, $p < 0.01$). As indicated in the equation, the combination of the four predictors accounted for nearly 37% of the variation in NROCS.

Examining Obsessive Beliefs as a Mediator. Subsequently, three regression analyses were conducted to examine OB as a potential mediator in the direct relationships of permissive parenting, authoritarian parenting and neurotic personality with NROCS. First, OB was regressed simultaneously on permissive parenting, authoritarian parenting and neurotic personality. Then, NROCS was regressed on OB. Coefficients of the two regression stages are presented in tables 66 and 67.

Table 66

Simultaneous Multiple Regression Analysis with OB as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.315	3.358	.001***	.390
2 Authoritarian	.306	3.318	.001***	
3 Neurotic	.255	2.897	.005***	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 17.939; R = .625; ΔR^2 = .390)

Table 66 shows the results of a simultaneous multiple regression analysis in which the mediating variable (OB) was regressed on permissive parenting, authoritarian parenting and neurotic personality. Multicollinearity tests indicated low levels of multicollinearity (tolerance = .823, .856, .940) for permissive parenting, authoritarian parenting and neurotic personality respectively. Beta coefficients for the predictors were; permissive, β = .315, t = 3.358, p = 0.01; authoritarian, β = .306, t = 3.318, $p < 0.01$, and neurotic, β = .255, t = 2.897, $p < 0.01$. The signs of the regression weights indicated a positive relationship of OB with permissive parenting, authoritarian parenting and neurotic personality. The regression equation was significant (R = .625, R^2 = .390, F (3, 84) = 17.939, $p < 0.01$). As indicated in the equation, the combination of the three predictors accounted for nearly 39% of the variation in OB.

Table 67

Bivariate Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	T	p	R^2
1 Obsessive Beliefs	.607	7.078	.000***	.368

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 50.095; R = .607; ΔR^2 = .368)

Table 67 presents the results of a bivariate regression analysis in which the outcome variable (NROCS) was regressed on the mediating variable (OB). A multicollinearity test

indicated low level of multicollinearity with tolerance = 1.000 for OB. The beta coefficient for the mediator was; obsessive beliefs, β = .607, t = 7.078, $p < 0.01$. The sign of the regression weight indicated a positive relationship of NROCS with OB. The regression equation was significant (R = .607, R^2 = .368, F (1, 86) = 50.095, $p < 0.01$). As indicated in the equation, the mediator accounted for nearly 37% of the variation in NROCS.

Lastly, NROCS was regressed on OB with permissive parenting, authoritarian parenting and neurotic personality. Results of the regression analysis are presented in table 68.

Table 68

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.375	3.605	.001***	.453
2 Permissive	.166	1.744	.085	
3 Authoritarian	.181	1.940	.056	
4 Neurotic	.179	2.041	.044**	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 17.180; R = .673; ΔR^2= .453)

Table 68 presents the results of a simultaneous multiple regression in which NROCS was regressed on the mediating variable (OB) and predictors (permissive parenting, authoritarian parenting and neurotic personality). Tests for multicollinearity indicated the presence of low multicollinearity levels (tolerance = .610, .725, .756 & .854) for OB, permissive parenting, authoritarian parenting and neurotic personality respectively. Beta coefficients for the three predictors were; obsessive beliefs, β = .375, t = 3.605, $p < 0.01$;

permissive, $\beta = .166$, $t = 1.744$, $p = .085$ n.s; authoritarian, $\beta = .181$, $t = 1.940$, $p = .056$ n.s and

neurotic, $\beta = .179$, $t = 2.041$, $p < 0.05$. The signs of the regression weights indicated positive

relationships of NROCS with the mediator (OB), permissive parenting, authoritarian

parenting and neurotic personality. The regression equation was significant ($R = .673$, $R^2 =$

$.453$, $F(4, 83) = 17.180$, $p < 0.01$). As indicated in the equation, the combination of the four

predictors accounted for nearly 45% of the variation in NROCS.

The beta coefficient of OB is $\beta = .375$ which is significant at α 0.01. With its

inclusion in the model, the significance level of permissive parenting and NROCS

relationship decreased from $p = .005$ to $p = .085$. Similarly, the significance level of

authoritarian parenting and NROCS relationship decreased from $p = .002$ to $p = .056$. Also, the

significance level of neurotic personality and NROCS relationship decreased from $p = .008$ to

$p = .044$. Hence, OB is validated as a partial mediator in the direct relationships of permissive

parenting, authoritarian parenting and neurotic personality with NROCS.

Testing H_4, H_5 and H_6 in the high-religiosity exposed Muslim group [HREMG].
The outcome variable (NROCS) was regressed on parental authority styles and personality

traits in the HREMG. The regression results are presented in tables 69 and 70.

Table 69

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.368	4.046	.000***	.170
2 Authoritarian	.105	1.186	.238	
3 Authoritative	.027	.297	.767	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 7.717; R = .412; $\Delta R^2 = .170$)

Table 69 shows results of a simultaneous multiple regression analysis performed in which NROCS was regressed on parenting styles (permissive, authoritarian and authoritative) as predictors. Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance = .889, .944, .910) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, β = .368, t = 4.046, p < 0.01; authoritarian, β = .105, t = 1.186, p = .238 n.s; and authoritative, β = .027, t = .297, p = .767 n.s. The regression equation was significant (R = .412, R^2 = .170, F (3, 113) = 7.717, p < 0.01). As indicated in the equation, the combination of the three predictors accounted for nearly 17% of the variation in NROCS. The signs of the regression weights indicated a positive relationship of NROCS with permissive parenting.

Table 70

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Neurotic	.362	4.094	.000***	.136
2 Psychotic	-.044	-.489	.626	
3 Extrovert	.116	1.305	.194	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 5.929; R = .369; ΔR^2 = .136)

Table 70 shows results of a simultaneous multiple regression analysis performed in which NROCS was regressed on personality traits (neurotic, psychotic and extrovert) as predictors. Multicollinearity tests indicated the presence of low level of multicollinearity (tolerance = .976, .958, .967) for neurotic, psychotic and extrovert personality respectively.

Beta coefficients for the three predictors were; neurotic, $\beta = .362$, $t = 4.094$, $p < 0.01$; psychotic, $\beta = -.044$, $t = -.489$, $p = .626$ n.s; and extrovert, $\beta = .116$, $t = 1.305$, $p = .194$ n.s. The regression equation was significant ($R = .369$, $R^2 = .136$, $F (3, 113) = 5.929$, $p < 0.01$). As indicated in the equation, the combination of the three predictors accounted for nearly 14% of the variation in NROCS. The signs of the regression weights indicated a positive relationship of NROCS with neurotic personality. The outcome variable (NROCS) was regressed on religiosity level along with permissive parenting and neurotic personality as predictors. The regression results are presented in table 71.

Table 71

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Religiosity	.023	.272	.786	.227
2 Permissive	.333	3.885	.000***	
3 Neurotic	.275	3.125	.002***	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 11.076; R = .477; ΔR^2= .227)

Table 71 shows the results of a simultaneous multiple regression analysis in which non-religious OCS was regressed on religiosity level, permissive parenting and neurotic personality as predictors. Tests for multicollinearity indicated that low levels of multicollinearity were present (tolerance = .928, .928 and .886) for religiosity level, permissive parenting and neurotic personality respectively. Beta coefficients for the three predictors were; religiosity, $\beta = .023$, $t = .272$, $p = .786$ n.s; permissive, $\beta = .333$, $t = 3.885$, $p < 0.01$ and, neurotic, $\beta = .275$, $t = 3.125$, $p < 0.01$. The signs of the regression weights

indicated positive relationships of NROCS with permissive parenting and neurotic personality. For every 1% increase in permissive parenting styles, NROCS increased by 33% and, for every 1% increase in neurotic personality trait, NROCS increased by 28%.The regression equation was significant ($R = .477$, $R^2 = .227$, $F (3, 113) = 11.076$, $p < 0.01$). As indicated in the equation, the combination of the three predictors accounted for nearly 23% of the variation in NROCS.

Examining Obsessive Beliefs as a Mediator. Subsequently, three multiple regression analyses were conducted to examine OB as a potential mediator in the direct relationships of permissive parenting, and neurotic personality with NROCS. OB was first regressed simultaneously on permissive parenting, and neurotic personality. Secondly, NROCS regressed on OB. Coefficients of the first and second regressions are presented in tables 72 and 73.

Table 72

Simultaneous Multiple Regression Analysis with OB as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.259	2.862	.005***	.117
2 Neurotic	.172	1.902	.060	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 7.538; R = .342; ΔR^2 = .117)

Table 72 shows the results of a simultaneous multiple regression analysis in which the mediating variable (OB) was regressed on permissive parenting and neurotic personality. Multicollinearity tests indicated low levels of multicollinearity with tolerance = .948 for both permissive parenting and neurotic personality. Beta coefficients for the predictors were;

permissive, $\beta = .259$, $t = 2.862$, $p = 0.01$, and neurotic, $\beta = .172$, $t = 1.902$, $p = .060$ n.s. The signs of the regression weights indicated a positive relationship of OB with permissive parenting. The regression equation was significant ($R = .342$, $R^2 = .117$, $F (2, 114) = 7.538$, $p < 0.01$). As indicated in the equation, the combination of the two predictors accounted for nearly 12% of the variation in OB.

Table 73

Bivariate Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.564	7.317	.000***	.318

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 53.541; R = .564; ΔR^2 = .318)

Table 73 presents the results of a bivariate regression analysis in which the outcome variable (NROCS) was regressed on the mediating variable (OB). A multicollinearity test indicated a low level of multicollinearity with tolerance = 1.000 for OB. The beta coefficient for the mediator was; obsessive beliefs, $\beta = .564$, $t = 7.317$, $p < 0.01$. The sign of the regression weight indicated a positive relationship of NROCS with OB. The regression equation was significant ($R = 564$, $R^2 = .318$, $F (1, 115) = 53.541$, $p < 0.01$). As indicated in the equation, the mediator accounted for nearly 32% of the variation in NROCS. Lastly, NROCS was regressed on OB with permissive parenting. Results of the regression analysis are presented in table 74.

Table 74

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.488	6.300	.000***	.376
2 Permissive	.253	3.258	.001***	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 34.315; R = .613; ΔR^2= .376)

Table 74 presents the results of a simultaneous multiple regression in which NROCS was regressed on the mediating variable (OB) and permissive parenting. Test for multicollinearity indicated the presence of low multicollinearity levels with tolerance = .911 for both OB and permissive parenting. Beta coefficients for the two predictors were; obsessive beliefs, β = .488, t = 6.300, $p < 0.01$ and, permissive, β =.253, t = 3.258, $p < 0.01$; The signs of the regression weights indicated positive relationships of NROCS with the mediator (OB) and permissive parenting. The regression equation was significant (R = .613, R^2 = .376, F (2, 114) = 34.315, $p < 0.01$). As indicated in the equation, the combination of the two predictors accounted for nearly 38% of the variation in NROCS.

The beta coefficient of OB is β = .488 which is significant at α 0.01. With its inclusion in the model, the significance level of permissive parenting and NROCS relationship slightly decreased from p =.000 to p =.001. Hence, OB can be considered as a partial mediator in the direct relationship of permissive parenting with NROCS.

Testing H_4, H_5 and H_6 in low-religiosity exposed group [LREG]. The outcome variable (NROCS) was regressed on parental authority styles and personality traits in the LREG. The regression results are presented in tables 75 and 76.

Table 75

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.171	1.340	.184	.105
2 Authoritarian	.233	1.979	.051*	
3 Authoritative	-.058	-.480	.632	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 3.314; R = .324; ΔR^2 = .105)

Table 75 shows results of a simultaneous multiple regression analysis in which NROCS was regressed on parental authority styles (permissive, authoritarian and authoritative) as predictors. Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance = .645, .760, .722) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, β = .171, t = 1.340, p = .184 n.s; authoritarian, β = .233, t = 1.979, p = .051 which is almost significant at α 0.05; and authoritative, β = -.058, t = -.480, p = .632 n.s. The regression equation was significant (R = .324, R^2 = .105, F (3, 85) = 3.314, p < 0.05). As indicated in the equation, the combination of the three predictors accounted for nearly 11% of the variation in NROCS. The signs of the regression weights indicated a positive relationship of NROCS with authoritarian parenting.

Table 76

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Neurotic	.295	2.872	.005***	.112
2 Psychotic	.120	1.155	.251	
3 Extrovert	.145	1.405	.164	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 3.572; R = .335; ΔR^2 = .112)

Table 76 shows results of a simultaneous multiple regression analysis in which NROCS was regressed on personality traits (neurotic, psychotic and extrovert) as predictors. Multicollinearity tests indicated the presence of low level of multicollinearity (tolerance = .991, .968, .976) for neurotic, psychotic and extrovert personality respectively. Beta coefficients for the three predictors were; neurotic, β = .295, t = 2.872, $p < 0.01$; psychotic, β = .120, t = 1.155, p = .251 n.s; and extrovert, β = .145, t = 1.405, p = .164 n.s. The regression equation was significant (R = .335, R^2 = .112, F (3, 85) = 3.572, $p < 0.05$). As indicated in the equation, the combination of the three predictors accounted for nearly 11% of the variation in NROCS. The signs of the regression weights indicated a positive relationship of NROCS with neurotic personality. The outcome variable (NROCS) was regressed on religiosity level along with authoritarian parenting and neurotic personality as predictors. The regression results are presented in table 77.

Table 77

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Religiosity	.093	.903	.369	.144
2 Authoritarian	.228	2.194	.031**	
3 Neurotic	.215	2.051	.043**	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 4.753; R = .379; ΔR^2 = .144)

Table 77 shows the results of a simultaneous multiple regression analysis in which NROCS was regressed on religiosity level, authoritarian parenting and neurotic personality as predictors. Tests for multicollinearity indicated that low levels of multicollinearity were present (tolerance = .954, .932 & .920) for religiosity level, authoritarian parenting and neurotic personality respectively. Beta coefficients for the three predictors were; religiosity, β = .093, t = .903, p = .369 n.s; authoritarian, β = .228, t = 2.194, $p < 0.05$ and, neurotic, β = .215, t = 2.051, $p < 0.05$.

The signs of the regression weights indicated positive relationships of NROCS with authoritarian parenting and neurotic personality. With every 1% increase in authoritarian parenting, NROCS increases by 23% and, for every 1% increase in neurotic personality trait, NROCS increases by 22%. The regression equation was significant (R = .379, R^2 = .144, F (3, 85) = 4.753, $p < 0.01$). As indicated in the equation, the combination of the two predictors accounted for nearly 14% of the variation in NROCS.

Examining Obsessive Beliefs as a Mediator. Subsequently, three regression analyses were conducted to examine OB as a potential mediator in the direct relationships of authoritarian parenting, and neurotic personality with NROCS. First, OB was regressed

simultaneously on authoritarian parenting, and neurotic personality. Then, NROCS Symptoms was regressed on OB. Coefficients of the two regression stages are presented in tables 78 and 79.

Table 78

Simultaneous Multiple Regression Analysis with OB as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Authoritarian	.448	4.684	.000***	.256
2 Neurotic	.152	1.585	.117	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 14.823; R = .506; ΔR^2= .256)

Table 78 shows the results of a simultaneous multiple regression analysis in which the mediating variable (OB) was regressed on authoritarian parenting and neurotic personality. Multicollinearity tests indicated low levels of multicollinearity with tolerance = .944 for both authoritarian parenting and neurotic personality. Beta coefficients for the predictors; authoritarian, β = .448, t = 4.684, p = 0.01, and neurotic, β = .152, t = 1.585, p = .117 n.s. The signs of the regression weights indicated a positive relationship of OB with authoritarian parenting. The regression equation was significant (R = .506, R^2 = .256, F (2, 86) = 14.823, p < 0.01). As indicated in the equation, the combination of the two predictors accounted for nearly 26% of the variation in OB.

Table 79

Bivariate Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.397	4.031	.000***	.157

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 16.252; R = .397; ΔR^2= .157)

Table 79 presents the results of a bivariate regression analysis in which the outcome variable (NROCS) was regressed on the mediating variable (OB). A multicollinearity test indicated low level of multicollinearity with tolerance = 1.000 for OB. The beta coefficient for the mediator was; obsessive beliefs, β = .397, t = 4.031, p < 0.01. The sign of the regression weight indicated a positive relationship of NROCS with obsessive beliefs. The regression equation was significant (R = .397, R^2 = .157, F (1, 87) = 16.252, p < 0.01). As indicated in the equation, the mediator accounted for nearly 16% of the variation in NROCS. Lastly, NROCS was regressed on OB with authoritarian parenting. Results of the regression analysis are presented in table 80.

Table 80

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Obsessive Beliefs	.333	2.967	.004***	.171
2 Authoritarian	.131	1.171	.245	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 8.846; R = .413; ΔR^2= .171)

Table 80 presents the results of a simultaneous multiple regression in which NROCS was regressed on the mediating variable (OB) and authoritarian parenting. Test for multicollinearity indicated the presence of low multicollinearity levels with tolerance = .765 for both OB and authoritarian parenting. Beta coefficients for the two predictors were; obsessive beliefs, β = .333, t = 2.967, $p < 0.01$ and, authoritarian, β =.131, t = 1.171, p =.245 n.s. The signs of the regression weights indicated positive relationships of NROCS with the mediator (OB) and permissive parenting. The regression equation was significant (R = .413, R^2 = .171, F (2, 87) = F = 8.846, p < 0.01). As indicated in the equation, the combination of the two predictors accounted for nearly 17% of the variation in NROCS.

The beta coefficient of OB is β = .333 which is significant at α 0.01. With its inclusion in the model, the beta coefficient of authoritarian parenting (β = .131) became insignificant with p = .245. Hence, OB is validated as a complete mediator for the direct relationship between authoritarian parenting and RNOCS.

Testing H_4, H_5 and H_6 in the low-religiosity non-exposed group [LRNEG]. The outcome variable (NROCS) was regressed on parental authority styles and personality traits in the LRNEG. The regression results are presented in tables 81 and 82.

Table 81

Simultaneous Multiple Regression Analysis with Non-Religious OCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Permissive	.079	.497	.621	.069
2 Authoritarian	-.096	-.677	.502	
3 Authoritative	.198	1.252	.217	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = 1.129 ; R = .262; ΔR^2= .069)

Table 81 shows results of a simultaneous multiple regression analysis in which non-religious OCS was regressed on parental authority styles (permissive, authoritarian and authoritative) as predictors. Multicollinearity tests indicated the presence of low multicollinearity levels (tolerance =. 813, .999, .813) for permissive, authoritarian and authoritative parenting respectively. Beta coefficients for the three predictors were; permissive, $\beta = .079$, $t = .497$, $p = .621$ n.s; authoritarian, $\beta = -.096$, $t = -.677$, $p = .502$ n.s.; and authoritative, $\beta = .198$, $t = 1.252$, $p = .217$ n.s. The regression equation was not significant ($R = .262$, $R^2 = .069$, $F (3, 46) = 1.129$, $p = .347$ n.s). As indicated in the equation, the combination of the three predictors accounted for merely 6% of the variation in NROCS.

Table 82

Simultaneous Multiple Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Neurotic	-.136	-.876	.385	.042
2 Psychotic	-.095	-.641	.524	
3 Extrovert	-.206	-1.301	.200	

*** Statistically significant p < 0.01
** Statistically significant p < 0.05
* Statistically significant p < 0.1
Note: (F = .675; R = .205; $\Delta R^2 = .042$)

Table 82 shows results of a simultaneous multiple regression analysis in which NROCS was regressed on personality traits (neurotic, psychotic and extrovert) as predictors. Multicollinearity tests indicated the presence of low level of multicollinearity (tolerance = .865, .957, .832) for neurotic, psychotic and extrovert personality respectively. Beta coefficients for the three predictors were; neurotic, $\beta = -.136$, $t = -.876$, $p = .385$ n.s;

psychotic, β = -.095, t = -.641, p = .524 n.s; and extrovert, β = -.206, t = -1.301, p = .200 n.s. The regression equation was not significant (R = .205, R^2 = .042, F (3, 46) = .675, p = .572 n.s). As indicated in the equation, the combination of the three predictors accounted for only 4% of the variation in NROCS. The outcome variable (NROCS) was regressed on religiosity level alone as none of the parental authority styles or personality traits was found to be significantly related with the outcome variable in previous analyses. The regression results are presented in table 83.

Table 83

Bivariate Regression Analysis with NROCS as Outcome Variable

Predictor Variables	Standardized β	t	p	R^2
1 Religiosity	.027	.184	.855	.001

*** Statistically significant $p < 0.01$
** Statistically significant $p < 0.05$
* Statistically significant $p < 0.1$
Note: (F = .034; R = .027; ΔR^2= .001)

Table 83 shows the results of a bivariate regression analysis in which NROCS was regressed on religiosity level as a predictor. Test for multicollinearity indicated that low level of multicollinearity was present (tolerance =. 1.000) for religiosity level. Beta coefficient for religiosity was, β = .027, t = .184, p =.855 n.s. The regression equation was not significant (R = .027, R^2 = .001, F (1, 48) = .034, p =.855 n.s). As indicated in the equation, religiosity level did not account for the variation in NROCS.

Chapter 5

Discussion

In the present study, the relationship of religiosity level with religious and non-religious OCS was examined using two low-religiosity groups and two high-religiosity groups, one comprising Christian participants and the other comprising Muslim participants. Three groups were formally exposed to subjects identified as OCD themes while one was not. The exposed groups were the high-religiosity Christian group, the high-religiosity Muslim group and one of the low-religiosity groups.

Religiosity was not the only predictor variable in the model applied for the four groups. Parental authority styles and personality traits were also included as predictors alongside religiosity level in the model with the aim of comparing their predictive ability and explanatory powers for the outcome variables with the predictive ability and explanatory power of religiosity level.

The objectives of the present study were: (a) to examine the relationship of religiosity level with religious and non-religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group, and low-religiosity non-exposed group; (b) to examine the relationship of parental authority styles with religious and non-religious OCS in the high-religiosity Christian group, high-religiosity Muslims group and, the two low-religiosity groups; (c) to examine the relationship of personality traits with religious and non-religious OCS in the high-religiosity Christian group, high-religiosity Muslims group and, the two low-religiosity groups. Additional subsidiary objectives are; (d) to examine obsessive beliefs as a mediator in any significant relationships found between the predictors (religiosity, personality trait & parental style) and the outcome variables (religious

& non-religious OCS) in the four sample groups; and (e) to compare the religiosity level-OCS relationship results of Christians and Muslims from the same culture.

Since the relationships of religious OCS and non-religious OCS with religiosity level, parental authority styles, and personality traits were discretely examined, six hypotheses statements were formulated in the literature review chapter to achieve the objectives of the study mentioned above. The first three statements were regarding the relationship of religious OCS with the three predictors, whereas the last three statements were regarding the relationship of non-religious OCS with the three predictors.

Validation of Hypotheses 1, 2 & 3

Validation of the following hypotheses 1, 2 and 3 are discussed below.

H_1 There will be a significant positive relationship between religiosity level and religious OCS in the high-religiosity exposed Christian group and high-religiosity exposed Muslim group, but no significant relationship between religiosity level and religious OCS in the low-religiosity exposed group and low-religiosity non-exposed group.

H_2 There will be a significant relationship between parental authority styles and religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group.

H_3 There will be a significant relationship between personality traits and religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group.

These three hypotheses were tested in each of the four groups, namely high-religiosity exposed Christian group (HRECG), high-religiosity exposed Muslim group (HREMG), low-religiosity exposed group (LREG) and low-religiosity non-exposed group (LRNEG). Results

of analyses for hypotheses testing varied across the four groups. Table 84 provides the summary of the hypotheses validation.

Table 84

Summary of Hypotheses 1, 2 & 3 Validation in the Four Groups

No	Hypotheses	HRECG	HREMG	LREG	LRNEG
1	H_1	Not Supported	Not Supported	Not Supported	Supported
2	H_2	Supported	Not Supported	Not supported	Supported
3	H_3	Supported	Supported	Supported	Supported

As shown in Table 84 above, hypothesis one was not supported in the high-religiosity Christian group, high-religiosity Muslim group and low-religiosity exposed group, but supported in the low-religiosity non-exposed group. Hypothesis two was validated in the high-religiosity Christian group and low-religiosity non-exposed group, but not in the high-religiosity Muslim group and low-religiosity exposed group. Hypothesis three was substantiated in all the four groups.

Validation of hypotheses 1, 2 & 3 within the high-religiosity exposed Christian group. In the high-religiosity exposed Christian group, the first hypothesis was not validated as the relationship between religiosity level and religious OCS was found to be significant but negative. However, the second and third hypotheses were supported, as authoritative parenting style and neurotic personality traits were found to have a significant positive relationship with religious OCS. Obsessive beliefs were validated as a complete mediator for the significant negative relationship between religiosity level and religious OCS and, a partial mediator in the positive relationships of authoritative style and neurotic traits with the outcome variable.

Validation of hypotheses 1, 2 & 3 within the high-religiosity exposed Muslim group. In the high-religiosity exposed Muslim group, the first and second hypotheses were not supported as the relationship between religiosity level and religious OCS was found to be significant but negative and, none of the parental authority styles were found to be significantly related with religious OCS. The third hypothesis, however, was supported as neurotic traits was found to be significantly related with religious OCS. Obsessive beliefs were found to be neither a complete nor a partial mediator in the direct relationships of religiosity level and neurotic traits with religious OCS.

Validation of hypotheses 1, 2 & 3 within the low-religiosity exposed group. In the low-religiosity exposed group, the first and second hypothesis were not supported as the relationship between religiosity level and religious OCS was found to be significant and positive and, none of the parental authority styles were found to be significantly related with religious OCS. The third hypotheses, however, was supported as neurotic and psychotic personality traits were found to be significantly related with religious OCS. Obsessive beliefs were found to partially mediate the positive relationship of religiosity level with religious OCS.

Validation of hypotheses 1, 2 & 3 within the low-religiosity non-exposed group. In the low-religiosity non-exposed group, the first, second and third hypotheses were supported as religiosity level was found to be not significantly related with religious OCS, while authoritative style and extrovert traits were found to be significantly related with the outcome variable. Obsessive beliefs were found to be a complete mediator in the direct relationship of authoritative parenting with religious OCS.

Validation of Hypotheses 4, 5 & 6

The validation of hypotheses 4, 5 and 6 stated below are discussed in this section.

H_4 There will be a significant positive relationship between religiosity level and non-religious OCS in the high-religiosity exposed Christian group and high-religiosity exposed Muslim group, but no significant relationship between religiosity level and non-religious OCS in the low-religiosity exposed group and low-religiosity non-exposed group.

H_5 There will be a significant relationship between parental authority styles and non-religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group.

H_6 There will be a significant relationship between personality traits and non-religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group, low-religiosity exposed group and low-religiosity non-exposed group.

These three hypotheses were tested in each of the four groups, namely high-religiosity exposed Christian group (HRECG), high-religiosity exposed Muslim group (HREMG), low-religiosity exposed group (LREG) and low-religiosity non-exposed group (LRNEG). Results of analyses for hypotheses testing varied across the four groups. Table 85 provides the summary of the hypotheses validation.

Table 85

Summary of Hypotheses 4, 5 & 6 Validation in the Four Groups

No	Hypotheses	HRECG	HREMG	LREG	LRNEG
1	H_4	Not supported	Not supported	Supported	Supported
2	H_5	Supported	Supported	Supported	Not supported
3	H_6	Supported	Supported	Supported	Not Supported

As shown in Table 85 above, hypothesis four was supported in the low-religiosity exposed group and low-religiosity non-exposed group, but not in the high-religiosity

Christian group and high-religiosity Muslim group. Hypothesis five was substantiated in the the high-religiosity Christian group, high-religiosity Muslim group and the low-religiosity exposed group, but not in the low-religiosity non-exposed group. Similarly, hypothesis six was verified in the high-religiosity Christian group, high-religiosity Muslim group and the low-religiosity exposed group, but not in the low-religiosity non-exposed group.

Validation of hypotheses 4, 5 & 6 within the high-religiosity exposed groups (Christian & Muslim). In the high-religiosity exposed Christian group the fifth and sixth hypotheses were verified, but not the fourth, as permissive style, authoritarian style and neurotic traits were found to be significantly related with non-religious OCS, but not religiosity level. Results of the high-religiosity exposed Muslim group also supported the fifth and sixth hypotheses, but not the fourth, as permissive style and neurotic traits were found to be significantly related with non-religious OCS. Like the high-religiosity exposed Christian group, religiosity level was not significantly related with non-religious OCS. Obsessive beliefs were found to be a partial mediator in the direct relationship of permissive style with non-religious OCS.

Validation of hypotheses 4, 5 & 6 within the low-religiosity groups (exposed & non-exposed). In the low-religiosity exposed group hypothesis four, five and six were supported, as no significant relationship was found between religiosity level and non-religious OCS, but authoritarian style and neurotic traits were found to be significantly related with non-religious OCS. Obsessive beliefs were validated as a complete mediator for the direct relationship between authoritarian style and non-religious OCS. In the low-religiosity non-exposed group the fourth hypothesis was verified but, the fifth and sixth hypotheses were not, as religiosity level, parental authority style and personality traits were found to be not significantly related with non-religious OCS.

The Relationship of Personality Traits and Parental Authority Styles with Religious and Non-religious OCS in the Four Groups

Results of the relationships of personality traits and parental authority styles with religious and non-religious OCS in the four groups support the assumption that there are other important factors, besides religiosity level that may explain OCS variations, the exclusion of which may have yielded results which explained OCS variations insufficiently. The inclusion of personality traits and parental authority styles as predictors in the present study's model demonstrated that they explain non-religious OCS variations without religiosity level, and explain religious OCS variations with religiosity level.

The relationship of personality traits and parental authority styles with religious OCS in the four groups. Beside religiosity level, personality traits and parental authority styles also explained religious OCS of the four groups. In the high-religiosity exposed Muslim group, neurotic traits explained religious OCS variations *(β = .21)* alongside religiosity level *(β = -.31)*. Its relationship with the outcome variable was positive. In the low-religiosity exposed group, religious OCS variations were explained by both neurotic *(β = .18)* and psychotic traits *(β = -.16)* alongside religiosity level *(β = .39)*. While neurotic traits was positively related, psychotic trait was negatively related.

Within the high-religiosity Christian group, neurotic traits *(β= .37)* and authoritative parental style *(β= .28)* explained religious OCS variations along with religiosity level *(β= -.21)*. Both predictors were positively related with the outcome variable. In the low-religiosity non-exposed group also religious OCS was predicted by authoritative style *(β =.42)*. However, besides authoritative style, religious OCS in this group was also explained by extrovert traits *(β =.41)*, but not religiosity level, hence differing from the other three groups. The relationship of religious OCS with both authoritative style and extrovert traits, in the low-religiosity non-exposed group was positive.

Hence, the positive relationship of religious OCS with neurotic traits in the two high religiosity groups and the low-religiosity exposed group indicated that the severity of religious OCS increased with an increase in neurotic traits. Such neurotic traits-religious OCS relationship results are comparable to the positive neurotic traits-generic OCS link demonstrated in previous studies (Fullana, Mataix-Cols, Trujillo et al., 2004; Salmanpour & Issazadegan, 2012; & Wu et al., 2005). Similarly, the negative relationship of religious OCS with psychotic traits in the low religiosity exposed group was consistent with findings in past studies (Fullana, Mataix-Cols, Trujillo et al., 2004; Fullana, Mataix-Cols, Caseras et al., 2004; Gutiérrez-Zotes et al., 2013). However, religious OCS' positive relationship with extrovert traits in the low religiosity non-exposed group was inconsistent with the findings of past studies (Fullana, Mataix-Cols, Trujillo et al., 2004; Fullana, Mataix-Cols, Caseras et al., 2004; Gutiérrez-Zotes et al., 2013; Salmanpour & Issazadegan, 2012; Wu et al., 2005).

As noted, parental authority style did not explain religious OCS in both the high-religiosity Muslim group and low-religiosity exposed group. Religious OCS was explained by parental authority style in the high-religiosity Christian group and the low-religiosity non-exposed group, though. The investigation of the parental authority style (permissive, authoritarian & authoritative) link with religious and non-religious OCS in the four groups of the present study was explorative. Therefore, its findings cannot be directly compared or contrasted with the finding of past studies, which mainly examined the relationships of OCS/D with parental bonding styles [overprotection & care] or parental rearing styles [rejection, emotional warmth & overprotection] (Yoshida, Taga, Matsumoto & Fukui, 2005; Turgeon, O'Connor, Marchand & Freeston, 2002; Vogel, Stiles & Nordahl, 1997).

The relationship of personality traits and parental authority styles with non-religious OCS in the four groups. Non-religious OCS, in the high-religiosity exposed Christian group was explained by permissive style *(β=.28),* authoritarian style *(β=.29)*, and

neurotic traits *(β=.25)*, but not by religiosity level. Similarly, in the high-religiosity exposed Muslim group also, non-religious OCS was explained only by permissive style *(β=.33)*, and neurotic traits *(β=.28)*, but not by religiosity level. In the low-religiosity exposed group, non-religious OCS was explained by authoritarian style *(β=.23)* and neurotic traits *(β=.22)* only. Non-religious OCS, in the low-religiosity non-exposed group have not been explained by any of the three predictors. Hence, religiosity level did not predict non-religious OCS in any of the groups.

Results show that non-religious OCS in the high-religiosity exposed Christian group, high-religiosity exposed Muslim group and the low religiosity exposed group was explained better by variant parental authority styles than neurotic personality traits. The relationships of both predictors with non-religious OCS in the three groups were positive, indicating that non-religious OCS increased with an increase in neurotic traits and the different parental authority styles documented for each group. The positive relationship of neurotic traits with non-religious OCS is harmonious with the findings of past studies which showed an association between neurotic traits and generic OCS (Fullana, Mataix-Cols, Trujillo et al., 2004; Salmanpour & Issazadegan, 2012; & Wu et al., 2005).

The positive relation of variant personality traits and/or parental authority styles with religious and non-religious OCS, the absence of a significant relationship between religiosity level and non-religious OCS and the negative relation of religiosity level with religious OCS, provide a fresh perspective on the relationship of religiosity level with OCS. A perspective which favors the assumption that variation in OCS may actually be linked with personality traits, parental authority styles and other potential predictors of OCS, rather than religiosity level, with obsessive beliefs as a mediator in some of the relationships.

The Relationship of Religiosity Level and Religious OCS in the Low-Religiosity Groups (Exposed & Non-Exposed)

Exposure to subjects identified as OCD themes was supported as a potential moderator of the positive relationship of religiosity level with religious OCS found in the low-religiosity exposed group of the present study, as such a relationship was absent in its low-religiosity non-exposed group. The increase of religious OCS in the exposed group were best explained by their religiosity level *(β = .39)*, as compared to neurotic *(β = .18)* and psychotic *(β =-.16)* personality traits. The statistical results of religiosity level- religious OCS relationship in the low-religiosity exposed group of this study were inconsistent with the findings of past studies' low-religiosity groups, which indicated no significant relationship between the two variables (e.g., Abramowitz, et al., 2004; Hermesh et al., 2003; Seive & Cohen, 2007; Sica et al., 2002; Tek & Ulag, 2001; Yorulmaz, et al., 2009; Zohar et al, 2005). The presence of a significant relationship between the variables in the low-religiosity exposed group of the present study, therefore, suggests that its absence in past studies' low religiosity groups may be due to their non-exposure to subjects identified as OCD themes. Further research should explore in greater depth in low-religiousity exposed groups to illuminate the predictors involved.

No significant religiosity level- religious OCS relationship was found in the low-religiosity non-exposed group of the present study, which was consistent with past findings on low-religiosity groups (e.g., Abramowitz et al., 2004; Hermesh et al., 2003; Seive & Cohen, 2007; Sica et al., 2002; Tek & Ulag, 2001; Yorulmaz, et al., 2009; Zohar et al, 2005). Religious OCS in this group, however, was significantly related with authoritative style *(β =.42)* and extrovert traits *(β =.41)*, hence indicating a significant religious OCS incidence in the non-exposed group as well. The presence of religious OCS in both low-religiosity groups (exposed and non-exposed) indicated that their participants possessed a certain level of

religiosity, despite reporting themselves as non-religious. This finding is consistent with Okasha et al. (1994) observation of religious OCS incidence among his non-religious Egyptian patients. It is worth noting that Egypt is a country with a dominantly religious culture owing to its overwhelming religious population. Likewise, Greenberg and Huppert (2010) also observed that many Israeli Jewish patients who describe themselves as secular or liberal presented with numerous scrupulosity themes like, fearing hell or the penalty of violating a religious decree, despite not believing in them. As such, they affirmed that liberal forms of religious adherence, atheism or agnosticism do not inoculate an individual from the risk of developing religious OCS/scrupulosity (Greenberg & Huppert, 2010).

The presence of religious OCS in both low-religiosity groups (exposed & non-exposed) verified the appropriateness and significance of assessing the level of religiosity and religious OCS in the non-religious participants' of the present study. In fact, such results should encourage future researchers to gauge religious OCS in their non/less-religious groups also, especially if they have been sampled from dominantly religious populations.

It is most likely, that the low-religiosity groups (exposed & non-exposed) of this study exhibited religious OCS presence because of the values or morals to which they adhered, if not because of their faith. A contextual explanation for the religious OCS found in less-religious participants of this study may be considered. While less-religious individuals are a minority in Malaysia, they may have inevitably embraced religious values and morals which are inherent in the dominant culture of the overwhelming religious majority, hence exhibiting religious OC symptoms.

The Relationship of Religiosity Level and Religious OCS in the High-Religiosity Exposed Groups (Christian & Muslim)

In the present study, being religious was validated as a potentially *protective factor* against religious OCS in both high-religiosity exposed Muslims and high-religiosity exposed Christians, as an increase in religiosity level was found to be associated with reduction of religious OCS in the high-religiosity exposed Muslim as well as Christian groups. Such religiosity-OCS relationship findings in these groups were contradictory to most past studies in which religiosity was broadly examined (Abramowitz et al., 2004; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica, et al., 2002; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar et al., 2005). While some of these studies demonstrated no significant relationship between religiosity level and generic OCS (e.g. Tek & Ulug, 2001), others demonstrated a significant, but positive relationship between the two variables, indicating that an increase in religiosity level would be associated with an increase in religious OC phenomena (Abramowitz et al., 2004; Inozu, Clark & Karanci, 2012; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica, et al., 2002; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar et al., 2005). However, the present religiosity level-religious OCS relationship results of these groups are similar to Himle et al.'s (2012) finding indicating a negative association between OCD and church service attendance, one of the religiosity dimensions examined. Although, they did not match another finding in the same study which indicated a positive relationship between OCD and religious coping (e.g. performing prayer in stressful conditions), another religiosity dimension in their study.

Generally, this finding is consistent with the bulk of studies which demonstrated a negative relationship between religiousness and other psychopathological problems such as depression and anxiety, hence strengthening their position on religion being a protective factor against psychopathological problems (Gallagher, Wadsworth, & Stratton; Hill &

Pargament; Koenig, George, Titus & Meador; Hodges; Larson & Larson as cited in Gonsalvez et al., 2009).

The link of religious OCS reduction with increase in the religiosity level in both high-religiosity Muslims and Christians indicated that both Christianity and Islam possess features which facilitate the reduction of OCS severity. Hence, the inverse association of the two variables in both high-religiosity Muslim and Christian groups does not support the attribution of increased religious OCS prevalence to the nature of either Christianity or Islam, as seen in past studies (Greenberg, 1984; Okasha et al., 1994).

The religious OCS reduction in high-religiosity exposed Muslims and Christians, which occurred with an increase in their religiosity level, differed in degree. Religious OCS reduction in the high-religiosity exposed Christian group was least explained by religiosity level $(\beta= -.21)$, as compared to neurotic traits $(\beta= .37)$ and authoritative style $(\beta= .28)$. Contrarily, religious OCS reduction in the high-religiosity exposed Muslim group was best explained by religiosity level $(\beta = -.31)$ as compared to neurotic traits $(\beta = .21)$. In other words, the degree of religious OCS severity reduction in relation to religiosity level increase was found to be greater in high-religiosity Muslims than high-religiosity Christians, hence indicating that an increase in religiousness might benefit Muslims more than Christians in reducing religious OCS. Such variations in religious OCS reduction found in high-religiosity exposed Christians and Muslims could be due to variations in the OCS reducing features of Christianity and Islam, and not their cultural diversity, which was minimized in the present study by sampling them from the same region to minimize confounding of results.

The inverse relationship between religiosity level and religious OCS found in the high religiosity exposed groups (Christians & Muslims) could have been moderated by their advanced religious knowledge. The majority of the participants in the two high-religiosity exposed groups were university students from religious studies degree programs. Their

knowledge and understanding of religious concepts, practices, rulings and their leniencies was most likely deeper than individuals whose knowledge of religion was culturally acquired. Such knowledge may have guided them to a spiritual/religious approach for managing religious OCS.

This assumption is supported by the fact that past results of high-religiosity groups, whose participants were religious but not students of religion, demonstrated a positive relationship between their religiosity level and religious OCS (Abramowitz et al., 2004; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica, et al., 2002; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar et al., 2005), rather than a negative relationship, which indicated that their symptoms increased with an increase in religiosity. Many of the high-religiosity participants in past studies may have acquired their religious knowledge culturally rather than formally. So far, only two studies have recruited students from a religious school for its high-religiosity groups (Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012). The level of their religious knowledge, however, cannot be compared to the level of students pursuing a university degree in the subject.

Therefore, the inverse relationship of religiosity level with religious OCS found exclusively in highly-religious Christians and Muslims with advanced levels of religious knowledge suggests an effectual role of enhanced religious knowledge in the reduction of religious OCS. The effectual role of religious knowledge in the reduction of religious OCS was greatly emphasized by early Muslim religious scholars (e.g. Ibn al-Qayyim, 1933), and subsequently by Christian religious authorities (Bourke, 2009), while they tried to tackle the problem of scrupulosity by enhancing the sufferers religious knowledge (Bourke, 2009; Ibn al- Qayyim, 1933). More importantly, these statistical findings, support and suggest the use of religious interventions, which presently are being employed and recommended by a growing number of psychologists (e.g., Badri, 1979; Besiroglu et al.,, 2012; Bonchek &

Greenberg, 2009; Bhugra & Osbourne, 2004; Greenberg & Huppert, 2010; Hatta, 2001; Huppert et al., 2007; Singh & Khan, 1998; West, 2000; Zain, 2001), for better treatment outcomes. Since the use of religious interventions is aimed at enhancing the religious knowledge and spirituality of patients, it is expected to reduce the severity of their religious OCS.

Summary. The positive relation of variant personality traits and/or parental authority styles with religious and non-religious OCS, the absence of a significant relationship between religiosity level and non-religious OCS, and the negative relation of religiosity level with religious OCS, provide a fresh religiosity-OCS perspective which favors the assumption that variations in OCS may actually be linked with personality traits, parenting authority styles and other potential predictors of OCS, rather than a high religiosity level.

In the present study high religiosity was validated as a potentially protective factor against religious OCS in both Muslims and Christians, as an increase in religiosity level was found to be associated with reduction of religious OCS in the high-religiosity Muslim as well as the Christian groups. This study, therefore, contradicts previous studies, which indicated religiosity as a potential predisposing factor for the development of OCS/D (Abramowitz et al., 2004; Inozu, Clark & Karanci, 2012; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica, et al., 2002; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar et al., 2005). The link of religious OCS reduction with increase in the religiosity level of both Muslims and Christians indicated that both Christianity and Islam possess features which facilitate the reduction of OCS severity. Hence, it invalidates the attribution of increased religious OCS prevalence to the nature of either Christianity or Islam, as seen in past studies (Greenberg, 1984; Okasha et al., 1994). Such reduction features, however, may differ in the two religions, as Muslims indicated a greater degree of religious OCS severity reduction in relation to religiosity level

increase than Christians. This finding possibly suggests that an increase in religiousness could benefit Muslims more than Christians in reducing religious OCS.

The inverse relationship between religiosity level and religious OCS found in the high- religiosity groups (Christians & Muslims) could have been moderated by their advanced religious knowledge. Such assumption is supported by the fact that past results of high-religiosity groups, whose participants were religious but not students of religion, demonstrated a positive relationship between their religiosity level and religious OCS (Abramowitz et al., 2004; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica, et al., 2002; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar et al., 2005), rather than negative, which indicated that their symptoms increased with an increase in religiosity. Therefore, the negative relationship of religiosity level with religious OCS found exclusively in highly-religious Christians and Muslims with advanced levels of religious knowledge suggests an effectual role of enhanced religious knowledge in reducing religious OCS.

Implications of the Study on OCD Therapeutic and Research Approach

The present study has validated personality traits, parental authority styles and low religiosity level as potential predisposing factors in the development of OCD, mediated through dysfunctional obsessive beliefs. Such validation has significant implications on the therapeutic approach for treating OCD, as it suggests that mental health professionals, while managing religious and non-religious OCD patients, should consider adopting a holistic approach in which the personality traits, parental authority style and the religiosity level of the patient should be identified and carefully assessed, and the dysfunctional obsessive beliefs which maintain his/her OCD should be cognitively countered while applying behavioral techniques like EX/RP.

The present research also has crucial implications on the management of religious OCD patients in particular, as it evidently suggests the benefit of integrating religious interventions in their cognitive behavioral treatment approach. Moreover, it facilitates a quantitative empirical foundation for modern psychologists and psychiatrists who, based on their clinical experience, have been advocating a clinical approach that integrates religious interventions in the management of psychological disorders (Badri, 1979; Besiroglu et al.,, 2012; Bhugra & Osbourne, 2004; Bonchek & Greenberg, 2009; Greenberg & Huppert, 2010; Hatta, 2001; Huppert et al., 2007; Singh & Khan, 1998; West, 2000; Zain, 2001). At the same time, the present research negates studies which, due to the positive religiosity-OCD link found in them, imply that the use of religious interventions would be, not only inappropriate, but rather problematic in the treatment of OCD (Abramowitz et al., 2004; Inozu, Clark & Karanci, 2012; Inozu, Karanci & Clark, 2012; Gonsalvez et al., 2010; Seive & Cohen, 2007; Sica, et al., 2002; Williams et al., 2013; Yorulmaz, et al., 2009; Zohar et al., 2005).

Religious interventions can be conveniently integrated with cognitive behavior therapy. This is evident from the clinical practice of the mental health clinicians who recommend its use (Badri, 1979; Besiroglu et al.,, 2012; Bonchek & Greenberg, 2009; Bhugra & Osbourne, 2004; Greenberg & Huppert, 2010; Hatta, 2001; Huppert et al., 2007; Singh & Khan, 1998; West, 2000; Zain, 2001). They effectively treated religious OCD cases by integrating religious interventions with cognitive and behavior therapeutic approaches (Badri, 1979; Bonchek & Greenberg, 2009; Greenberg & Huppert, 2010; Huppert et al., 2007; Singh & Khan, 1998; Zain, 2001). For example Bonchek and Greenberg (2009) successfully treated three religious patients with prayer related symptoms using the guided-prayer repetition technique, which was innovated by them, to achieve the results of EX/RP without preventing their patients from prayers. Likewise, mental health professionals who opt to integrate religious interventions in their clinical practice should be profound, insightful,

innovative and precautious while managing their religious OCD patients. Therefore it would be advantageous that they equip themselves with relevant religious knowledge and/or remain constantly connected with spiritual healers or religious authorities for advice and assistance during the treatment process (Besiroglu et al., 2012; Greenberg & Huppert, 2010; Huppert et al., 2007). They may also receive professional training on the assessment of spiritual coping ability, the application skills of religious interventions, and the religious ethics of approaching spiritual healers and religious authorities for advice.

In addition, results of the present study set new directions for future research in the area of the religiosity-OCS/OCD relationship. They suggest the need for identifying and including new potential predictors alongside religiosity in future religiosity-OCS/OCD research models for more accurate results. Moreover, they insinuate the need for adopting a more rigorous approach in the recruitment of participants for the different religiosity groups. In the current study, a group of low-religiosity participants were formally exposed to OCD subjects like their highly religious counterparts. Results indicated a positive relationship of religiosity level with religious OCS in this group. Since, a significant relationship between the two variables was absent in the unexposed low-religiosity participants of the present study as well as previous studies (e.g., Abramowitz et al., 2004; Hermesh et al., 2003; Seive & Cohen, 2007; Sica et al., 2002; Tek & Ulag, 2001; Yorulmaz, et al., 2009; Zohar et al, 2005), exposure to subjects identified as OCD themes was supported as a potential moderator for the positive relationship found in the low-religiosity exposed group.

The unique results obtained after using OCD specialised scales in the present study also indicate the need to use similar appropriate scales in future religiosity-OCS/OCD studies for measuring OCS (religious & non-religious) adequately. In the present study, the 28 item Religious Obsessive Compulsive Symptoms Scale (ROCSS) was designed by the thesis author to adequately capture and measure religious OCS identified in Muslims by OCD

phenomenological and relationship studies (Abramowitz et al., 2004; Greenberg, 1984; Greenberg & Shefler, 2002; Karadag et al., 2006; Mahgoub & Abdel-Hafeiz, 1991; Okasha, et al., 1994). The development of ROCSS is an important contribution of the present study, since its availability could facilitate for gaging religious OCS of Muslim participants in future research. Measuring religious OCS in low-religiosity groups also is recommended, considering the presence of religious OCS found in both low-religiosity groups (exposed and non-exposed), which indicated that low-religiosity groups, especially in eastern cultures, may possess a degree of religiosity, despite reporting themselves as non-religious.

Limitations and Recommendations for Future Research

Religiosity in the present study has been broadly examined as a potential predictor of religious and non-religious OCS, therefore it is recommended that religiosity should be studied as a multi-dimensional construct, and each construct should be examined in more depth as a predictor of religious and non-religious OCS in future studies. Furthermore, the mediating roles of obsessive beliefs facets; (a) responsibility and threat estimation; (b) intolerance of uncertainty and perfectionism, and (c) importance and control of thoughts, have not been investigated separately in the significant relationships found between the predictors and OCS. As such it is suggested that the three obsessive beliefs should be examined as mediators separately in the direct relationships of the predictor with the outcome variables.

In this way, the religious dimensions and the OC symptoms' themes that relate to each facet of obsessive beliefs can be identified. Moreover, parental authority styles of the mothers and fathers of the participants were not separately analysed in this study. Hence, it is recommended that they should be separately analysed in future studies of a similar nature for more accurate results. It is also suggested that a Jewish sample should be examined along with Christian and Muslim samples in future cross-religious OCD studies, because of the

similarities in OCD prevalence and content found between Muslims and Jews in previous studies. The present study focused mainly on Christians and Muslims because the Malaysian and Indonesian population does not constitute a sizable Jewish community from which a Jewish sample could have been drawn.

Furthermore, in this study, the denominations of the Christian participants were not determined. It is therefore suggested that the different Christian denominations should be specified and separately examined in future, as their results may vary in relation to other religious groups. Recruiting highly religious Malaysian Christians for this study was very problematic. Most of the visited religious institutions and churches were reluctant and did not allow their theology students to participate in research. Such problems could be more common in countries where Christians are in the minority. Hence, it would be useful in such countries to form a Christian recruitment team of key research members who will educate and convince reluctant religious authorities about the benefits of research and participation. This was attempted in the present study with Christian research assistants, but still was not very successful to gain access to these institutions.

Additionally, a greater percentage of religious and non-religious OCS variation remained unexplained in the four groups, indicating that more potential predictors should have been identified and added in the research model. The combination of the three significantly related predictors in the high-religiosity Christian group accounted for nearly 37% of the variation in religious OCS. In other words, 63% of religious OCS variations remained unexplained. In the high-religiosity Muslim group, the combination of the two predictors accounted for only 17% of the variation in religious OCS, indicating that 83% of religious OCS variations were not explained in this group.

Furthermore, the combination of the three predictors in the low-religiosity exposed group accounted for nearly 26% of the variation in religious OCS. Hence, 74% of religious

OCS variation remained unexplained, whereas, the combination of the two predictors in the low-religiosity non-exposed group accounted for nearly 28% of the variation in religious OCS. Therefore, 72% of the religious OCS variation remained unexplained in this group. Given the high percentage of unexplained religious OCS variations in each group of the present study, it is suggested that new potential predictors for religious OCS should be identified and examined alongside religiosity level in future research. Lastly, qualitative studies are suggested to further explore the identified relationships in more depth. Furthermore, additional research is recommended to examine clinical efforts using religiously integrated psychotherapy with religious patients with OCD. Clinical research could help establish clearer treatment protocals for these population groups and provide evaluations of the evidence base for their use in practice.

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APPENDIX A: Research Instruments

Research Instrument for Muslims

<u>**Objective & General Instructions**</u>

    a.   The objective of this survey is to get your views about your experiences while practicing Islam

    b.   The respondent to this survey is anonymous. Therefore, you are not required to disclose your name and matric number

    c.   All Individual responses to this questionnaire will be kept <u>STRICTLY CONFIDENTIAL</u>

General Information

Kindly tick (√) in the box of your choice.

1. Status: Malaysian ☐   Non-Malaysian ☐

2. Gender: Male ☐   Female ☐

3. Year of study: Year 1 ☐ Year 2 ☐ Year 3 ☐ Year 4 ☐

4. Type of School you came from: Public ☐ Religious ☐ Private ☐

5. Does any of your family members suffer from persistent unwanted disturbing thoughts and unwanted repetitive behaviors?   Yes ☐ No ☐

6. Do you come from a religious family background?   Yes ☐ No ☐

A. **Instructions**: The following statements refer to some religious practices that people perform. Please indicate the statement that describes you best by circling the appropriate number.

1- How often do you perform all the five daily prayers?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

2- How often do you pray in congregation?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

3- How often do you pray in a mosque?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

4- How often do you pray privately (tahajjud)?
   1. Seldom
   2. A few times a month
   3. A few times a week
   4. Everyday

5- How often do you seek Allah's forgiveness for things that you have done wrong.
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

6- How often do you complete the fasting of Ramadan?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

7- How often do you fast *nawafil*?
   1. Seldom
   2. Once a month
   3. A few times a month
   4. Twice a week

8- How often do you read the Holy Qur'an?
   1. Seldom
   2. A few times a month
   3. A few times a week
   4. Everyday

9- How often do you recite *du'a* (prayer) before and after doing something for example eating a meal?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

10- How often do you help or serve others without expecting any reward from them?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

11- How often do you forgive those who hurt you?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

12- How often do you read religious literature?
   1. Seldom
   2. A few times a month
   3. A few times a week
   4. Everyday

13- How often do you watch or listen to religious programs?
   1. Never
   2. Seldom
   3. Often
   4. Always or almost always

14- How often do you try to carry your religious beliefs over to all your other dealings in life?
1. Never
2. Seldom
3. Often
4. Always or almost always

15- Did you ever have a religious or spiritual experience that changed your life?
No
Yes
IF YES: How old were you when this experience occurred?

16- Have you ever had a significant gain in your faith?
No
Yes
IF YES: How old were you when this occurred?

17- Have you ever had a significant loss in your faith?
No
Yes
IF YES: How old were you when this occurred?

Overall Self –Ranking
18- To what extent do you consider yourself as a religious person?
1. Very religious
2. Moderately religious
3. Slightly religious
4. Not religious at all

B. *Instructions*: The following statements refer to what Muslims sometimes experience while practicing Islam. Please read each descriptive statement carefully and indicate how often you have these experiences by circling the appropriate number (on a 5-point scale given below) that **best describes how you feel about the statement**.

0	1	2	3	4
Never	Almost never	Sometimes	Often	Constantly

1	If dirt (*najasah*) like urine etc. comes on my clothes, I wash it for longer than necessary	0	1	2	3	4
2	I wash my body during a purification bath (*ghusl at-taharah*) for longer than necessary	0	1	2	3	4
3	On visiting the toilet, I wash my body outlets and hand for longer than necessary	0	1	2	3	4
4	After performing my ablution (*wudhu'*) carefully, I still have the impression I have not performed it properly, or not completed it	0	1	2	3	4
5	Sometimes I doubt having performed a certain part (*rukn*) of my ablution (*wudhu'*) even though I know I have performed it	0	1	2	3	4
6	At times, I am not sure if I still have my ablution (*wudhu'*), when I actually know that I have not done anything that would break it	0	1	2	3	4
7	When I take ablution(*wudhu'*) I have the impression I have missed something important and must repeat my ablution at least two or three times	0	1	2	3	4
8	I have to perform ablution (*wudhu'*) several times before I think it is properly done	0	1	2	3	4

9	I wash my body parts during ablution (*wudhu'*) more than three times to ensure they are washed properly.	0	1	2	3	4
10	Sometimes I am not sure about my intention when performing ablution (*wudhu'*).	0	1	2	3	4
11	After performing my prayer (s*alah*) carefully, I still have the impression I have not performed it properly, or not completed it	0	1	2	3	4
12	At times I doubt having performed a certain part (*rukn*)of my prayer (*salah*) even though I know I have performed it	0	1	2	3	4
13	When I pray I have the impression I have missed something important and must repeat my prayer (*salah*) at least two or three times	0	1	2	3	4
14	When I pray, I tend to repeat the whole prayer (*salah*) or some of its recitations (*adhkar*) several times to ensure that I have done it/them correctly	0	1	2	3	4
15	I have to pray several times before I think it is properly done	0	1	2	3	4
16	I have to read Qur'anic verses or recitations (*adhkar*) several times during prayer (*salah*) before I think it is properly done	0	1	2	3	4
17	Sometimes I am not sure about my intention, sincerity and devotion when performing prayers (*salah*)	0	1	2	3	4
18	When I read a *surah* from the Qur'an I tend to repeat the whole *surah* or its verses several times to ensure that I have read it/them correctly.	0	1	2	3	4
19	When I read the Qur'an I have the impression I have missed some words or verses and must go back and re-read the same part of the Qur'an at least two or three times	0	1	2	3	4
20	Immoral thoughts or images (e.g. an unlawful relationship) come to my mind against my will and I cannot get rid of them	0	1	2	3	4
21	Immoral thoughts occur to my mind and I can't dispel (get rid of) them	0	1	2	3	4
22	After performing a purification bath (*ghusl at-taharah*) carefully, I still have the impression I have not performed it properly, or not completed it	0	1	2	3	4
23	Sometimes I doubt having performed a certain part (*rukn*) of my purification bath (*ghusl at-taharah*) even though I know I have performed it	0	1	2	3	4
24	When I perform a purification bath (*ghusl at-taharah*) I have the impression I have missed something important and must repeat it at least two or three times	0	1	2	3	4
25	I have to perform a purification bath (*ghusl at-taharah*)several times before I think it is properly done	0	1	2	3	4
26	Blasphemous thoughts (e.g. Muhammad (SAW) was not a prophet) come into my mind against my will and I cannot get rid of them	0	1	2	3	4
27	At times I get blasphemous thoughts which make me doubt that I am a true Muslim	0	1	2	3	4
28	Sometimes I am not sure about my faithfulness to Islam because of the blasphemous thoughts that come to my mind	0	1	2	3	4

C. *Instructions*: The following statements refer to what people sometimes think and feel. Please indicate how often you have these experiences by circling the appropriate number.

1	2	3	4	5	6	7

disagree very much	disagree moderately	disagree a little	neither agree nor disagree	agree a little	agree moderately		agree very much		

1	I often think things around me are unsafe.									
		1	2	3	4	5	6	7

2	If I'm not absolutely sure of something, I'm bound to make a mistake.
	1 2 3 4 5 6 7

3	Things should be perfect according to my own standards.
	1 2 3 4 5 6 7

4	In order to be a worthwhile person, I must be perfect at everything I do.
	1 2 3 4 5 6 7

5	When I see any opportunity to do so, I must act to prevent bad things from happening.
	1 2 3 4 5 6 7

6	Even if harm is very unlikely, I should try to prevent it at any cost.
	1 2 3 4 5 6 7

7	For me, having bad urges is as bad as actually carrying them out.
	1 2 3 4 5 6 7

8	If I don't act when I foresee danger, then I am to blame for any consequences.
	1 2 3 4 5 6 7

9	If I can't do something perfectly, I shouldn't do it at all.
	1 2 3 4 5 6 7

10	I must work to my full potential at all times.
	1 2 3 4 5 6 7

11	It is essential for me to consider all possible outcomes of a situation.
	1 2 3 4 5 6 7

12	Even minor mistakes mean a job is not complete.
	1 2 3 4 5 6 7

13	If I have aggressive thoughts or impulses about my loved ones, this means I may secretly want to hurt them.
	1 2 3 4 5 6 7

14	I must be certain of my decisions.
	1 2 3 4 5 6 7

15.	In all kinds of daily situations, failing to prevent harm is just as bad as deliberately causing harm.
	1 2 3 4 5 6 7

16	Avoiding serious problems (for example, illness or accidents) requires constant effort on my part.
	1 2 3 4 5 6 7

17	For me, not preventing harm is as bad as causing harm.
	1 2 3 4 5 6 7

18	I should be upset if I make a mistake.
	1 2 3 4 5 6 7

19	I should make sure others are protected from any negative consequences of my decisions or actions.
	1 2 3 4 5 6 7

20	For me, things are not right if they are not perfect.
	1 2 3 4 5 6 7

21	Having nasty thoughts means I am a terrible person.
	1 2 3 4 5 6 7

22	If I do not take extra precautions, I am more likely than others to have or cause a serious disaster.
	1 2 3 4 5 6 7

23	In order to feel safe, I have to be as prepared as possible for anything that could go wrong.
	1 2 3 4 5 6 7

24	I should not have bizarre or disgusting thoughts.
	1 2 3 4 5 6 7

25	For me, making a mistake is as bad as failing completely.
	1 2 3 4 5 6 7

26	It is essential for everything to be clear cut, even in minor matters.
	1 2 3 4 5 6 7

27	Having a blasphemous thought is as sinful as committing a sacrilegious act.
	1 2 3 4 5 6 7

28	I should be able to rid my mind of unwanted thoughts.
	1 2 3 4 5 6 7

29	I am more likely than other people to accidentally cause harm to myself or to

	others.	1	2	3	4	5	6	7
30	Having bad thoughts means I am weird or abnormal.	1	2	3	4	5	6	7
31	I must be the best at things that are important to me.	1	2	3	4	5	6	7
32	Having an unwanted sexual thought or image means I really want to do it.	1	2	3	4	5	6	7
33	If my actions could have even a small effect on a potential misfortune, I am responsible for the outcome.	1	2	3	4	5	6	7
34	Even when I am careful, I often think that bad things will happen.	1	2	3	4	5	6	7
35	Having intrusive thoughts means I'm out of control.	1	2	3	4	5	6	7
36	Harmful events will happen unless I am very careful.	1	2	3	4	5	6	7
37	I must keep working at something until it's done exactly right.	1	2	3	4	5	6	7
38	Having violent thoughts means I will lose control and become violent.	1	2	3	4	5	6	7
39	To me, failing to prevent a disaster is as bad as causing it.	1	2	3	4	5	6	7
40	If I don't do a job perfectly, people won't respect me.	1	2	3	4	5	6	7
41	Even ordinary experiences in my life are full of risk.	1	2	3	4	5	6	7
42	Having a bad thought is morally no different than doing a bad deed.	1	2	3	4	5	6	7
43.	No matter what I do, it won't be good enough.	1	2	3	4	5	6	7
44	If I don't control my thoughts, I'll be punished.	1	2	3	4	5	6	7

D. **Instructions:** For each of the following statements, circle the number of the 5-point scale (1 = strongly disagree, 5 = strongly agree) that best describes how that statement applies to you and your parents/guardian. Try to read and think about each statement as it applies to you and your parents/guardian during your years of growing up at home. There are no right or wrong answers, so don't spend a lot of time on any one item. We are looking for your overall impression regarding each statement. Be sure not to omit any items.

1	2	3	4	5
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

1.	While I was growing up my mother felt that in a well-run home the children should have their way in the family as often as the parents do.	1	2	3	4	5
1.	While I was growing up my father felt that in a well-run home the children should have their way in the family as often as the parents do.	1	2	3	4	5
2.	Even if her children didn't agree with her, my mother felt that it was for our own good if we were forced to conform to what she thought was right.	1	2	3	4	5
2.	Even if his children didn't agree with him, my father felt that it was for our own good if we were forced to conform to what he thought was right.	1	2	3	4	5
3.	Whenever my mother told me to do something as I was growing up, she expected me to do it immediately without asking any questions.	1	2	3	4	5
3.	Whenever my father told me to do something as I was growing up, he expected me to do it immediately without asking any questions.	1	2	3	4	5
4.	As I was growing up, once family policy had been established, my mother discussed	1	2	3	4	5

	the reasoning behind the policy with the children in the family.					
4.	As I was growing up, once family policy had been established, my father discussed the reasoning behind the policy with the children in the family.	1	2	3	4	5
5.	My mother has always encouraged verbal give-and-take whenever I have felt that family rules and restrictions were unreasonable.	1	2	3	4	5
5.	My father has always encouraged verbal give-and-take whenever I have felt that family rules and restrictions were unreasonable.	1	2	3	4	5
6.	My mother has always felt that what children need is to be free to make up their own minds and to do what they want to do, even if this does not agree with what their parents might want.	1	2	3	4	5
6.	My father has always felt that what children need is to be free to make up their own minds and to do what they want to do, even if this does not agree with what their parents might want.	1	2	3	4	5
7.	As I was growing up my mother did not allow me to question any decision she had made.	1	2	3	4	5
7.	As I was growing up my father did not allow me to question any decision he had made.	1	2	3	4	5
8.	As I was growing up my mother directed the activities and decisions of the children in the family through reasoning and discipline.	1	2	3	4	5
8.	As I was growing up my father directed the activities and decisions of the children in the family through reasoning and discipline.	1	2	3	4	5
9.	My mother has always felt that more force should be used by parents in order to get their children to behave the way they are supposed to.	1	2	3	4	5
9.	My father has always felt that more force should be used by parents in order to get their children to behave the way they are supposed to.	1	2	3	4	5
10.	As I was growing up my mother did not feel that I needed to obey rules and regulations of behavior simply because someone in authority had established them.	1	2	3	4	5
10.	As I was growing up my father did not feel that I needed to obey rules and regulations of behavior simply because someone in authority had established them.	1	2	3	4	5
11.	As I was growing up I knew what my mother expected of me in my family, but I also felt free to discuss those expectations with my mother when I felt that they were unreasonable.	1	2	3	4	5
11.	As I was growing up I knew what my father expected of me in my family, but I also felt free to discuss those expectations with my father when I felt that they were unreasonable.	1	2	3	4	5
12.	My mother felt that wise parents should teach their children early just who is boss in the family.	1	2	3	4	5
12.	My father felt that wise parents should teach their children early just who is boss in the family.	1	2	3	4	5
13.	As I was growing up, my mother seldom gave me expectations and guidelines for my behavior.	1	2	3	4	5
13.	As I was growing up, my father seldom gave me expectations and guidelines for my behavior.	1	2	3	4	5
14.	Most of the time as I was growing up my mother did what the children in the family wanted when making family decisions.	1	2	3	4	5
14.	Most of the time as I was growing up my father did what the children in the family wanted when making family decisions.	1	2	3	4	5
15.	As the children in my family were growing up, my mother consistently gave us direction and guidance in rational and objective ways.	1	2	3	4	5

15.	As the children in my family were growing up, my father consistently gave us direction and guidance in rational and objective ways.	1	2	3	4	5
16.	As I was growing up my mother would get very upset if I tried to disagree with her.	1	2	3	4	5
16.	As I was growing up my father would get very upset if I tried to disagree with him.	1	2	3	4	5
17.	My mother feels that most problems in society would be solved if parents would not restrict their children's activities, decisions, and desires as they are growing up.	1	2	3	4	5
17.	My father feels that most problems in society would be solved if parents would not restrict their children's activities, decisions, and desires as they are growing up.	1	2	3	4	5
18.	As I was growing up my mother let me know what behavior she expected of me, and if I didn't meet those expectations, she punished me.	1	2	3	4	5
18.	As I was growing up my father let me know what behavior he expected of me, and if I didn't meet those expectations, he punished me.	1	2	3	4	5
19.	As I was growing up my mother allowed me to decide most things for myself without a lot of direction from her.	1	2	3	4	5
19.	As I was growing up my father allowed me to decide most things for myself without a lot of direction from him.	1	2	3	4	5
20.	As I was growing up my mother took the children's opinions into consideration when making family decisions, but she would not decide for something simply because the children wanted it.	1	2	3	4	5
20.	As I was growing up my father took the children's opinions into consideration when making family decisions, but he would not decide for something simply because the children wanted it.	1	2	3	4	5
21.	My mother did not view herself as responsible for directing and guiding my behavior as I was growing up.	1	2	3	4	5
21.	My father did not view himself as responsible for directing and guiding my behavior as I was growing up.	1	2	3	4	5
22.	My mother had clear standards of behavior for the children in our home as I was growing up, but she was willing to adjust those standards to the needs of each of the individual children in the family.	1	2	3	4	5
22.	My father had clear standards of behavior for the children in our home as I was growing up, but he was willing to adjust those standards to the needs of each of the individual children in the family.	1	2	3	4	5
23.	My mother gave me direction for my behavior and activities as I was growing up and she expected me to follow her direction, but she was always willing to listen to my concerns and to discuss that direction with me.	1	2	3	4	5
23.	My father gave me direction for my behavior and activities as I was growing up and he expected me to follow his direction, but he was always willing to listen to my concerns and to discuss that direction with me.	1	2	3	4	5
24.	As I was growing up my mother allowed me to form my own point of view on family matters and she generally allowed me to decide for myself what I was going to do.	1	2	3	4	5
24.	As I was growing up my father allowed me to form my own point of view on family matters and he generally allowed me to decide for myself what I was going to do.	1	2	3	4	5
25.	My mother has always felt that most problems in society would be solved if we could get parents to strictly and forcibly deal with their children when they don't do what they are supposed to as they are growing up.	1	2	3	4	5
25.	My father has always felt that most problems in society would be solved if we could get parents to strictly and forcibly deal with their children when they don't do what they are supposed to as they are growing up.	1	2	3	4	5
26.	As I was growing up my mother often told me exactly what she wanted me to do and how she expected me to do it.	1	2	3	4	5

26.	As I was growing up my father often told me exactly what he wanted me to do and how he expected me to do it.	1	2	3	4	5
27.	As I was growing up my mother gave me clear direction for my behaviors and activities, but she was also understanding when I disagreed with her.	1	2	3	4	5
27.	As I was growing up my father gave me clear direction for my behaviors and activities, but he was also understanding when I disagreed with him.	1	2	3	4	5
28.	As I was growing up my mother did not direct the behaviors, activities, and desires of the children in the family.	1	2	3	4	5
28.	As I was growing up my father did not direct the behaviors, activities, and desires of the children in the family.	1	2	3	4	5
29.	As I was growing up I knew what my mother expected of me in the family and she insisted that I conform to those expectations simply out of respect for her authority.	1	2	3	4	5
29.	As I was growing up I knew what my father expected of me in the family and he insisted that I conform to those expectations simply out of respect for him authority.	1	2	3	4	5
30.	As I was growing up, if my mother made a decision in the family that hurt me, she was willing to discuss that decision with me and to admit it if she had made a mistake.	1	2	3	4	5
30.	As I was growing up, if my father made a decision in the family that hurt me, he was willing to discuss that decision with me and to admit it if he had made a mistake.	1	2	3	4	5

E. *Instructions:* The following statements refer to what people sometimes experience in their life. Please indicate how often you have these experiences by circling the appropriate number.

0	1	2	3	4
Never	Almost never	Sometimes	Often	Constantly

1	I have saved up so many things that they get in the way	0	1	2	3	4
2	I check things more often than necessary	0	1	2	3	4
3	I get upset if objects are not arranged properly	0	1	2	3	4
4	I feel compelled to count while I am doing things	0	1	2	3	4
5	I find it difficult to touch an object when I know it has been touched by strangers or certain people	0	1	2	3	4
6	I find it difficult to control my own thoughts	0	1	2	3	4
7	I collect things I don't need	0	1	2	3	4
8	I repeatedly check doors, windows, drawers etc.	0	1	2	3	4
9	I get upset if others change the way I have arranged things	0	1	2	3	4
10	I feel I have to repeat certain numbers	0	1	2	3	4
11	I sometimes have to wash or clean myself simply because I feel contaminated	0	1	2	3	4
12	I am upset by unpleasant thoughts that come into my mind against my will	0	1	2	3	4
13	I avoid throwing things away because I am afraid I might need them later	0	1	2	3	4
14	I repeatedly check gas and water taps and light switches after turning them off	0	1	2	3	4
15	I need things to be arranged in a particular order	0	1	2	3	4
16	I feel that there are good and bad numbers					

		0	1	2	3	4
17	I wash my hands more often or longer than necessary	0	1	2	3	4
18	I frequently get nasty thoughts and have difficulty in getting rid of them	0	1	2	3	4

F. **Instructions:** Please indicate the statement that describes you best by marking an x in the Yes or No column.

		Yes	No
1	Does your mood often go up and down?		
2	Do you take much notice of what people think?		
3	Are you a talkative person?		
4	Do you ever feel 'just miserable' for no reason?		
5	Would being in debt worry you?		
6	Are you rather lively?		
7	Are you an irritable person?		
8	Would you take drugs which may have strange or dangerous effects?		
9	Do you enjoy meeting new people?		
10	Are your feelings easily hurt?		
11	Do you prefer to go your own way rather than act by the rules?		
12	Can you usually let yourself go and enjoy yourself at a lively party?		
13	Do you often feel 'fed-up'?		
14	Do good manners and cleanliness matter much to you?		
15	Do you usually take the initiative in making new friends?		
16	Would you call yourself a nervous person?		
17	Do you think marriage is old-fashioned and should be done away with?		
18	Can you easily get some life into a rather dull party?		
19	Are you a worrier?		
20	Do you enjoy co-operating with others?		
21	Do you tend to keep in the background on social occasions?		
22	Does it worry you if you know there are mistakes in your work?		
23	Would you call yourself tense or 'highly strung'?		
24	Do you think people spend too much time safeguarding their future with savings and insurance?		
25	Do you like mixing with people?		
26	Do you worry too long after an embarrassing experience?		
27	Do you try not to be rude to people?		
28	Do you like plenty of bustle and excitement around you?		
29	Do you suffer from 'nerves'?		
30	Would you like other people to be afraid of you?		
31	Are you mostly quiet when you are with other people?		
32	Do you often feel lonely?		
33	Is it better to follow society's rules than go your own way?		
34	Do other people think of you as being very lively?		
35	Are you often troubled about feelings of guilt?		
36	Can you get a party going?		

Research Instrument for Christians &Non-Christian Participants

Objective & General Instructions

a. The objective of this survey is to get your views about your experiences while practicing Christianity or your religious faith.
b. The respondent to this survey is anonymous. Therefore, you are not required to disclose your name and matric number
c. All Individual responses to this questionnaire will be kept STRICTLY CONFIDENTIAL
d. Kindly read the statements carefully.

General Information

Kindly tick (√) in the box of your choice.

1. Status: Malaysian ☐   Non-Malaysian ☐

2. Gender: Male ☐   Female ☐

3. Year of study: Year 1 ☐   Year 2 ☐   Year 3 ☐   Year 4 ☐

4. Type of School you came from: Public ☐   Religious ☐   Private ☐

5. Does any of your family members suffer from persistent unwanted disturbing thoughts and unwanted repetitive behaviors?   Yes ☐   No ☐

6. Do you come from a religious family background?   Yes ☐   No ☐

A. **Instructions:** The following statements refer to some religious practices that people perform. Please indicate the statement that describes you best by circling the appropriate number.

3- How often do you pray in congregation?
   5. Never
   6. Seldom
   7. Often
   8. Always or almost always

4- How often do you pray in church/ worship places?
   5. Never
   6. Seldom
   7. Often
   8. Always or almost always

19- How often do you pray privately?
   5. Seldom
   6. A few times a month
   7. A few times a week
   8. Everyday

20- How often do you seek God's forgiveness for things that you have done wrong.
   5. Never
   6. Seldom
   7. Often
   8. Always or almost always

21- How often do you read the Holy Bible/ Sacred Books?
   5. Seldom
   6. A few times a month
   7. A few times a week
   8. Everyday

22- How often do you recite prayer or grace before doing something for example eating a meal?
   5. Never
   6. Seldom
   7. Often
   8. Always or almost always

23- How often do you help or serve others without expecting any reward from them?
   5. Never
   6. Seldom
   7. Often
   8. Always or almost always

24- How often do you forgive those who hurt you?
5. Never
6. Seldom
7. Often
8. Always or almost always

25- How often do you read religious literature?
5. Seldom
6. A few times a month
7. A few times a week
8. Everyday

26- How often do you watch or listen to religious programs?
5. Never
6. Seldom
7. Often
8. Always or almost always

27- How often do you try to carry your religious beliefs over to all your other dealings in life?
5. Never
6. Seldom
7. Often
8. Always or almost always

28- Did you ever have a religious or spiritual experience that changed your life?
No

Yes
IF YES: How old were you when this experience occurred?

29- Have you ever had a significant gain in your faith?
No
Yes
IF YES: How old were you when this occurred?

30- Have you ever had a significant loss in your faith?
No
Yes
IF YES: How old were you when this occurred?

Overall Self –Ranking

31- To what extent do you consider yourself as a religious person?
5. Very religious
6. Moderately religious
7. Slightly religious
8. Not religious at all

B. **Instructions:** The following statements refer to experiences that people sometimes have. Please indicate how often you have these experiences by circling the appropriate number.

0	1	2	3	4
Never	Almost never	Sometimes	Often	Constantly

1	I worry that I might have dishonest thoughts	0	1	2	3	4
2	I fear that I might be an evil person	0	1	2	3	4
3	I fear I will act immorally	0	1	2	3	4
4	I feel urges to confess sins/mistakes over and over again					

		0	1	2	3	4
5-	I worry about heaven and hell/ my destiny	0	1	2	3	4
6	I worry I must act morally at all times or I will be punished	0	1	2	3	4
7	Feeling guilty interferes with my ability to enjoy things I would like to enjoy	0	1	2	3	4
8	Immoral thoughts come into my head and I can't get rid of them	0	1	2	3	4
9	I am afraid my behavior is unacceptable to God/ to the Divine Power/my religion	0	1	2	3	4
10	I fear I have acted inappropriately without realizing it	0	1	2	3	4
11	I must try hard to avoid having certain immoral thoughts	0	1	2	3	4
12	I am very worried that things I did may have been dishonest	0	1	2	3	4
13	I am afraid I will disobey God's/ the Divine Power's/my religion's rules/laws	0	1	2	3	4
14	I am afraid of having sexual thoughts	0	1	2	3	4
15	I worry I will never have a good relationship with God/with the Divine Power	0	1	2	3	4
16	I feel guilty about immoral thoughts I have had	0	1	2	3	4
17	I worry that God/the Divine Power is upset with me	0	1	2	3	4
18	I am afraid of having immoral thoughts	0	1	2	3	4
19	I am afraid my thoughts are unacceptable by God/by the Divine Power/by my religion	0	1	2	3	4

C. **Instructions:** The following statements refer to what people sometimes think and feel. Please indicate how often you have these experiences by circling the appropriate number.

1	2	3	4	5	6	7
disagree very much	disagree moderately	disagree a little	neither agree nor disagree	agree a little	agree moderately	agree very much

1	I often think things around me are unsafe.	1	2	3	4	5	6	7
2	If I'm not absolutely sure of something, I'm bound to make a mistake.	1	2	3	4	5	6	7

3	Things should be perfect according to my own standards.	1	2	3	4	5	6	7
4	In order to be a worthwhile person, I must be perfect at everything I do.	1	2	3	4	5	6	7
5	When I see any opportunity to do so, I must act to prevent bad things from happening.	1	2	3	4	5	6	7
6	Even if harm is very unlikely, I should try to prevent it at any cost.	1	2	3	4	5	6	7
7	For me, having bad urges is as bad as actually carrying them out.	1	2	3	4	5	6	7
8	If I don't act when I foresee danger, then I am to blame for any consequences.	1	2	3	4	5	6	7
9	If I can't do something perfectly, I shouldn't do it at all.	1	2	3	4	5	6	7
10	I must work to my full potential at all times.	1	2	3	4	5	6	7
11	It is essential for me to consider all possible outcomes of a situation.	1	2	3	4	5	6	7
12	Even minor mistakes mean a job is not complete.	1	2	3	4	5	6	7
13	If I have aggressive thoughts or impulses about my loved ones, this means I may secretly want to hurt them.	1	2	3	4	5	6	7
14	I must be certain of my decisions.	1	2	3	4	5	6	7
15.	In all kinds of daily situations, failing to prevent harm is just as bad as deliberately causing harm.	1	2	3	4	5	6	7
16	Avoiding serious problems (for example, illness or accidents) requires constant effort on my part.	1	2	3	4	5	6	7
17	For me, not preventing harm is as bad as causing harm.	1	2	3	4	5	6	7
18	I should be upset if I make a mistake.	1	2	3	4	5	6	7
19	I should make sure others are protected from any negative consequences of my decisions or actions.	1	2	3	4	5	6	7
20	For me, things are not right if they are not perfect.	1	2	3	4	5	6	7
21	Having nasty thoughts means I am a terrible person.	1	2	3	4	5	6	7
22	If I do not take extra precautions, I am more likely than others to have or cause a serious disaster.	1	2	3	4	5	6	7
23	In order to feel safe, I have to be as prepared as possible for anything that could go wrong.	1	2	3	4	5	6	7
24	I should not have bizarre or disgusting thoughts.	1	2	3	4	5	6	7
25	For me, making a mistake is as bad as failing completely.	1	2	3	4	5	6	7
26	It is essential for everything to be clear cut, even in minor matters.	1	2	3	4	5	6	7
27	Having a blasphemous thought is as sinful as committing a sacrilegious act.	1	2	3	4	5	6	7
28	I should be able to rid my mind of unwanted thoughts.							

		1	2	3	4	5	6	7
29	I am more likely than other people to accidentally cause harm to myself or to others.	1	2	3	4	5	6	7
30	Having bad thoughts means I am weird or abnormal.	1	2	3	4	5	6	7
31	I must be the best at things that are important to me.	1	2	3	4	5	6	7
32	Having an unwanted sexual thought or image means I really want to do it.	1	2	3	4	5	6	7
33	If my actions could have even a small effect on a potential misfortune, I am responsible for the outcome.	1	2	3	4	5	6	7
34	Even when I am careful, I often think that bad things will happen.	1	2	3	4	5	6	7
35	Having intrusive thoughts means I'm out of control.	1	2	3	4	5	6	7
36	Harmful events will happen unless I am very careful.	1	2	3	4	5	6	7
37	I must keep working at something until it's done exactly right.	1	2	3	4	5	6	7
38	Having violent thoughts means I will lose control and become violent.	1	2	3	4	5	6	7
39	To me, failing to prevent a disaster is as bad as causing it.	1	2	3	4	5	6	7
40	If I don't do a job perfectly, people won't respect me.	1	2	3	4	5	6	7
41	Even ordinary experiences in my life are full of risk.	1	2	3	4	5	6	7
42	Having a bad thought is morally no different than doing a bad deed.	1	2	3	4	5	6	7
43.	No matter what I do, it won't be good enough.	1	2	3	4	5	6	7
44	If I don't control my thoughts, I'll be punished.	1	2	3	4	5	6	7

D. *Instructions:* For each of the following statements, circle the number of the 5-point scale (1 = strongly disagree, 5 = strongly agree) that best describes how that statement applies to you and your parents/guardian. Try to read and think about each statement as it applies to you and your parents/guardian during your years of growing up at home. There are no right or wrong answers, so don't spend a lot of time on any one item. We are looking for your overall impression regarding each statement. Be sure not to omit any items.

1	2	3	4	5
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

1.	While I was growing up my mother felt that in a well-run home the children should have their way in the family as often as the parents do.	1	2	3	4	5

1.	While I was growing up my father felt that in a well-run home the children should have their way in the family as often as the parents do.	1	2	3	4	5
2.	Even if her children didn't agree with her, my mother felt that it was for our own good if we were forced to conform to what she thought was right.	1	2	3	4	5
2.	Even if his children didn't agree with him, my father felt that it was for our own good if we were forced to conform to what he thought was right.	1	2	3	4	5
3.	Whenever my mother told me to do something as I was growing up, she expected me to do it immediately without asking any questions.	1	2	3	4	5
3.	Whenever my father told me to do something as I was growing up, he expected me to do it immediately without asking any questions.	1	2	3	4	5
4.	As I was growing up, once family policy had been established, my mother discussed the reasoning behind the policy with the children in the family.	1	2	3	4	5
4.	As I was growing up, once family policy had been established, my father discussed the reasoning behind the policy with the children in the family.	1	2	3	4	5
5.	My mother has always encouraged verbal give-and-take whenever I have felt that family rules and restrictions were unreasonable.	1	2	3	4	5
5.	My father has always encouraged verbal give-and-take whenever I have felt that family rules and restrictions were unreasonable.	1	2	3	4	5
6.	My mother has always felt that what children need is to be free to make up their own minds and to do what they want to do, even if this does not agree with what their parents might want.	1	2	3	4	5
6.	My father has always felt that what children need is to be free to make up their own minds and to do what they want to do, even if this does not agree with what their parents might want.	1	2	3	4	5
7.	As I was growing up my mother did not allow me to question any decision she had made.	1	2	3	4	5
7.	As I was growing up my father did not allow me to question any decision he had made.	1	2	3	4	5
8.	As I was growing up my mother directed the activities and decisions of the children in the family through reasoning and discipline.	1	2	3	4	5
8.	As I was growing up my father directed the activities and decisions of the children in the family through reasoning and discipline.	1	2	3	4	5
9.	My mother has always felt that more force should be used by parents in order to get their children to behave the way they are supposed to.	1	2	3	4	5
9.	My father has always felt that more force should be used by parents in order to get their children to behave the way they are supposed to.	1	2	3	4	5
10.	As I was growing up my mother did not feel that I needed to obey rules and regulations of behavior simply because someone in authority had established them.	1	2	3	4	5
10.	As I was growing up my father did not feel that I needed to obey rules and regulations of behavior simply because someone in authority had established them.	1	2	3	4	5
11.	As I was growing up I knew what my mother expected of me in my family, but I also felt free to discuss those expectations with my mother when I felt	1	2	3	4	5

	that they were unreasonable.					
11.	As I was growing up I knew what my father expected of me in my family, but I also felt free to discuss those expectations with my father when I felt that they were unreasonable.	1	2	3	4	5
12.	My mother felt that wise parents should teach their children early just who is boss in the family.	1	2	3	4	5
12.	My father felt that wise parents should teach their children early just who is boss in the family.	1	2	3	4	5
13.	As I was growing up, my mother seldom gave me expectations and guidelines for my behavior.	1	2	3	4	5
13.	As I was growing up, my father seldom gave me expectations and guidelines for my behavior.	1	2	3	4	5
14.	Most of the time, as I was growing up, my mother did what the children in the family wanted when making family decisions.	1	2	3	4	5
14.	Most of the time, as I was growing up, my father did what the children in the family wanted when making family decisions.	1	2	3	4	5
15.	As the children in my family were growing up, my mother consistently gave us direction and guidance in rational and objective ways.	1	2	3	4	5
15.	As the children in my family were growing up, my father consistently gave us direction and guidance in rational and objective ways.	1	2	3	4	5
16.	As I was growing up my mother would get very upset if I tried to disagree with her.	1	2	3	4	5
16.	As I was growing up my father would get very upset if I tried to disagree with him.	1	2	3	4	5
17.	My mother feels that most problems in society would be solved if parents would not restrict their children's activities, decisions, and desires as they are growing up.	1	2	3	4	5
17.	My father feels that most problems in society would be solved if parents would not restrict their children's activities, decisions, and desires as they are growing up.	1	2	3	4	5
18.	As I was growing up my mother let me know what behavior she expected of me, and if I didn't meet those expectations, she punished me.	1	2	3	4	5
18.	As I was growing up my father let me know what behavior he expected of me, and if I didn't meet those expectations, he punished me.	1	2	3	4	5
19.	As I was growing up my mother allowed me to decide most things for myself without a lot of direction from her.	1	2	3	4	5
19.	As I was growing up my father allowed me to decide most things for myself without a lot of direction from him.	1	2	3	4	5
20.	As I was growing up my mother took the children's opinions into consideration when making family decisions, but she would not decide for something simply because the children wanted it.	1	2	3	4	5
20.	As I was growing up my father took the children's opinions into consideration when making family decisions, but he would not decide for something simply because the children wanted it.	1	2	3	4	5
21.	My mother did not view herself as responsible for directing and guiding my	1	2	3	4	5

	behavior as I was growing up.					
21.	My father did not view himself as responsible for directing and guiding my behavior as I was growing up.	1	2	3	4	5
22.	My mother had clear standards of behavior for the children in our home as I was growing up, but she was willing to adjust those standards to the needs of each of the individual children in the family.	1	2	3	4	5
22.	My father had clear standards of behavior for the children in our home as I was growing up, but he was willing to adjust those standards to the needs of each of the individual children in the family.	1	2	3	4	5
23.	My mother gave me direction for my behavior and activities as I was growing up and she expected me to follow her direction, but she was always willing to listen to my concerns and to discuss that direction with me.	1	2	3	4	5
23.	My father gave me direction for my behavior and activities as I was growing up and he expected me to follow his direction, but he was always willing to listen to my concerns and to discuss that direction with me.	1	2	3	4	5
24.	As I was growing up my mother allowed me to form my own point of view on family matters and she generally allowed me to decide for myself what I was going to do.	1	2	3	4	5
24.	As I was growing up my father allowed me to form my own point of view on family matters and he generally allowed me to decide for myself what I was going to do.	1	2	3	4	5
25.	My mother has always felt that most problems in society would be solved if we could get parents to strictly and forcibly deal with their children when they don't do what they are supposed to as they are growing up.	1	2	3	4	5
25.	My father has always felt that most problems in society would be solved if we could get parents to strictly and forcibly deal with their children when they don't do what they are supposed to as they are growing up.	1	2	3	4	5
26.	As I was growing up my mother often told me exactly what she wanted me to do and how she expected me to do it.	1	2	3	4	5
26.	As I was growing up my father often told me exactly what he wanted me to do and how he expected me to do it.	1	2	3	4	5
27.	As I was growing up my mother gave me clear direction for my behaviors and activities, but she was also understanding when I disagreed with her.	1	2	3	4	5
27.	As I was growing up my father gave me clear direction for my behaviors and activities, but he was also understanding when I disagreed with him.	1	2	3	4	5
28.	As I was growing up my mother did not direct the behaviors, activities, and desires of the children in the family.	1	2	3	4	5
28.	As I was growing up my father did not direct the behaviors, activities, and desires of the children in the family.	1	2	3	4	5
29.	As I was growing up I knew what my mother expected of me in the family and she insisted that I conform to those expectations simply out of respect for her authority.	1	2	3	4	5
29.	As I was growing up I knew what my father expected of me in the family and he insisted that I conform to those expectations simply out of respect for his authority.	1	2	3	4	5
30.	As I was growing up, if my mother made a decision in the family that hurt me, she was willing to discuss that decision with me and to admit it if she had	1	2	3	4	5

	made a mistake.					
30.	As I was growing up, if my father made a decision in the family that hurt me, he was willing to discuss that decision with me and to admit it if he had made a mistake.	1	2	3	4	5

E. *Instructions:* The following statements refer to what people sometimes experience in their life. Please indicate how often you have these experiences by circling the appropriate number.

0	1	2	3	4
Never	Almost never	Sometimes	Often	Constantly

1	I have saved up so many things that they get in the way	0	1	2	3	4
2	I check things more often than necessary	0	1	2	3	4
3	I get upset if objects are not arranged properly	0	1	2	3	4
4	I feel compelled to count while I am doing things	0	1	2	3	4
5	I find it difficult to touch an object when I know it has been touched by strangers or certain people	0	1	2	3	4
6	I find it difficult to control my own thoughts	0	1	2	3	4
7	I collect things I don't need	0	1	2	3	4
8	I repeatedly check doors, windows, drawers etc.	0	1	2	3	4
9	I get upset if others change the way I have arranged things	0	1	2	3	4
10	I feel I have to repeat certain numbers	0	1	2	3	4
11	I sometimes have to wash or clean myself simply because I feel contaminated	0	1	2	3	4
12	I am upset by unpleasant thoughts that come into my mind against my will	0	1	2	3	4
13	I avoid throwing things away because I am afraid I might need them later	0	1	2	3	4
14	I repeatedly check gas and water taps and light switches after turning them off	0	1	2	3	4
15	I need things to be arranged in a particular order	0	1	2	3	4
16	I feel that there are good and bad numbers	0	1	2	3	4
17	I wash my hands more often or longer than necessary	0	1	2	3	4
18	I frequently get nasty thoughts and have difficulty in getting rid of them	0	1	2	3	4

F. *Instructions*: Please indicate the statement that describes you best by marking an x in the Yes or No column.

		Yes	No

1	Does your mood often go up and down?		
2	Do you take much notice of what people think?		
3	Are you a talkative person?		
4	Do you ever feel 'just miserable' for no reason?		
5	Would being in debt worry you?		
6	Are you rather lively?		
7	Are you an irritable person?		
8	Would you take drugs which may have strange or dangerous effects?		
9	Do you enjoy meeting new people?		
10	Are your feelings easily hurt?		
11	Do you prefer to go your own way rather than act by the rules?		
12	Can you usually let yourself go and enjoy yourself at a lively party?		
13	Do you often feel 'fed-up'?		
14	Do good manners and cleanliness matter much to you?		
15	Do you usually take the initiative in making new friends?		
16	Would you call yourself a nervous person?		
17	Do you think marriage is old-fashioned and should be done away with?		
18	Can you easily get some life into a rather dull party?		
19	Are you a worrier?		
20	Do you enjoy co-operating with others?		
21	Do you tend to keep in the background on social occasions?		
22	Does it worry you if you know there are mistakes in your work?		
23	Would you call yourself tense or 'highly strung'?		
24	Do you think people spend too much time safeguarding their future with savings and insurance?		
25	Do you like mixing with people?		
26	Do you worry too long after an embarrassing experience?		
27	Do you try not to be rude to people?		
28	Do you like plenty of bustle and excitement around you?		
29	Do you suffer from 'nerves'?		
30	Would you like other people to be afraid of you?		
31	Are you mostly quiet when you are with other people?		
32	Do you often feel lonely?		
33	Is it better to follow society's rules than go your own way?		
34	Do other people think of you as being very lively?		
35	Are you often troubled about feelings of guilt?		
36	Can you get a party going?		

APPENDIX B: Expert's Evaluation of the ROCSS

MONASH University

Expert's Evaluation of the Religious Obsessive-Compulsive Symptoms Scale (ROCSS)

Expert's Name: _Prof. Dr. Malik B. Badri_

Designation: _Professor of Psychology_

Institution: _Ahfad University, Sudan_

Your evaluation will ensure that the research instrument is clear, easy and understandable to the intended respondents before use in the research. Kindly assist by answering the following questions. Revision will be made in accordance to any suggestions provided.

	YES	NO	SUGGESTIONS FOR IMPROVEMENT
Are the instructions for completing the questionnaire clear?	X		
Are the questions and/or statements written clearly? If not, suggest improvements for each question and/or statement.	X		
Are there any questions and/or statements you would exclude from the instrument? If yes, indicate the question(s) and statement(s) that you would exclude.		X	
Are there any other questions and statements that you would include in this instrument? If yes, indicate the question(s) and statement(s) that you would add.		X	
Is the layout of the instrument appropriate?	X		
Is the number of pages and questions in the instrument appropriate?	X		
Do you have any additional suggestions, for further improvement of the instrument?		X	

Comments: _It is OK_

Date: _7. 5. 2013_

APPENDIX C: High-religiosity exposed Christian group

High-religiosity exposed Christian group

Appendix C (i)

Histogram

Mean = 2.28
Std. Dev. = .672
N = 88

Histogram

Mean = 2.25
Std. Dev. = .554
N = 88

High-religiosity exposed Christian group

Appendix C (ii)

Histogram

Mean = 3.06
Std. Dev. = .318
N = 88

Histogram

Mean = 3.04
Std. Dev. = .647
N = 88
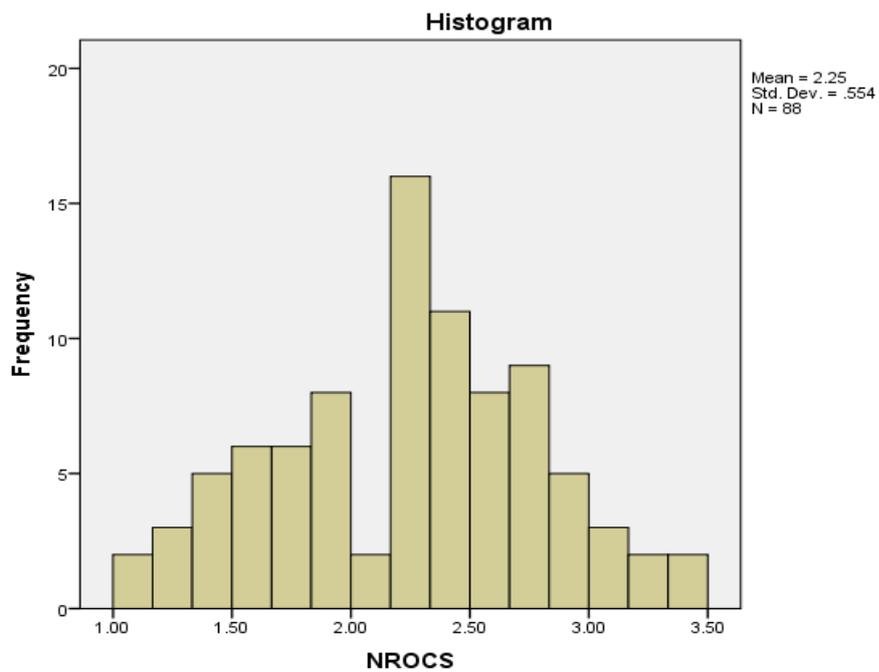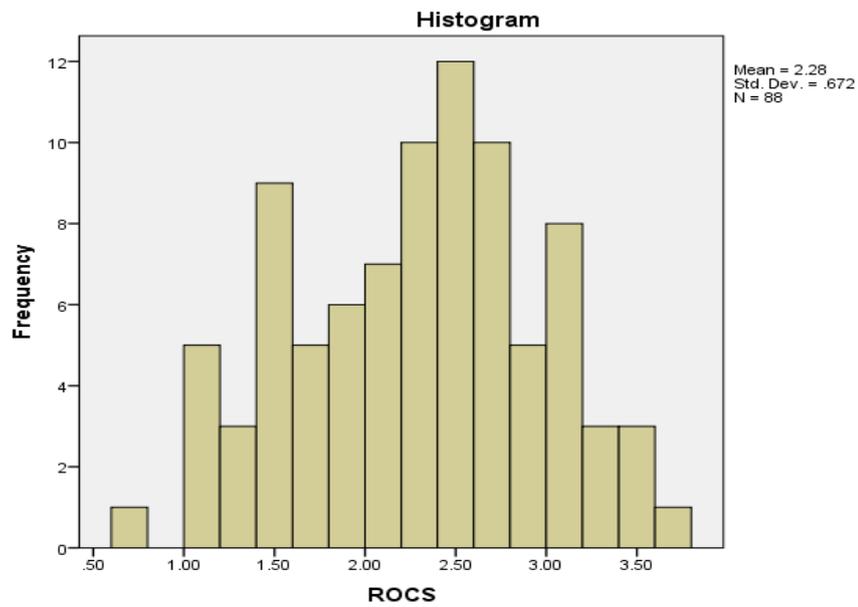
High-religiosity exposed Christian group
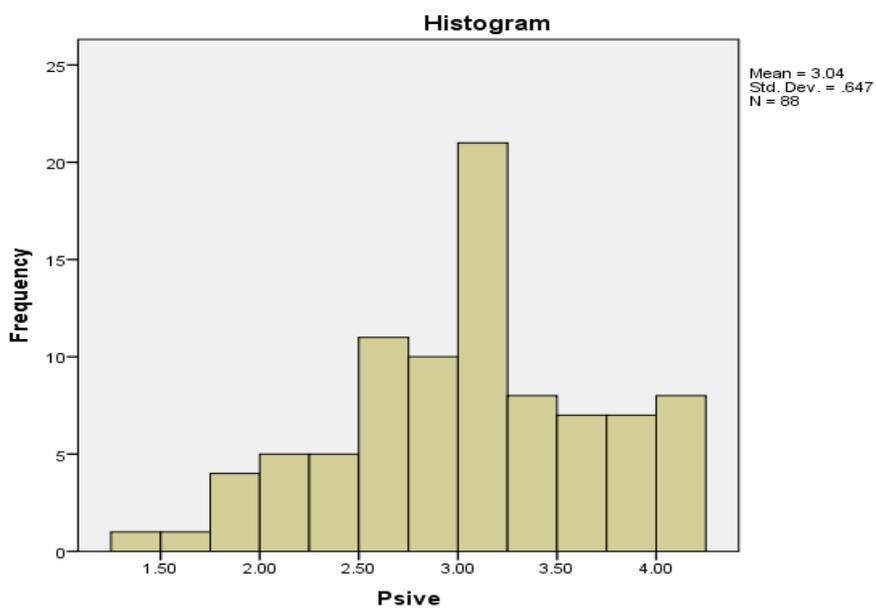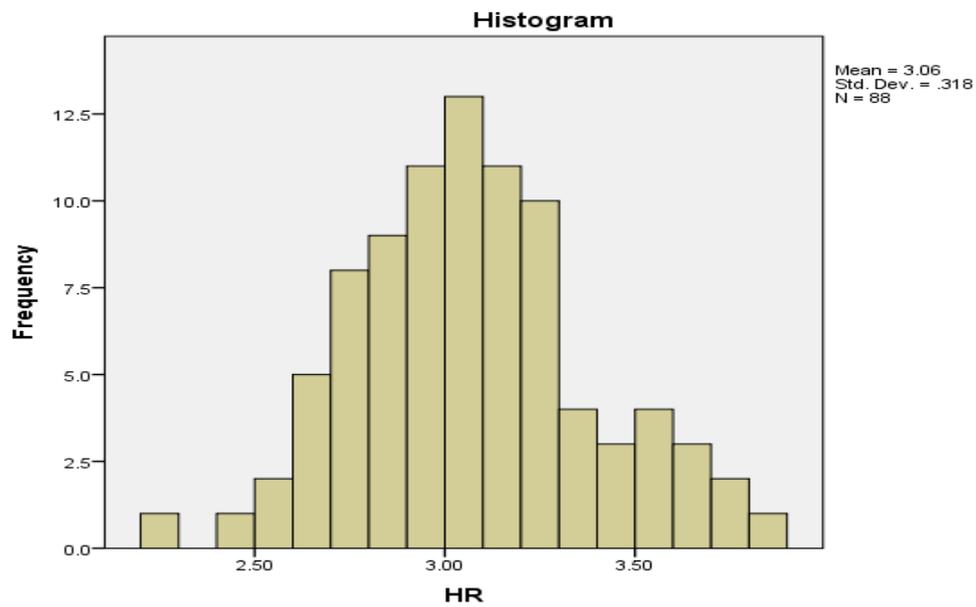
High-religiosity exposed Christian group

Appendix C (iii)

High-religiosity exposed Christian group

Appendix C (iv)

Histogram

Mean = 4.39
Std. Dev. = .905
N = 88
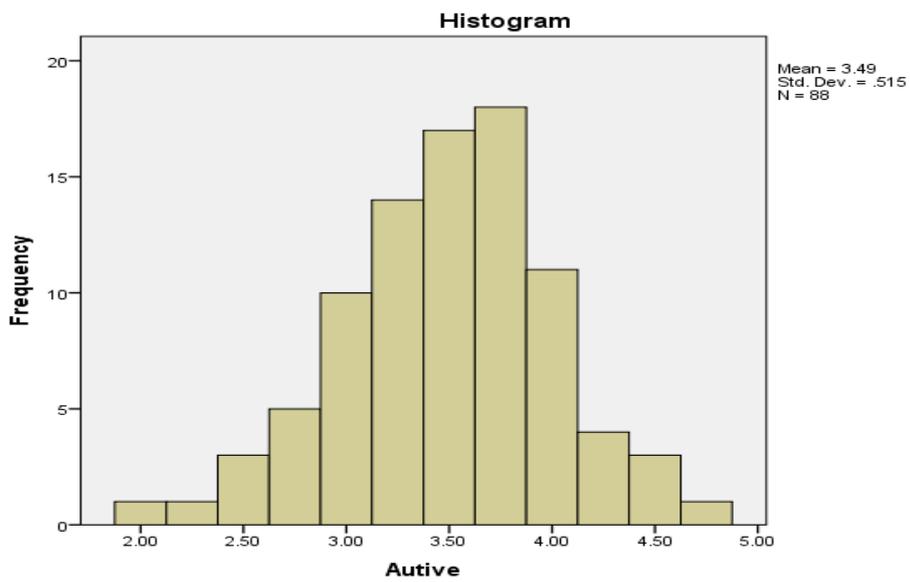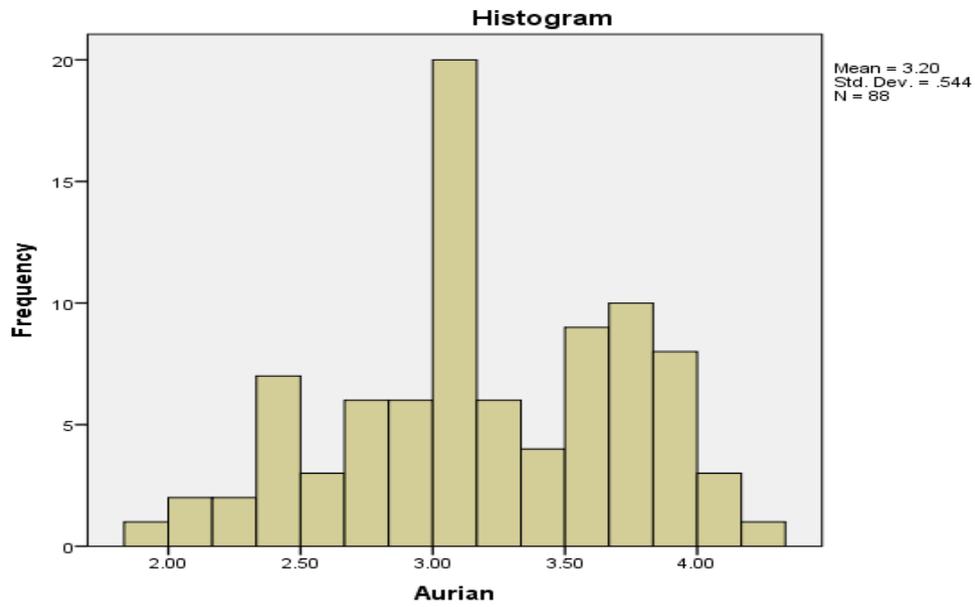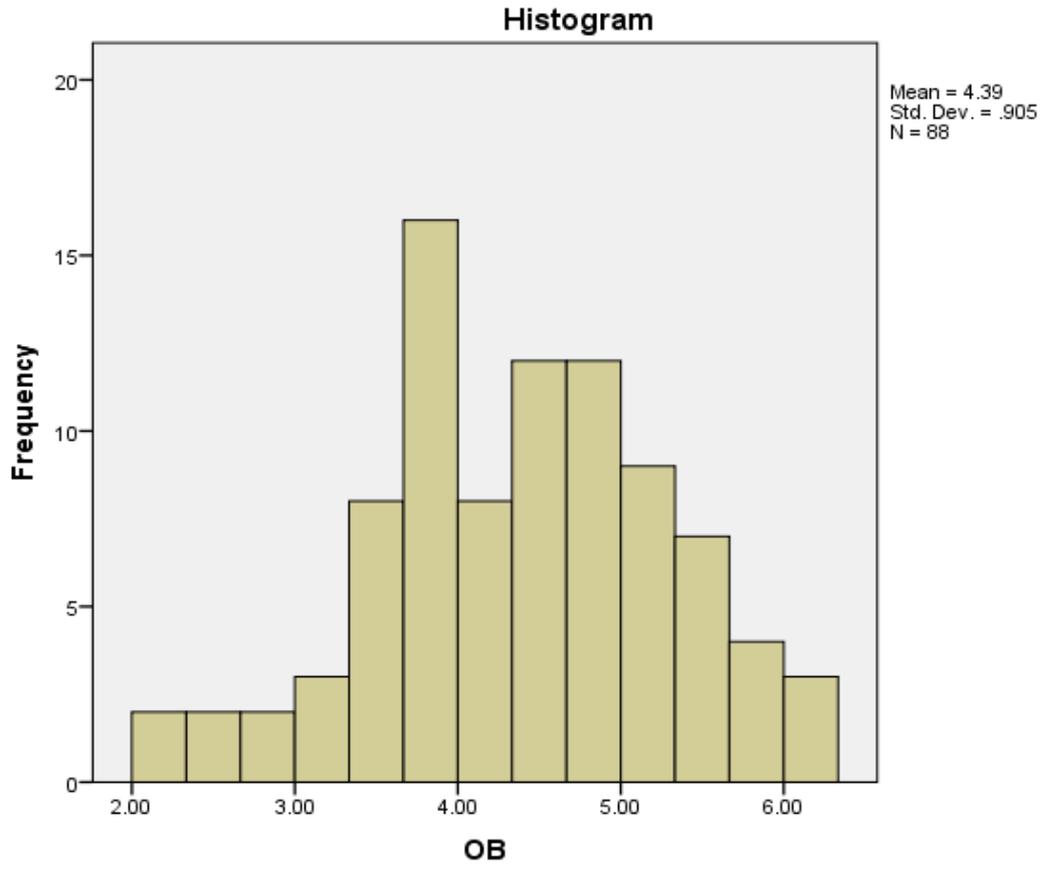
APPENDIX D: High-religiosity exposed Christian group

High-religiosity exposed Christian group
Appendix D (i)
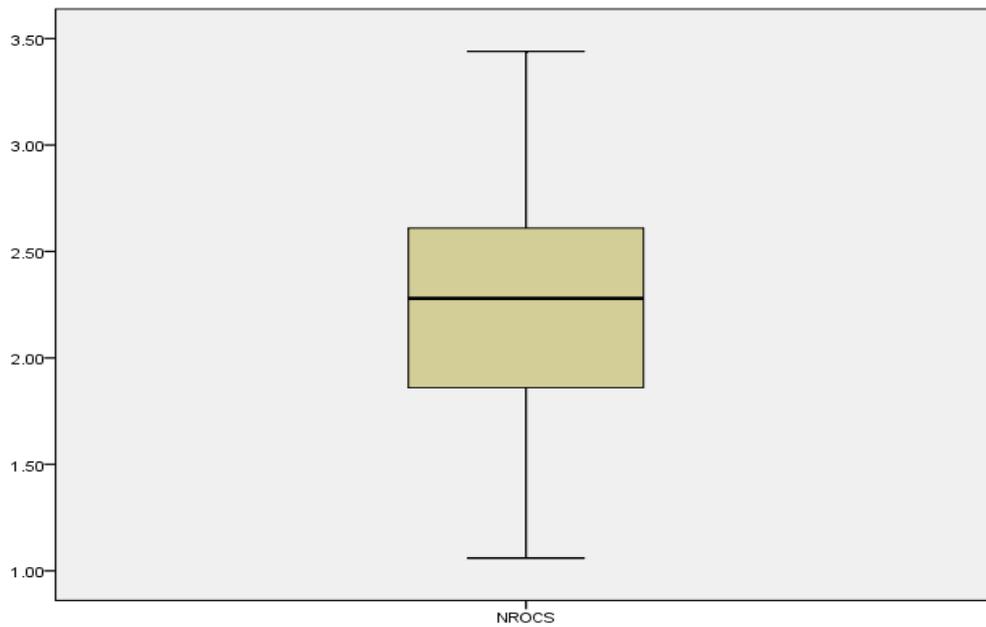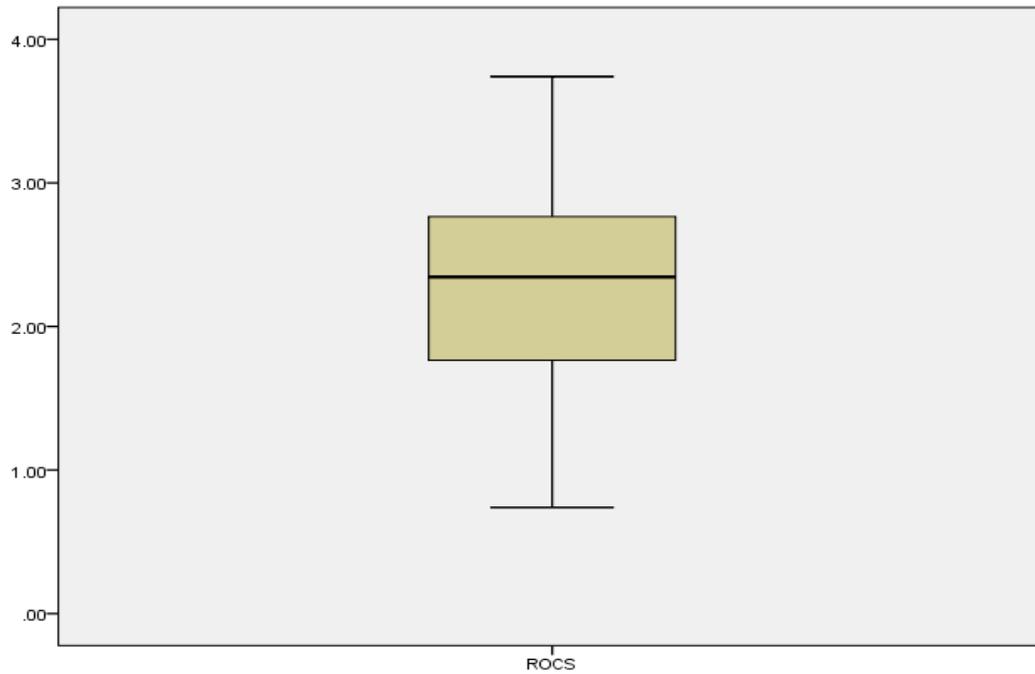
High-religiosity exposed Christian group
Appendix D (ii)
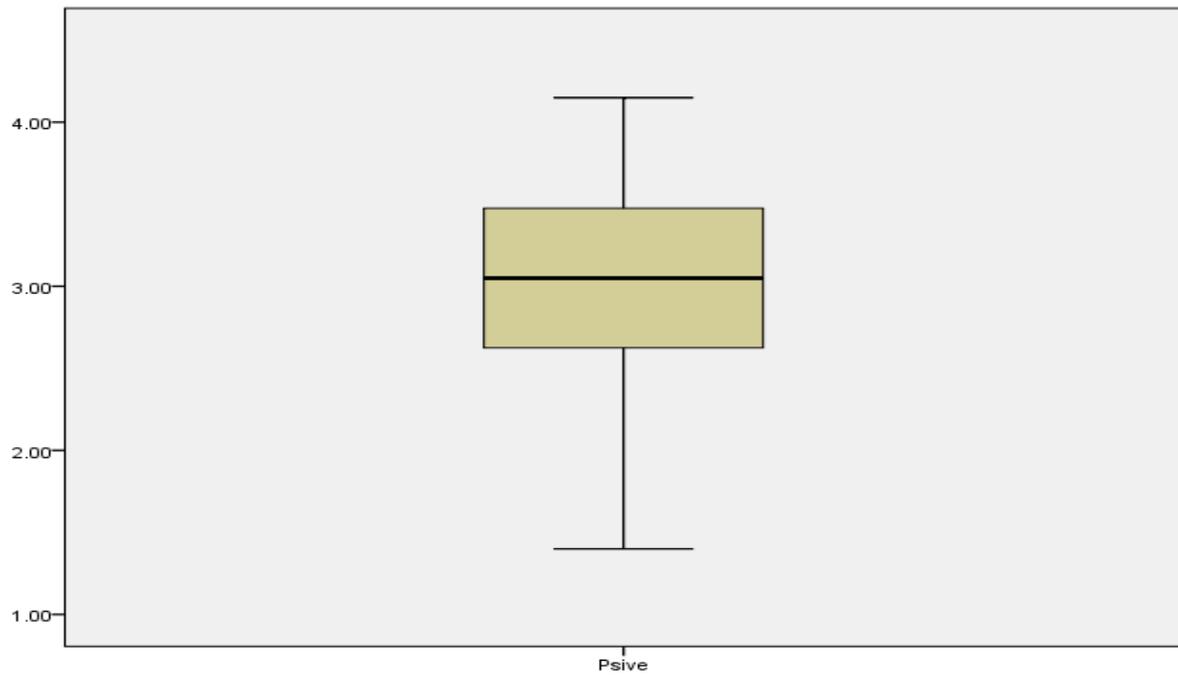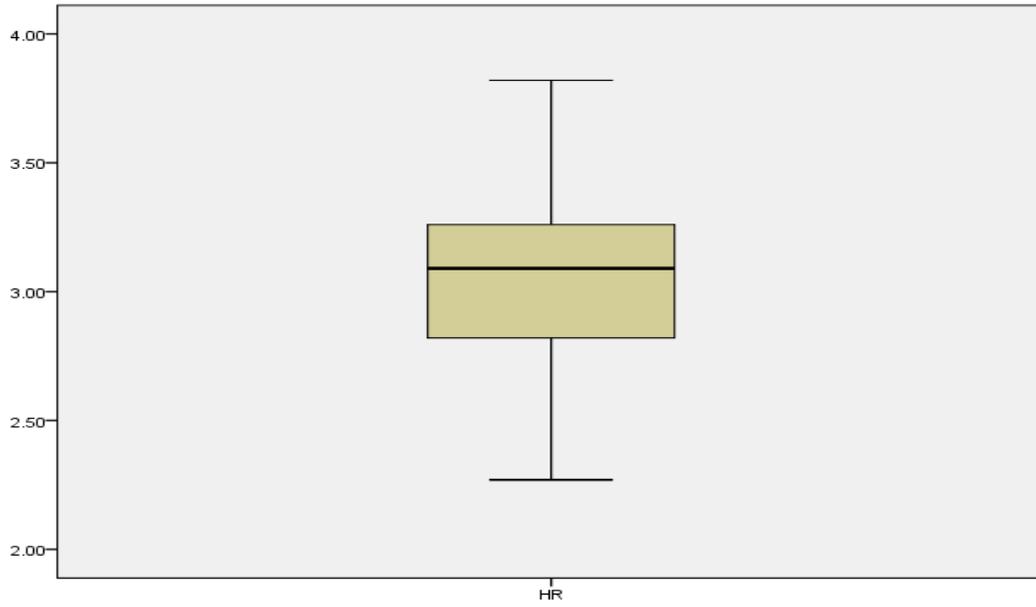
High-religiosity exposed Christian group
Appendix D (iii)
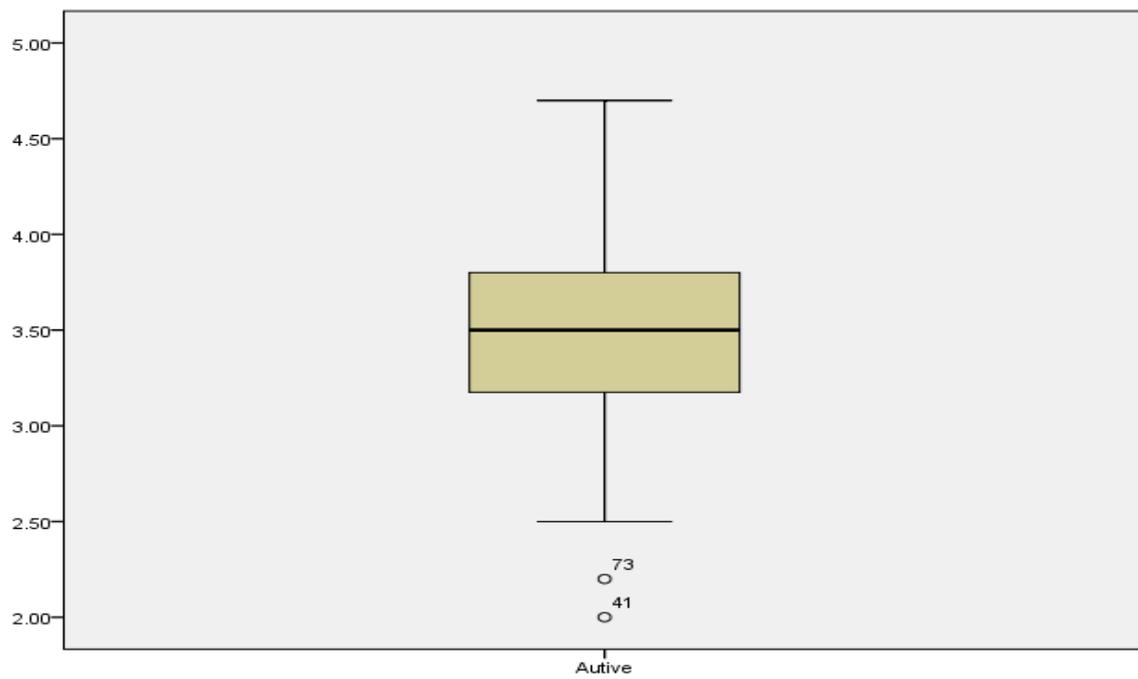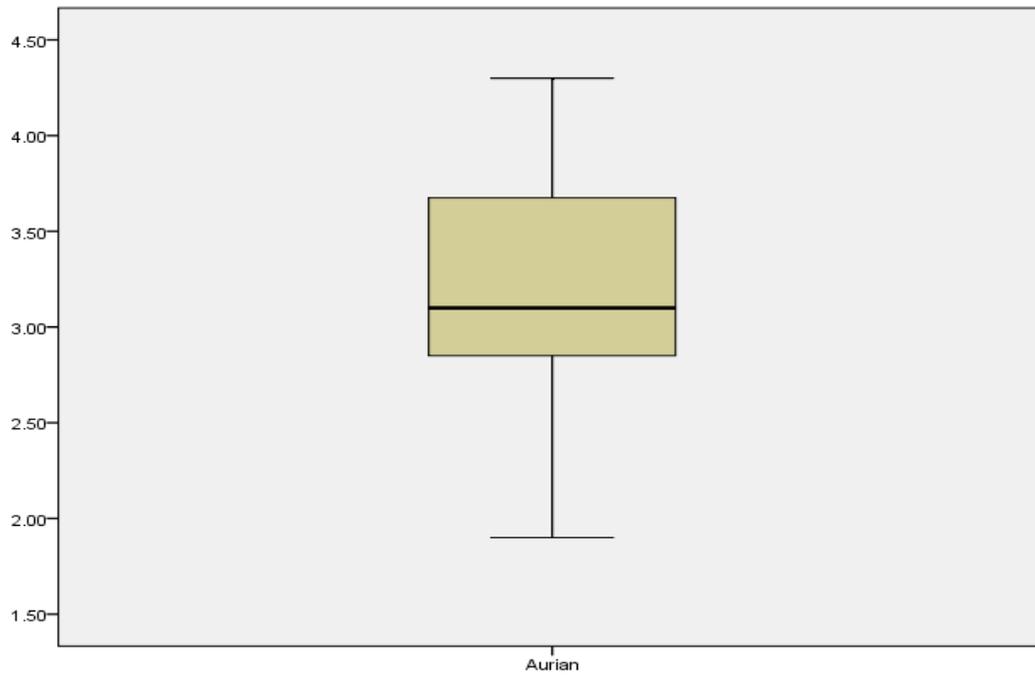
High-religiosity exposed Christian group
Appendix D (iv)
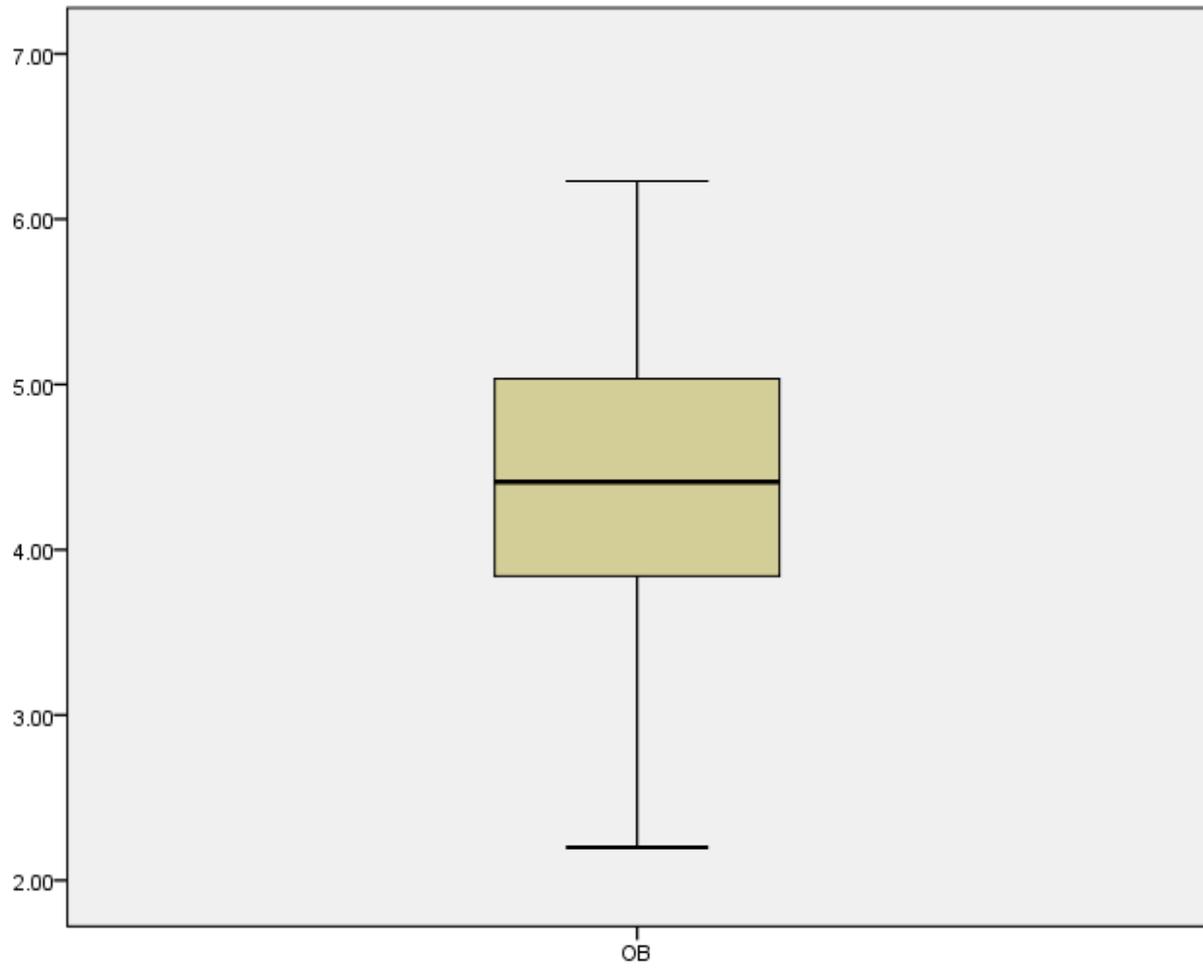
APPENDIX E: High-religiosity exposed Christian group

High-religiosity exposed Christian group
Appendix E (i)

Normal Q-Q Plot of ROCS

Normal Q-Q Plot of NROCS

High-religiosity exposed Christian group
Appendix E (ii)

Normal Q-Q Plot of HR

Normal Q-Q Plot of Psive

High-religiosity exposed Christian group
Appendix E (iii)

Normal Q-Q Plot of Aurian

Normal Q-Q Plot of Autive
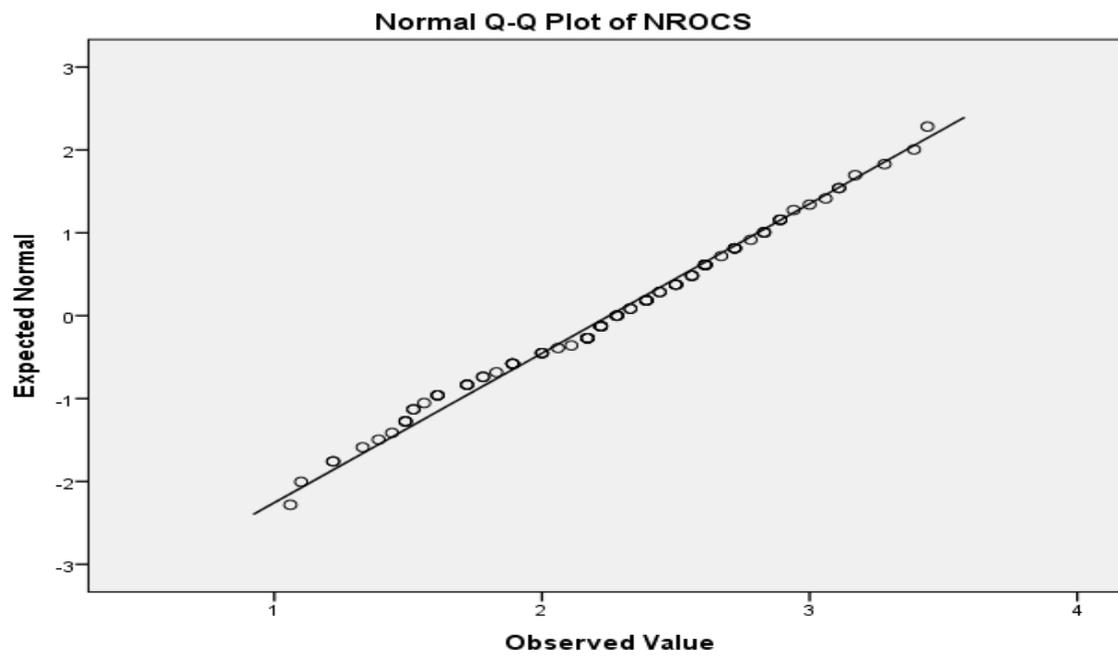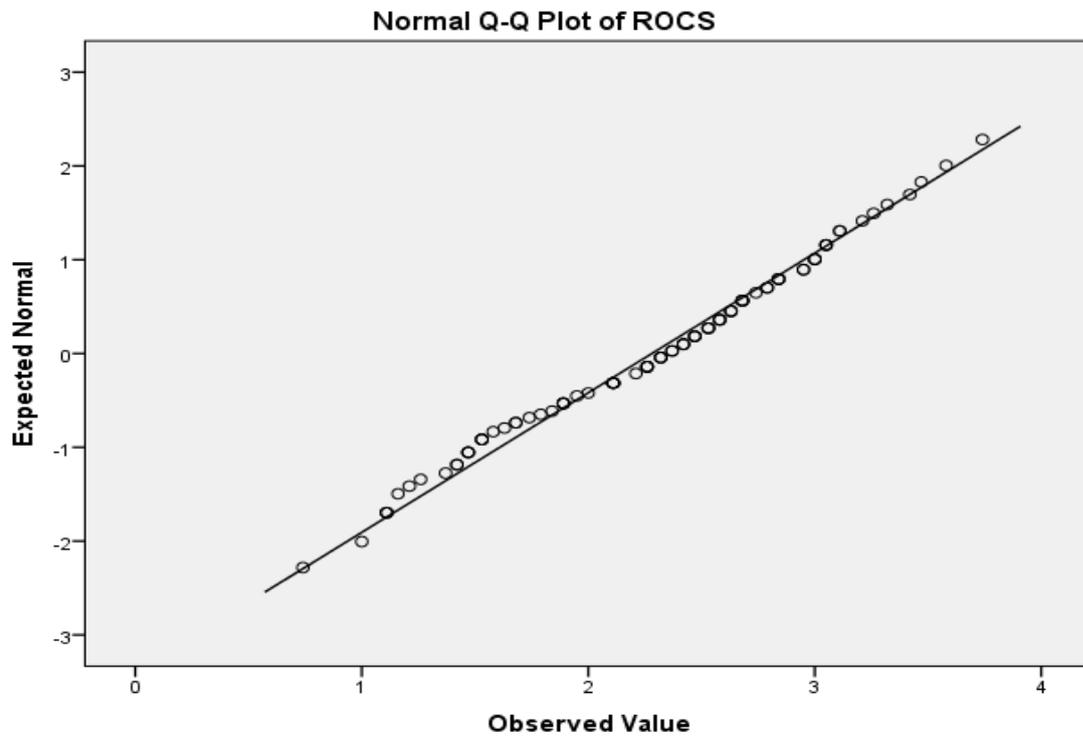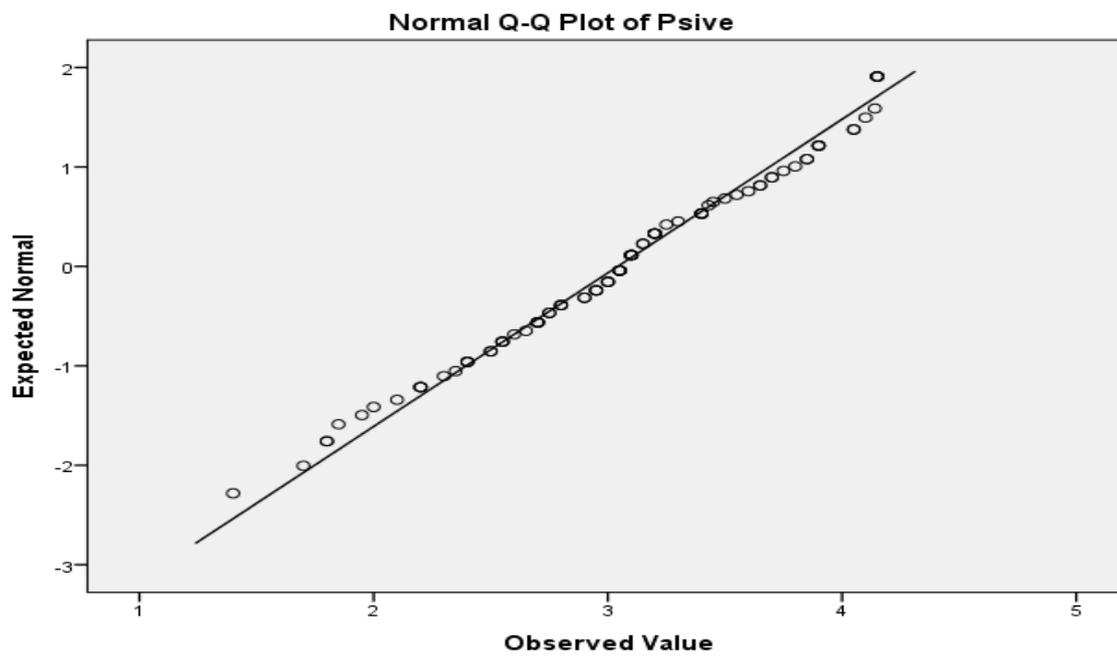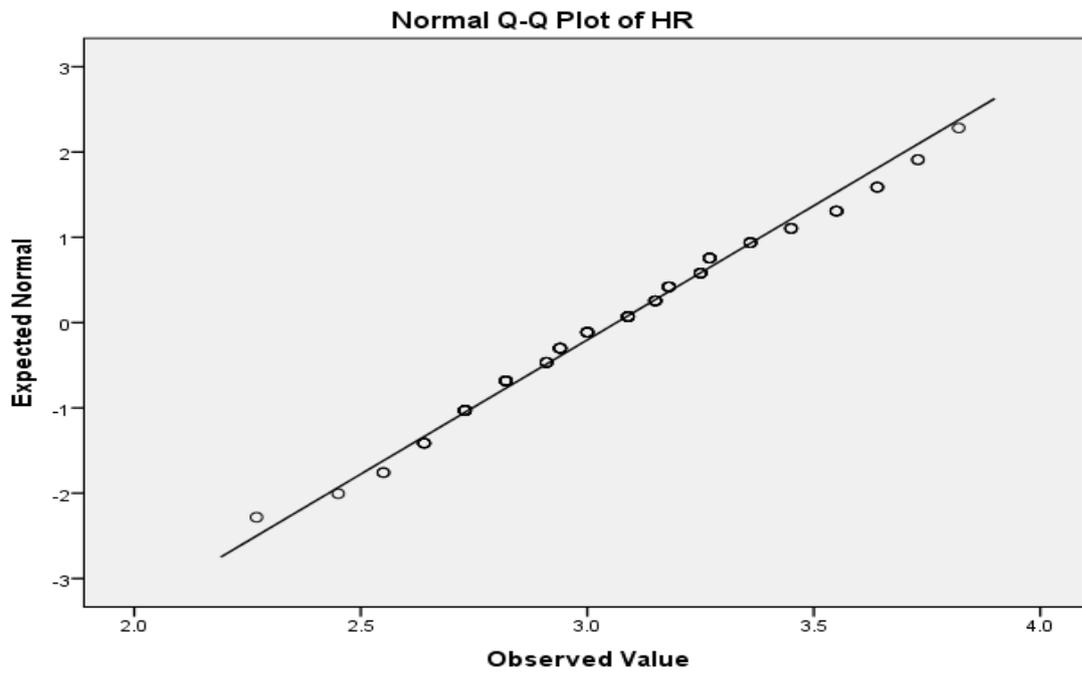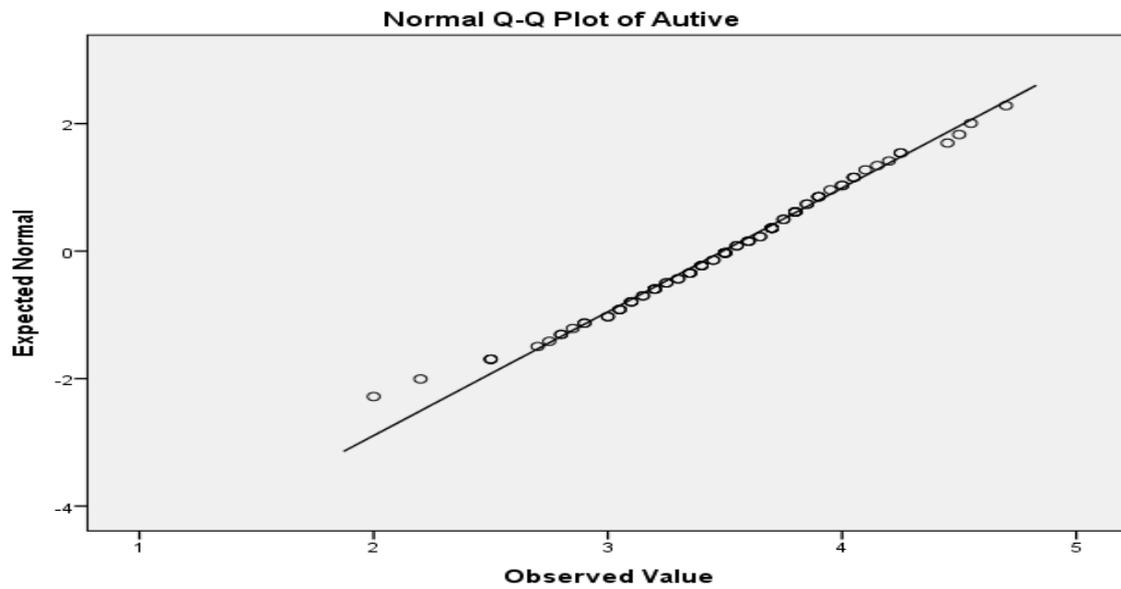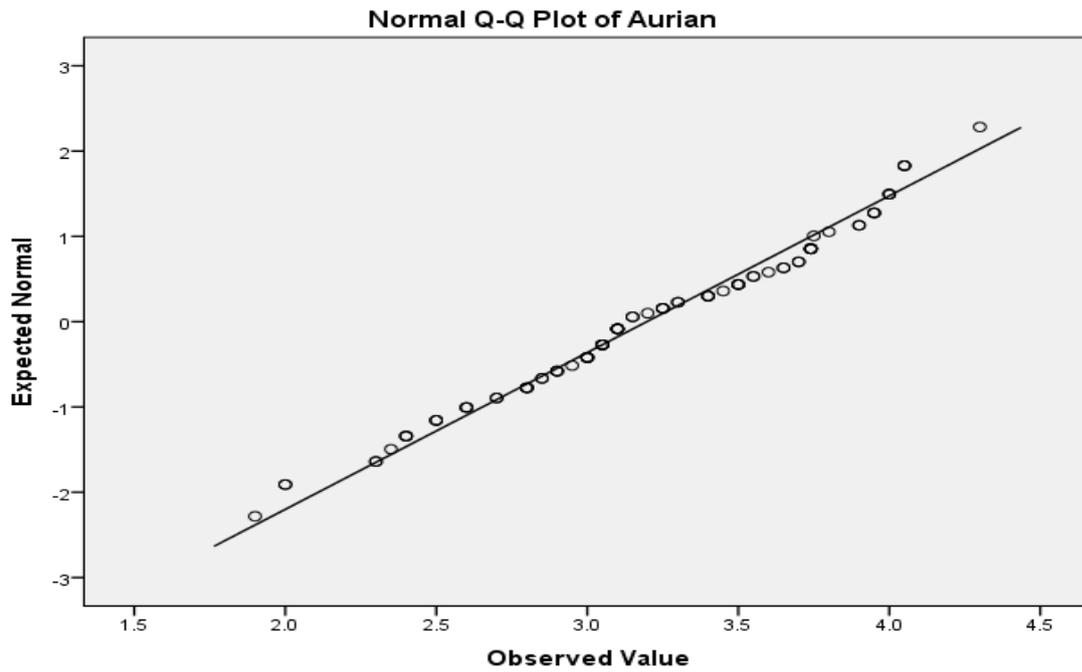
High-religiosity exposed Christian group
Appendix E (iv)

Normal Q-Q Plot of OB
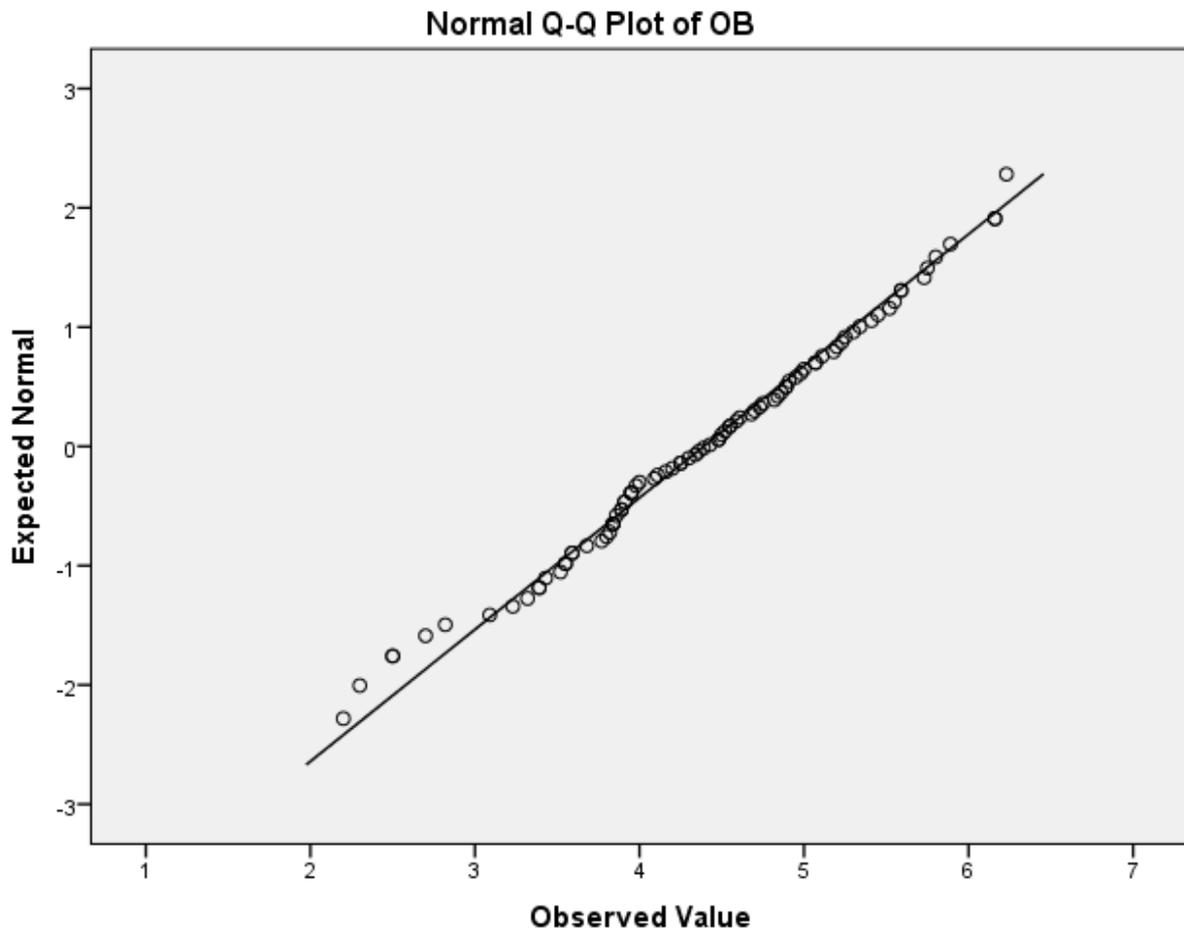
APPENDIX F: High-religiosity exposed Muslims group
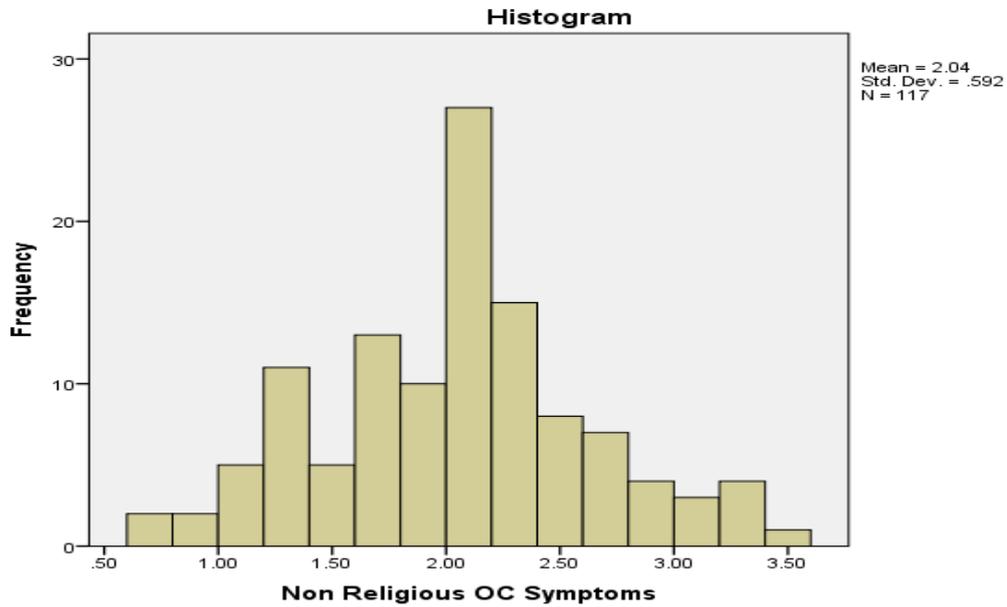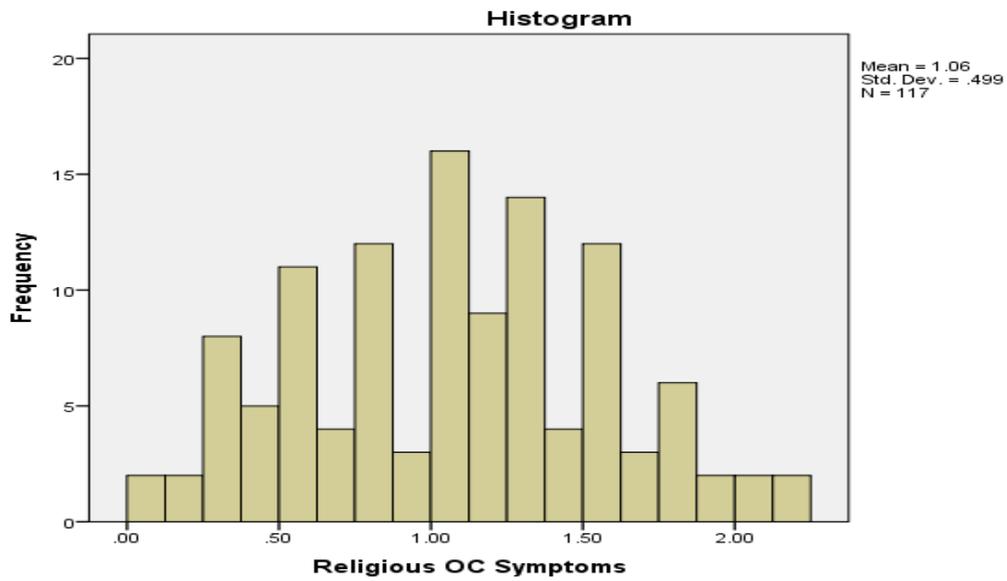
Appendix F (i)

High-religiosity exposed Muslims group
Appendix F (ii)
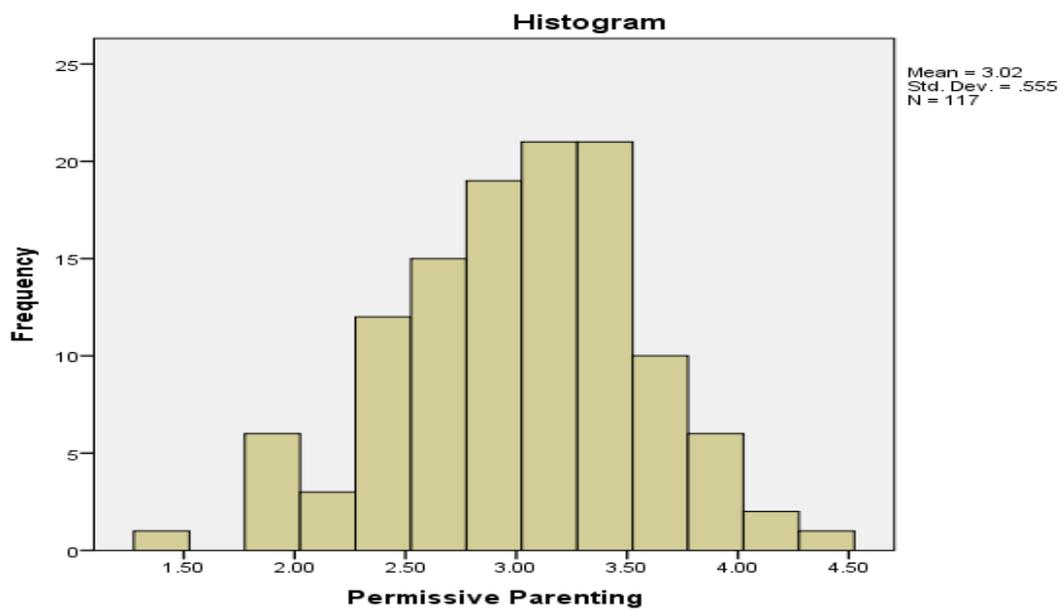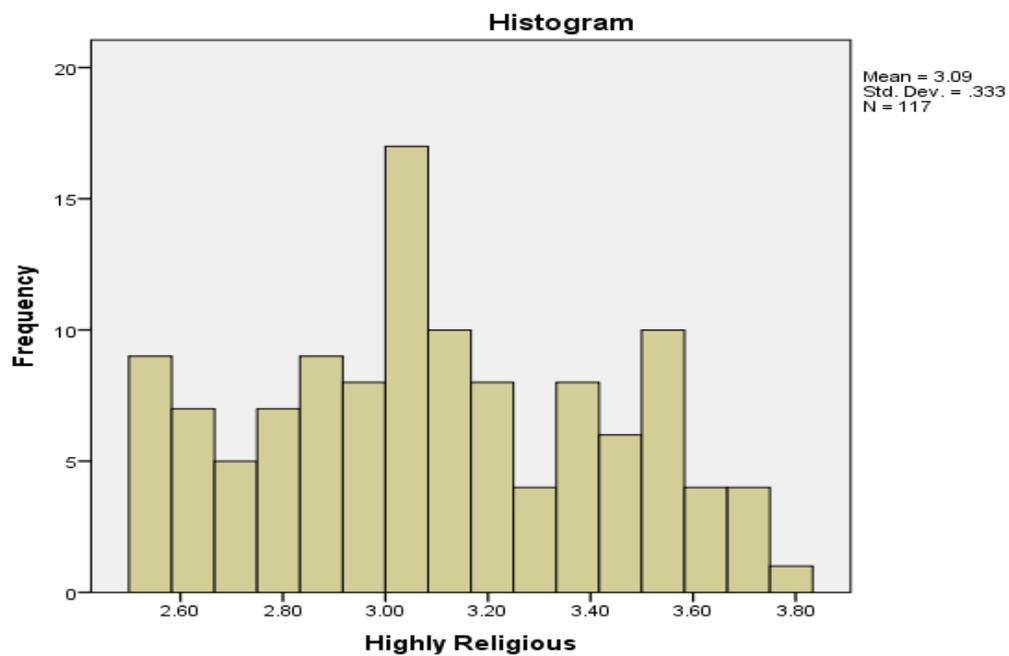
High-religiosity exposed Muslims group
Appendix F (iii)

Histogram

Mean = 3.06
Std. Dev. = .443
N = 117

Histogram

Mean = 3.67
Std. Dev. = .451
N = 117

High-religiosity exposed Muslims group
Appendix F (iv)

Histogram

Mean = 4.39
Std. Dev. = .709
N = 117
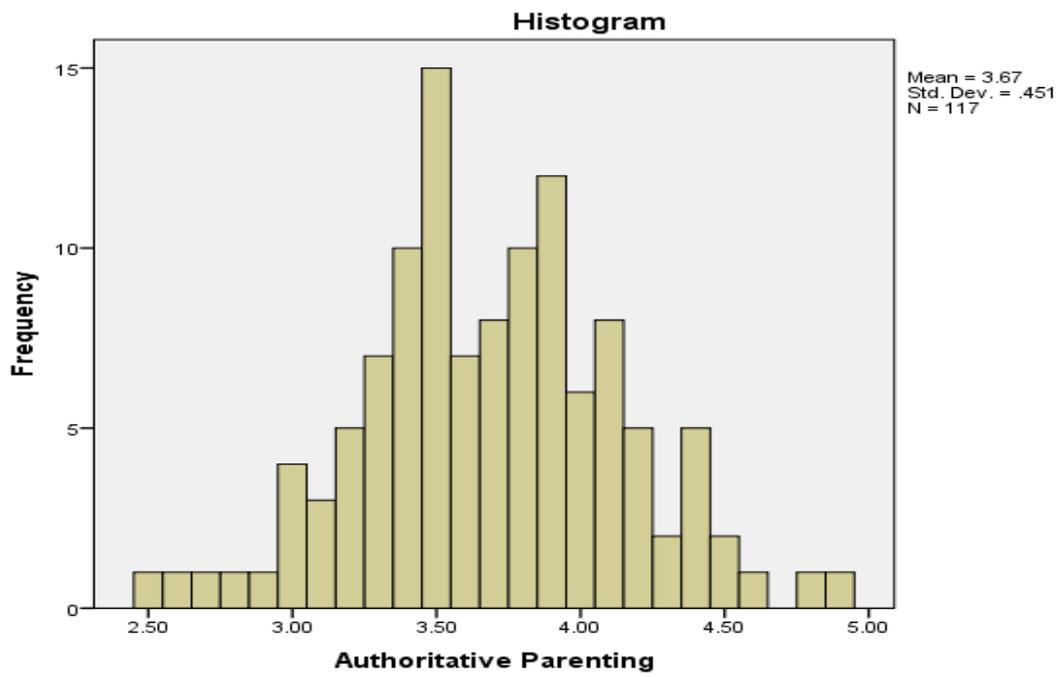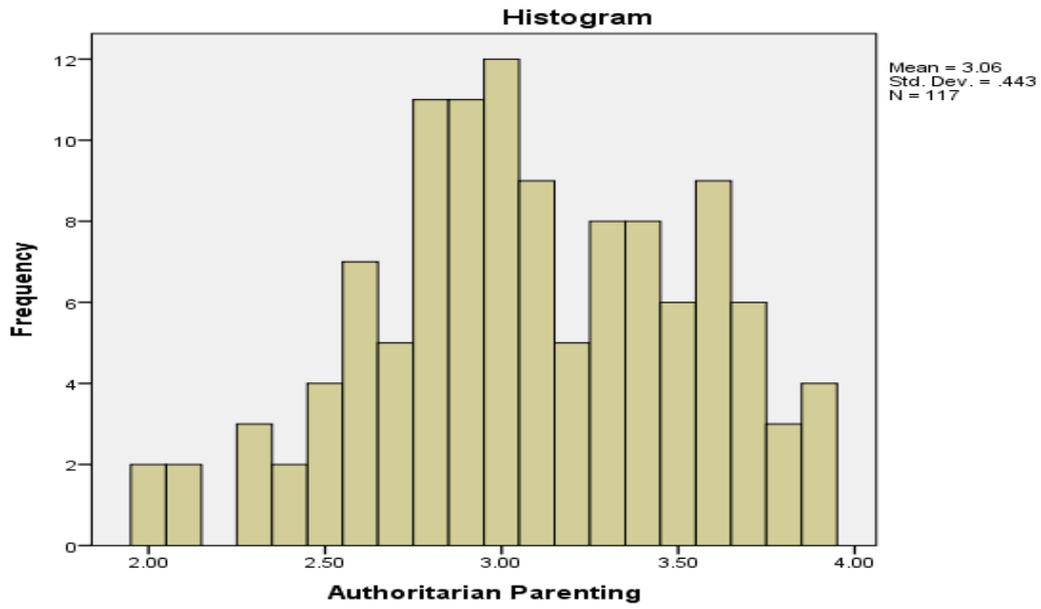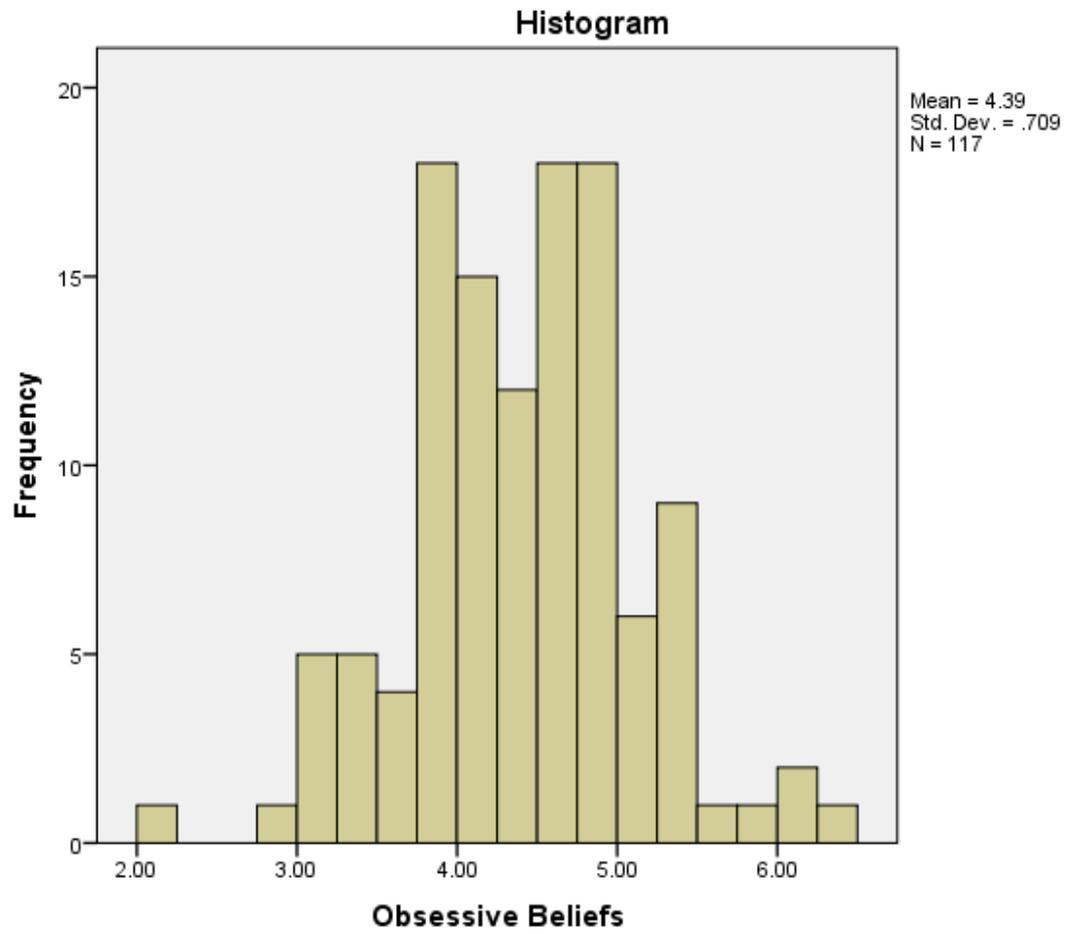
APPENDIX G: High-religiosity exposed Muslims group

High-religiosity exposed Muslims group
Appendix G (i)

Religious OC Symptoms

Non Religious OC Symptoms
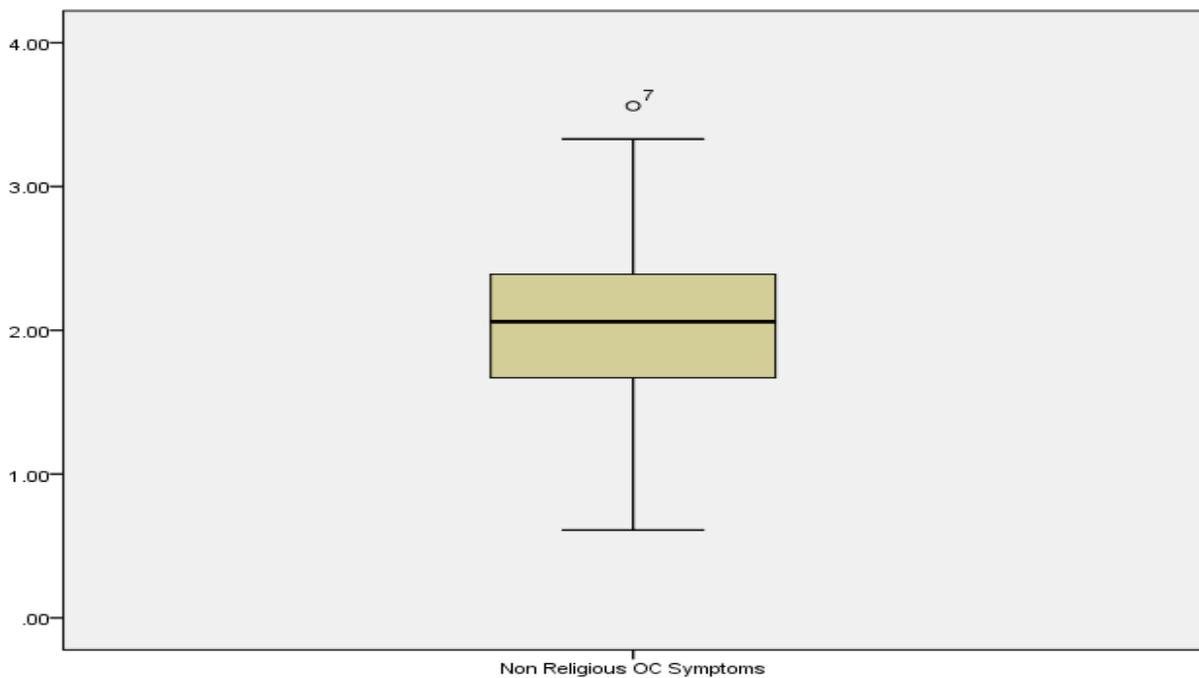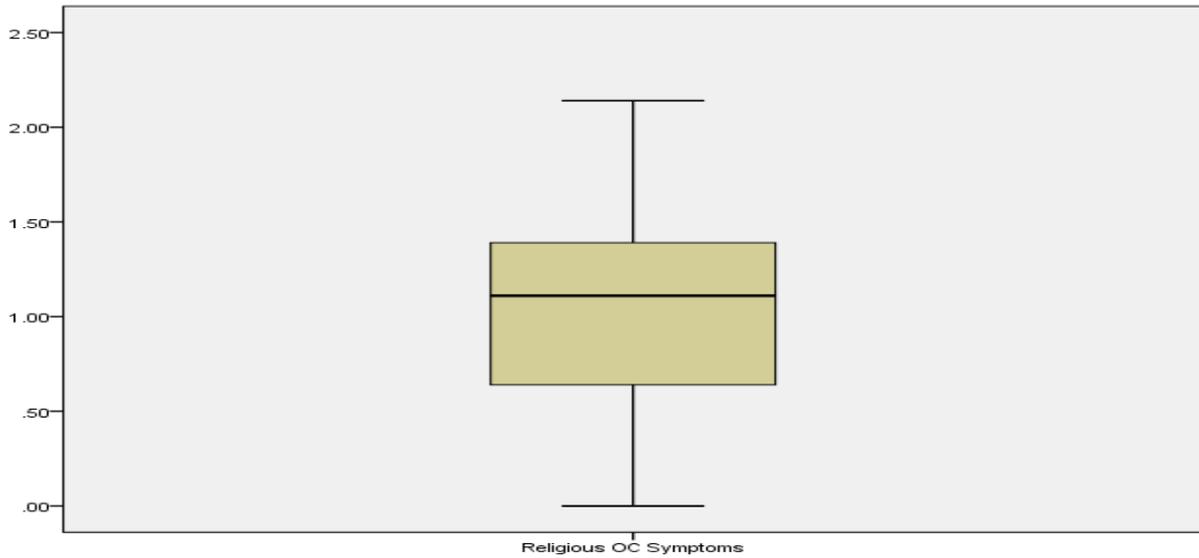
High-religiosity exposed Muslims group
Appendix G (ii)

High-religiosity exposed Muslims group
Appendix G (iii)

Authoritarian Parenting

Authoritative Parenting
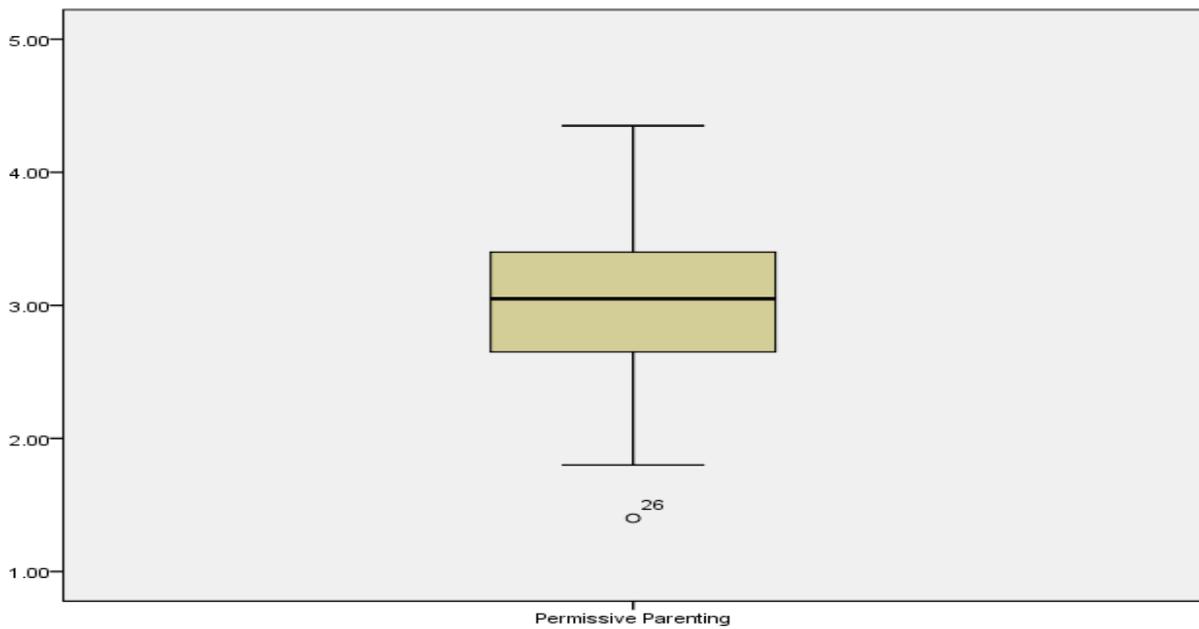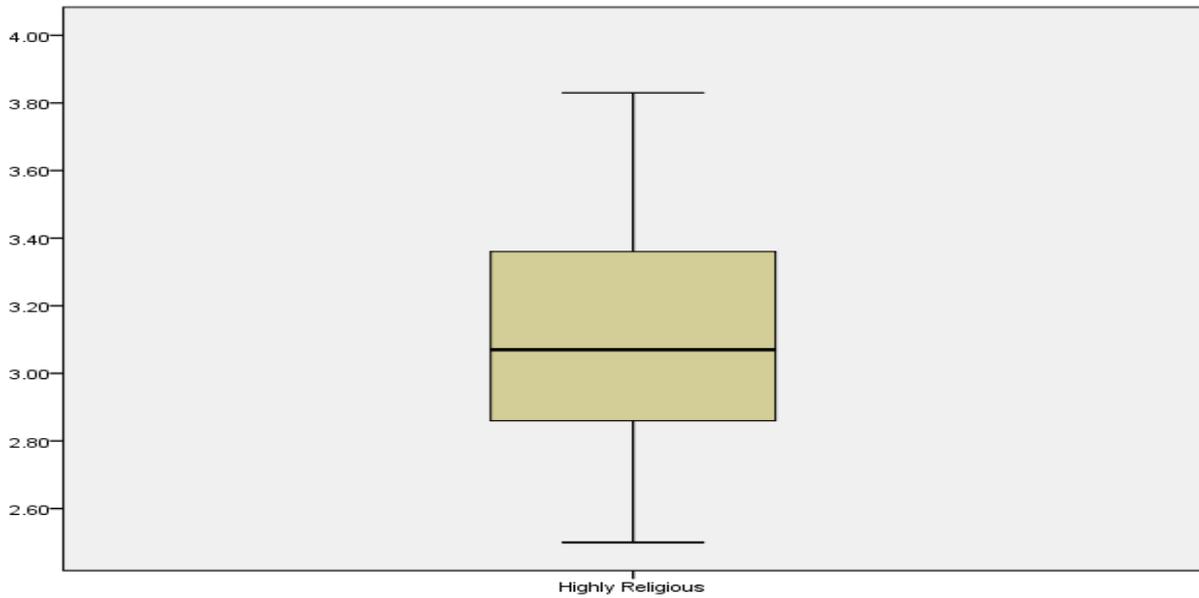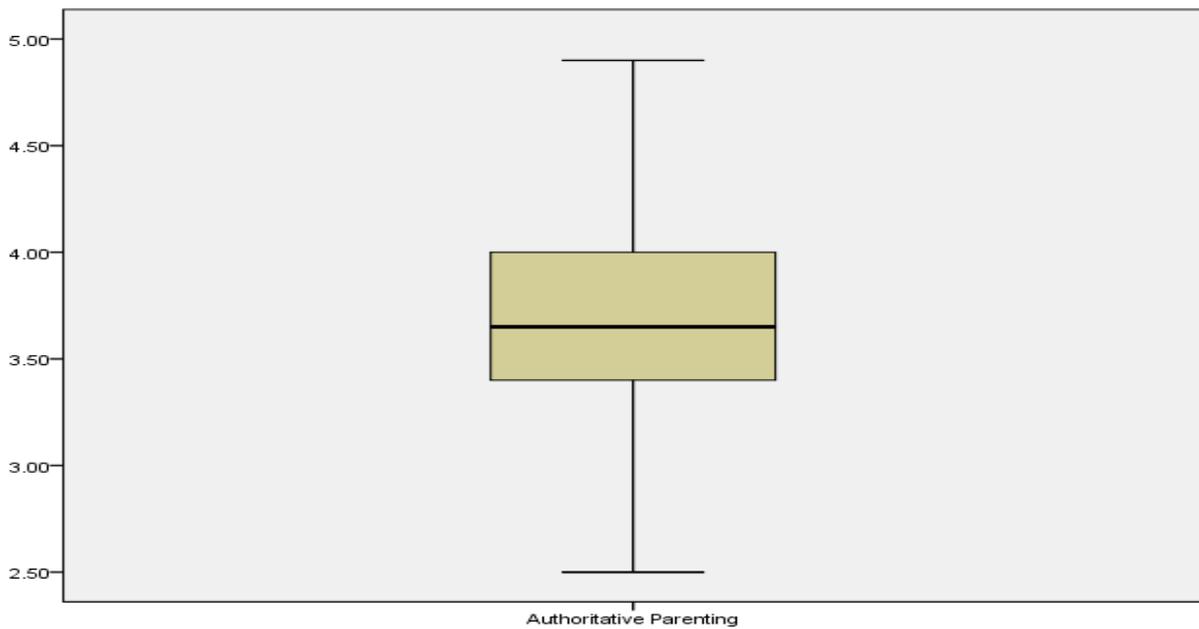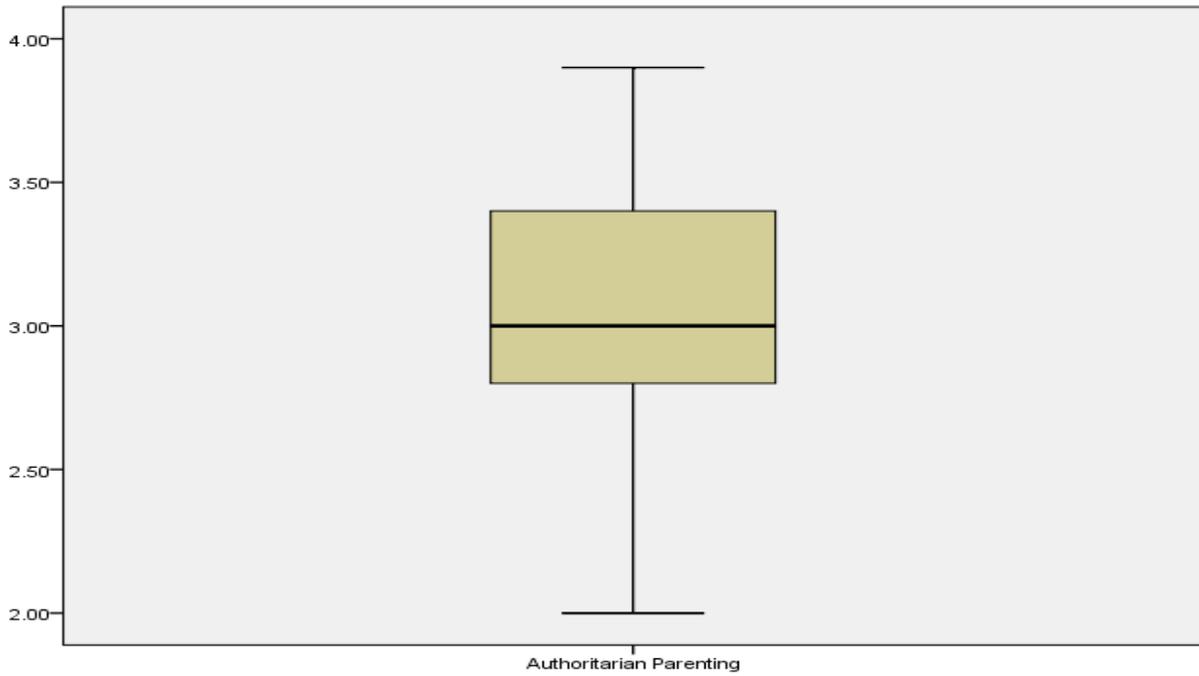
High-religiosity exposed Muslims group
Appendix G (iv)
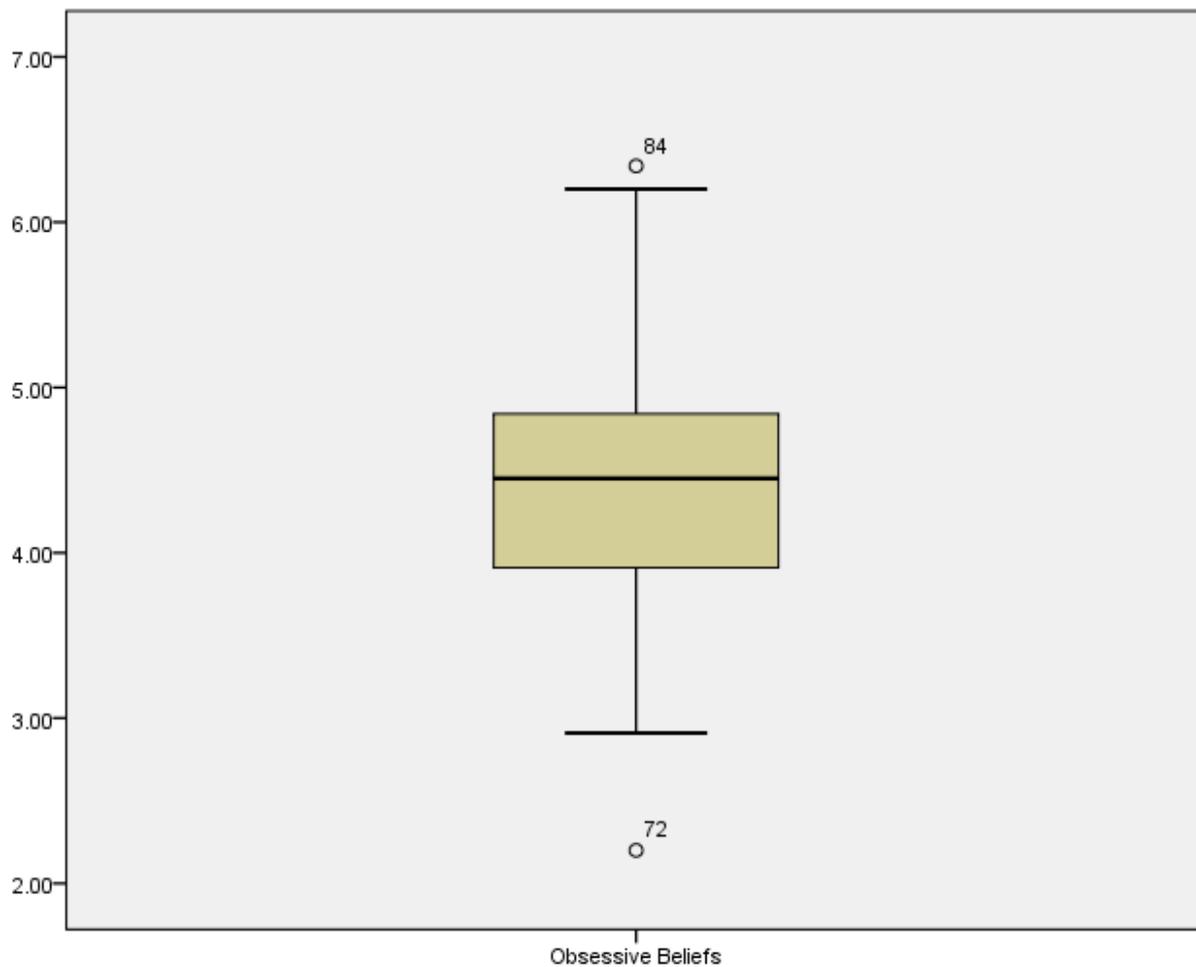
APPENDIX H: High-religiosity exposed Muslims group

High-religiosity exposed Muslims group

Appendix H (i)

Normal Q-Q Plot of Religious OC Symptoms

Normal Q-Q Plot of Non Religious OC Symptoms
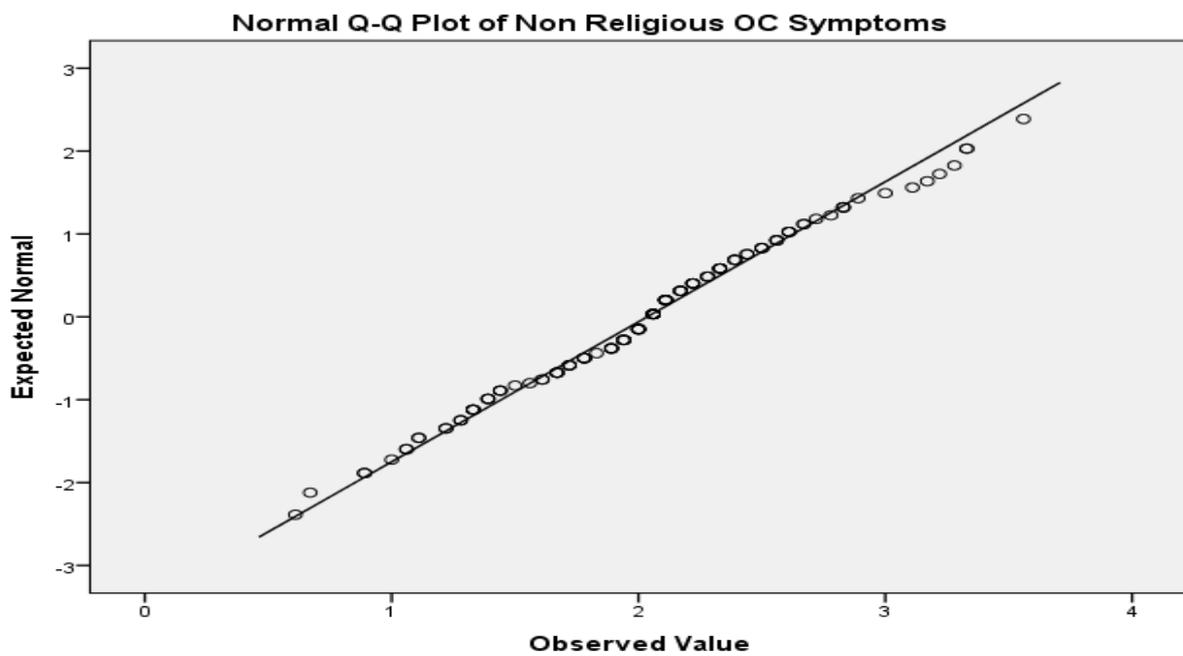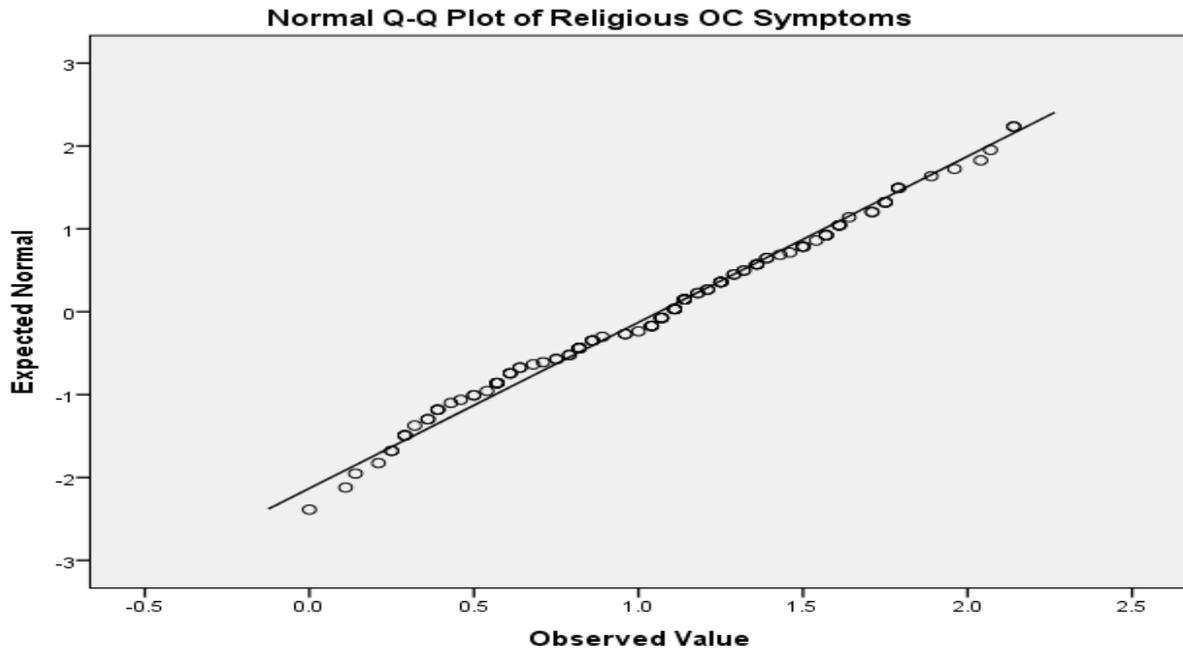
Religiously exposed high religiosity Muslims sample

Appendix H (ii)
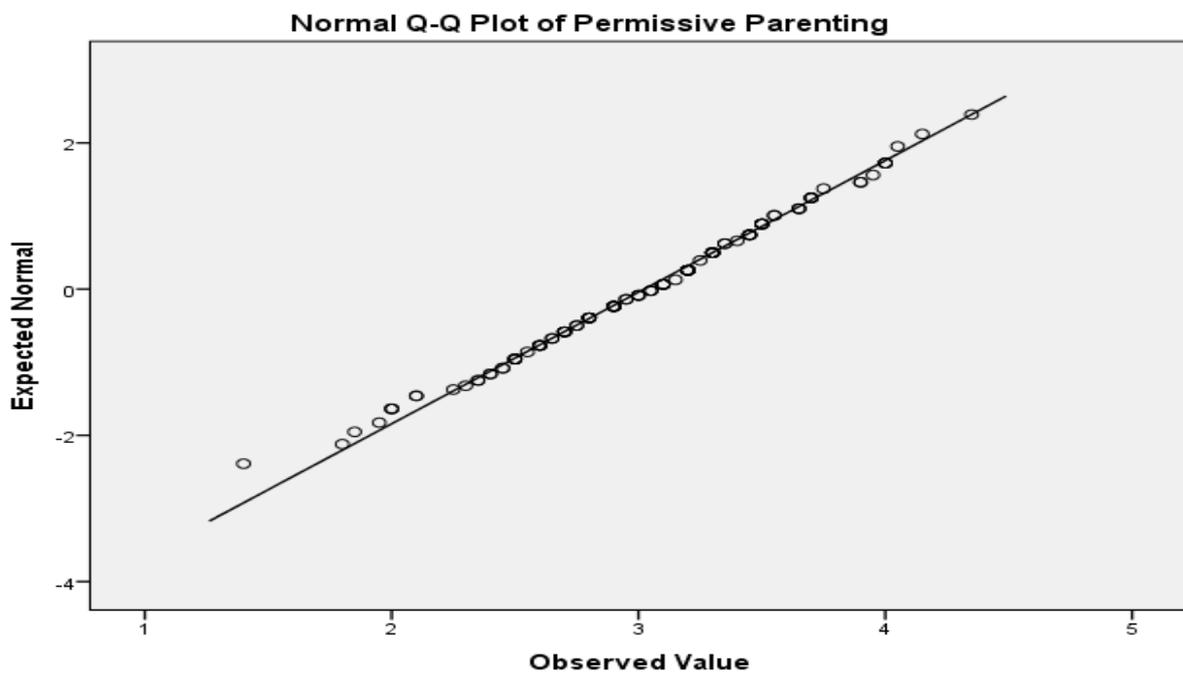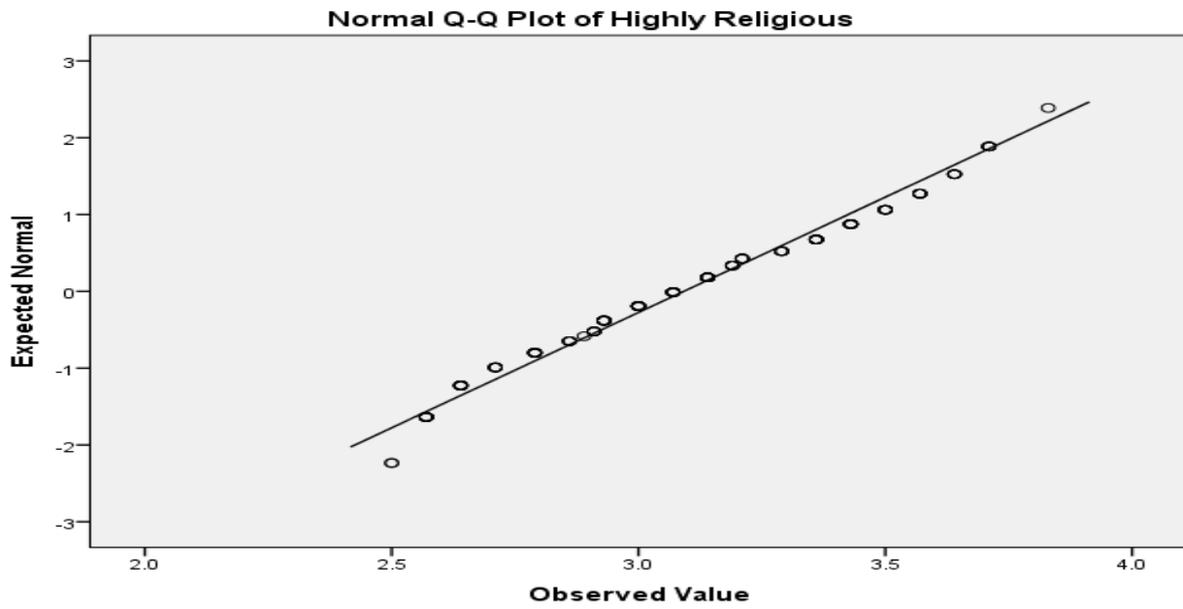
Normal Q-Q Plot of Highly Religious

Normal Q-Q Plot of Permissive Parenting

High-religiosity exposed Muslims group
Appendix H (iii)

Normal Q-Q Plot of Authoritarian Parenting

Normal Q-Q Plot of Authoritative Parenting

High-religiosity exposed Muslims group

Appendix H (iv)

Normal Q-Q Plot of Obsessive Beliefs
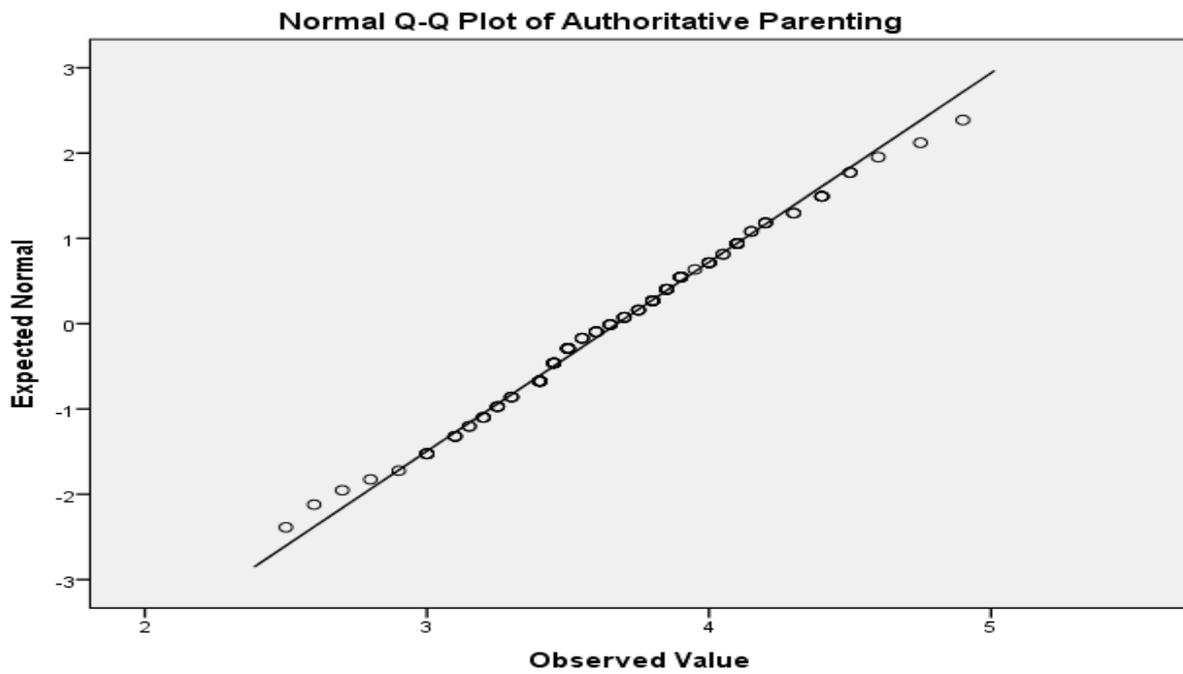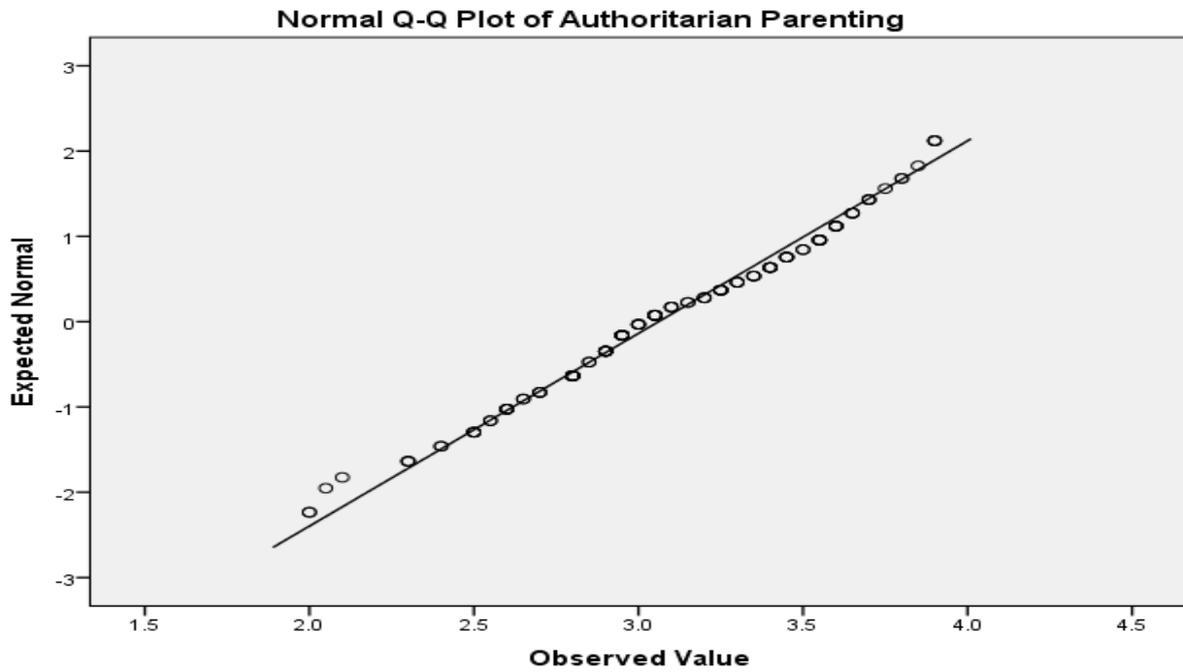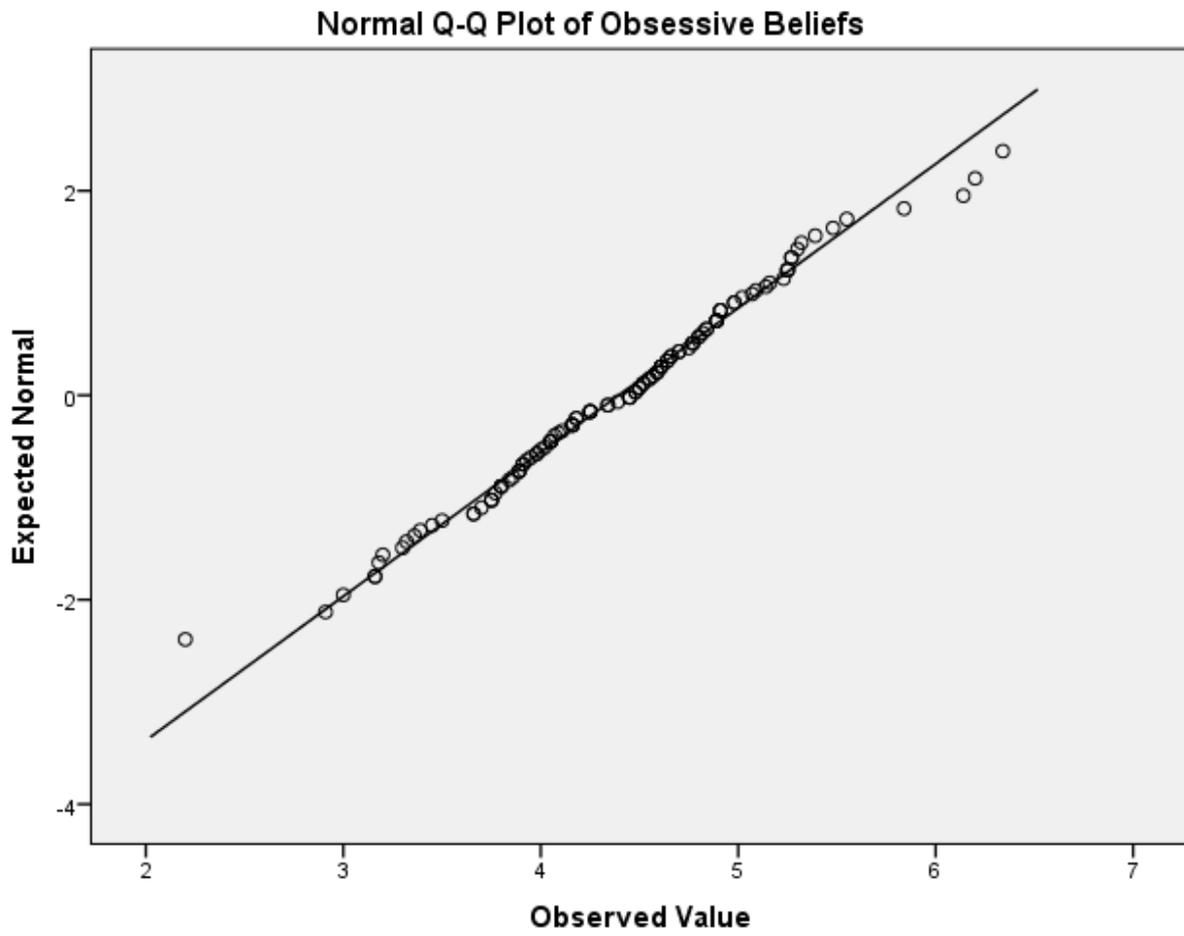
APPENDIX I: Descriptive Statistics

Descriptives

			Statistic	Std. Error
Permissive Parenting	Mean		3.0545	.05324
	95% Confidence Interval for Mean	Lower Bound	2.9487	
		Upper Bound	3.1603	
	5% Trimmed Mean		3.0722	
	Median		3.0000	
	Variance		.252	
	Std. Deviation		.50225	
	Minimum		1.25	
	Maximum		4.15	
	Range		2.90	
	Interquartile Range		.60	
	Skewness		-.581	.255
	Kurtosis		**1.794**	.506

APPENDIX J: Low-religiosity exposed group

Low-religiosity exposed group
Appendix J (i)

Histogram
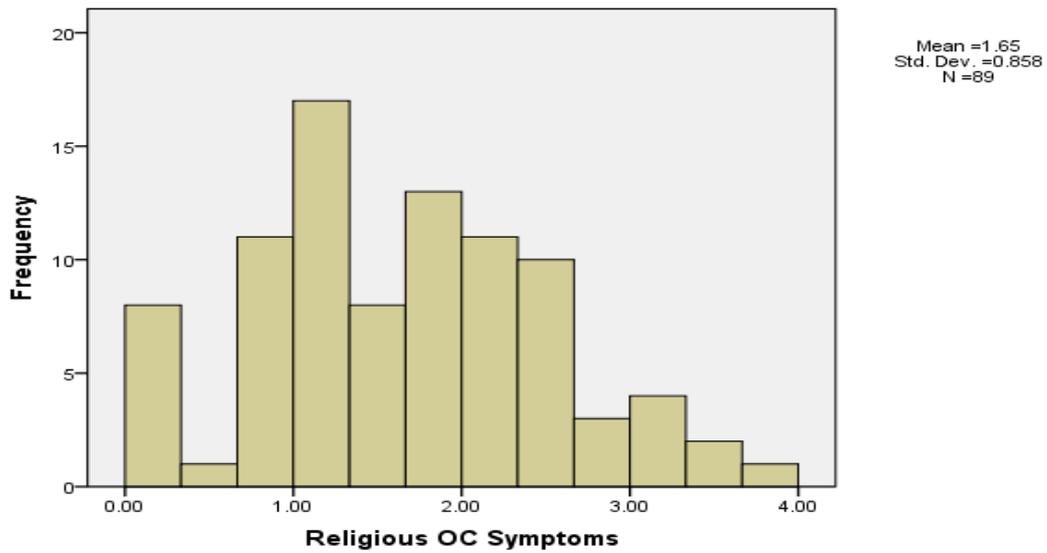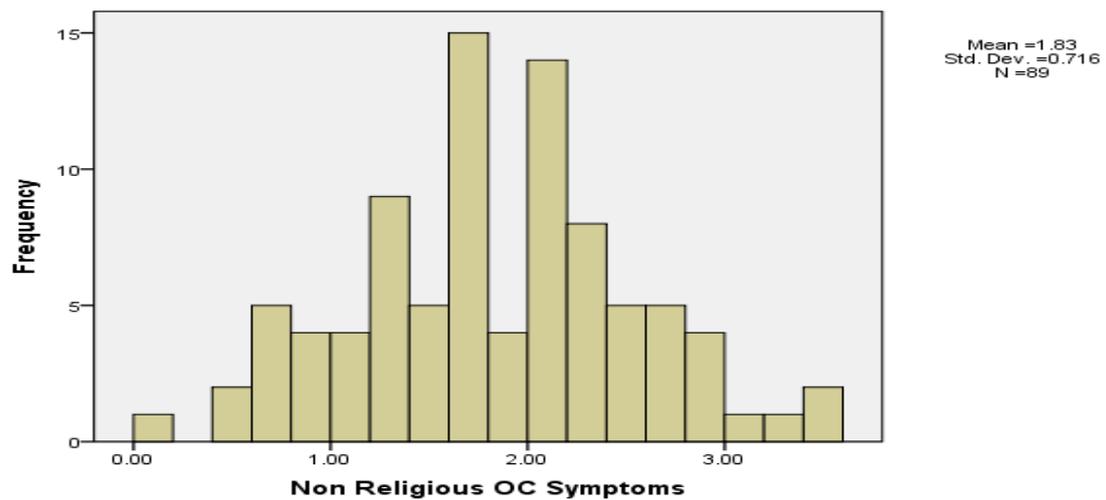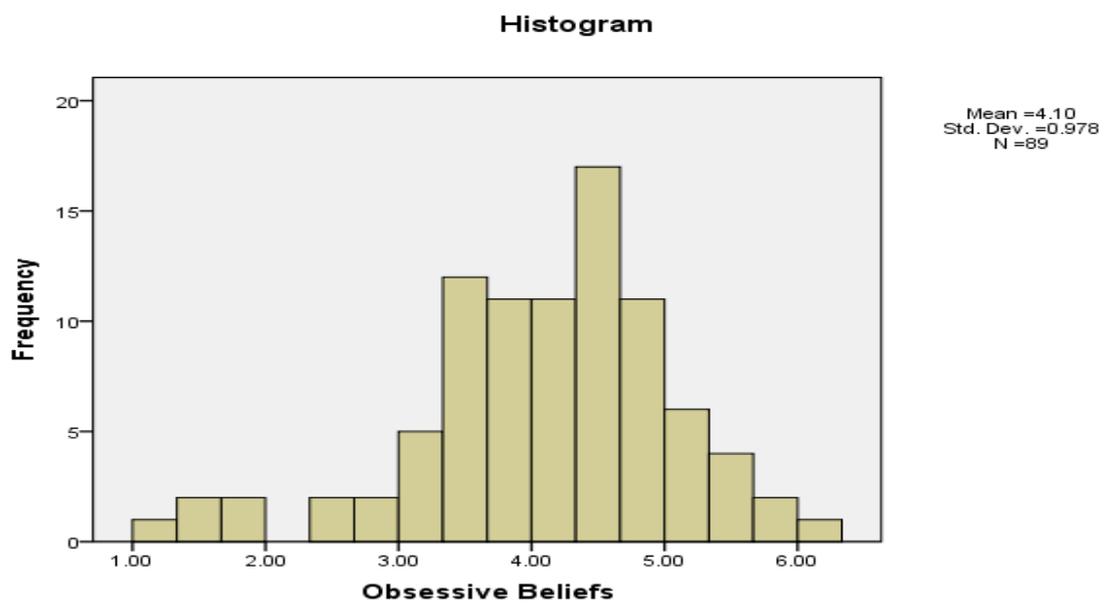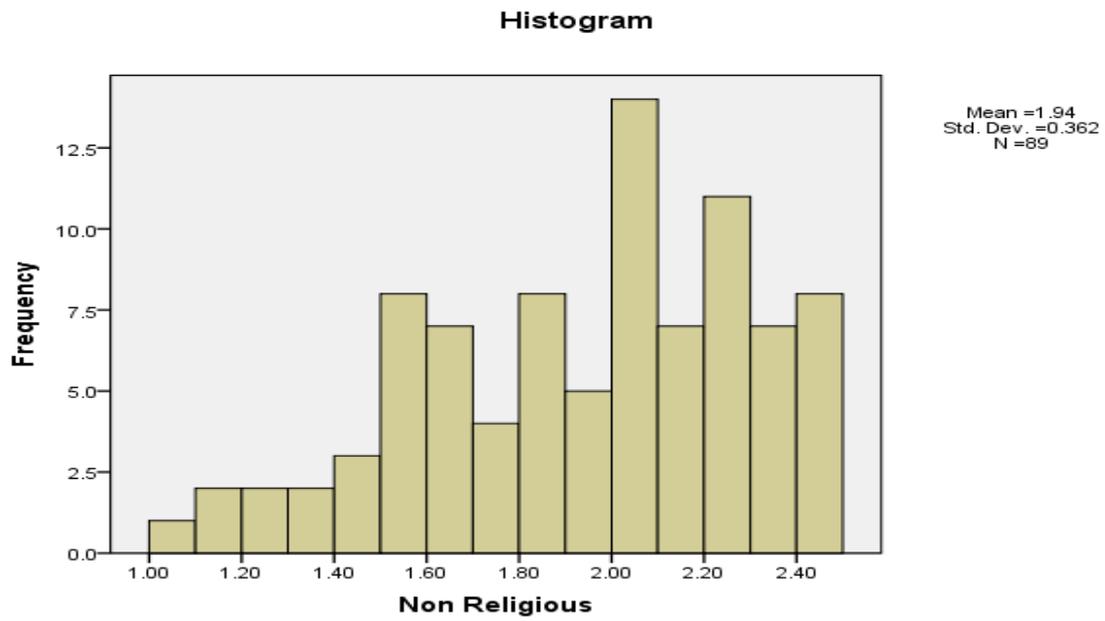
Mean =1.65
Std. Dev. =0.858
N =89

Histogram

Mean =1.83
Std. Dev. =0.716
N =89

Low-religiosity exposed group
Appendix J (ii)

Histogram

Mean =1.94
Std. Dev. =0.362
N =89

Histogram

Mean =4.10
Std. Dev. =0.978
N =89

Low-religiosity exposed group
Appendix J (iii)

Histogram

Mean =0.31
Std. Dev. =0.107
N =89

Histogram

Mean =2.96
Std. Dev. =0.623
N =89

Low-religiosity exposed group
Appendix J (iv)

Histogram

Mean =3.39
Std. Dev. =0.655
N =89
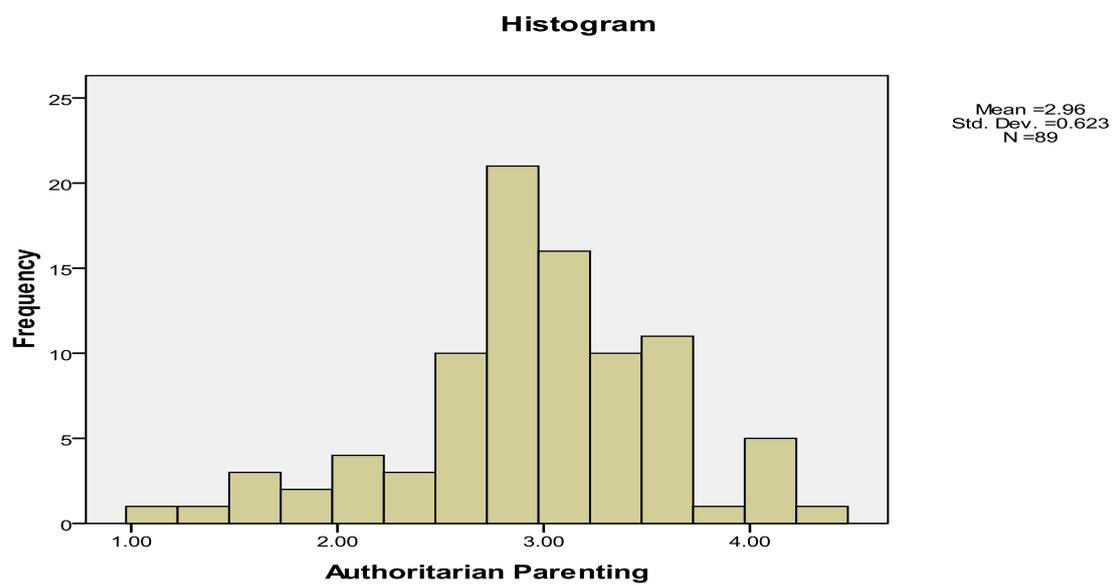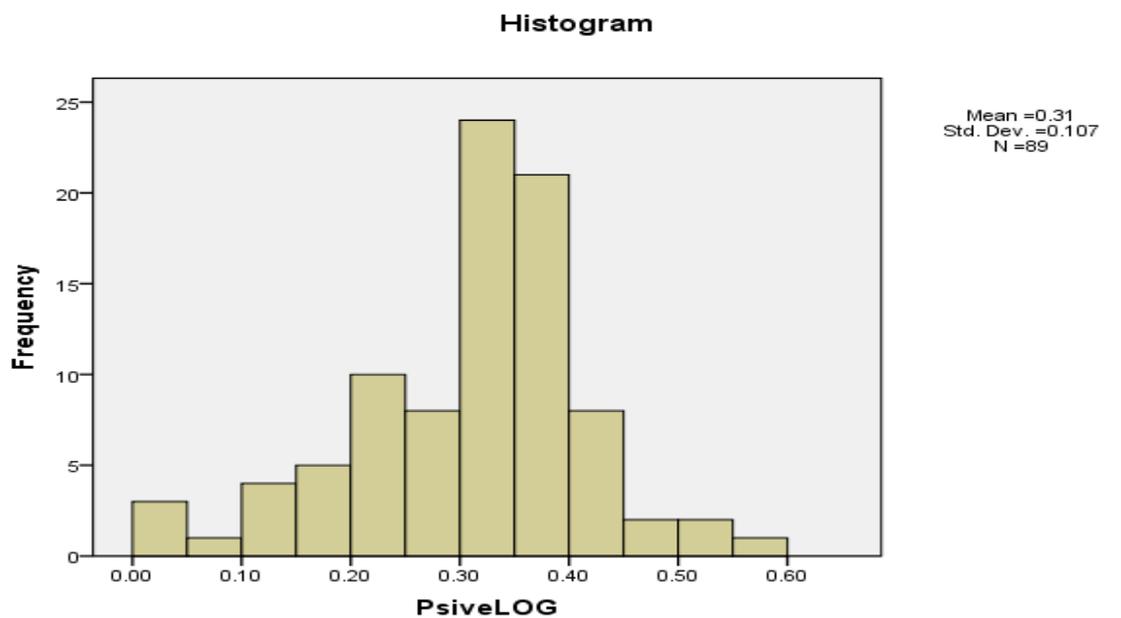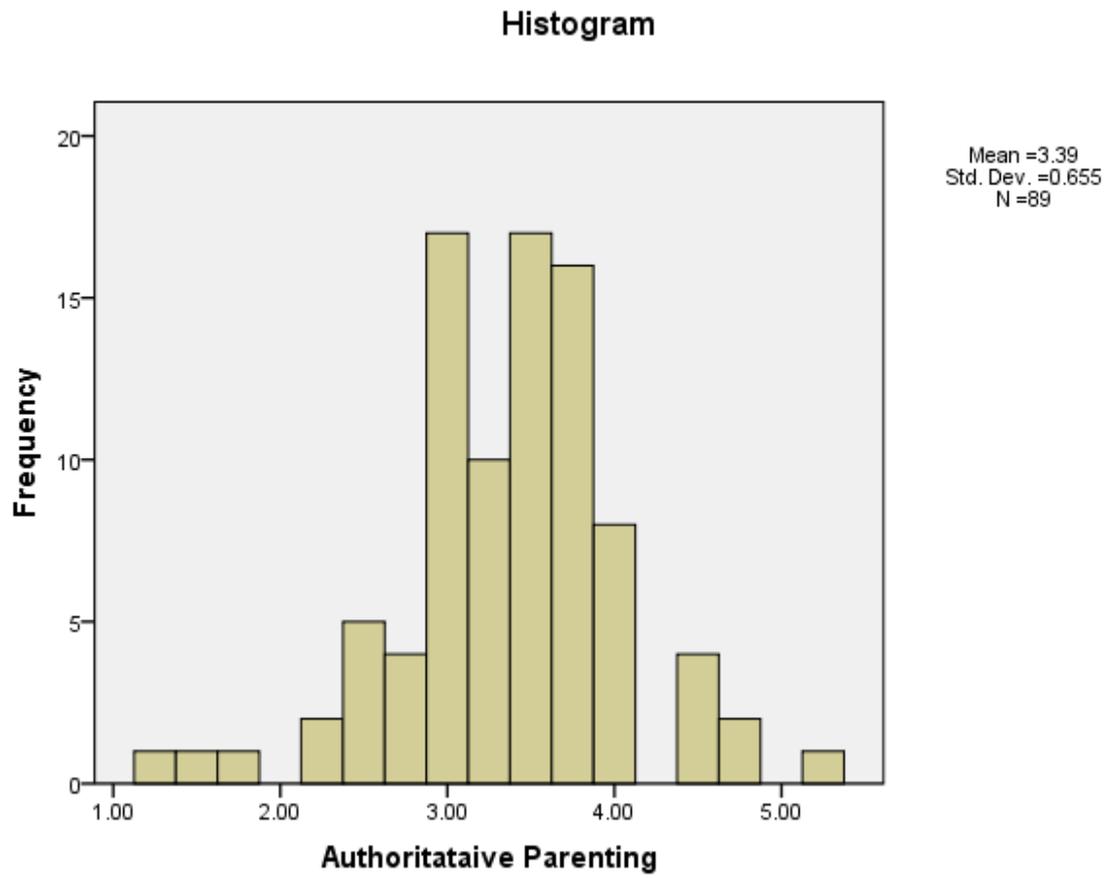
APPENDIX K: Low-religiosity exposed group

Low-religiosity exposed group
Appendix K (i)

Religious OC Symptoms

Non Religious OC Symptoms

Low-religiosity exposed group
Appendix K (ii)

Non Religious

Obsessive Beliefs
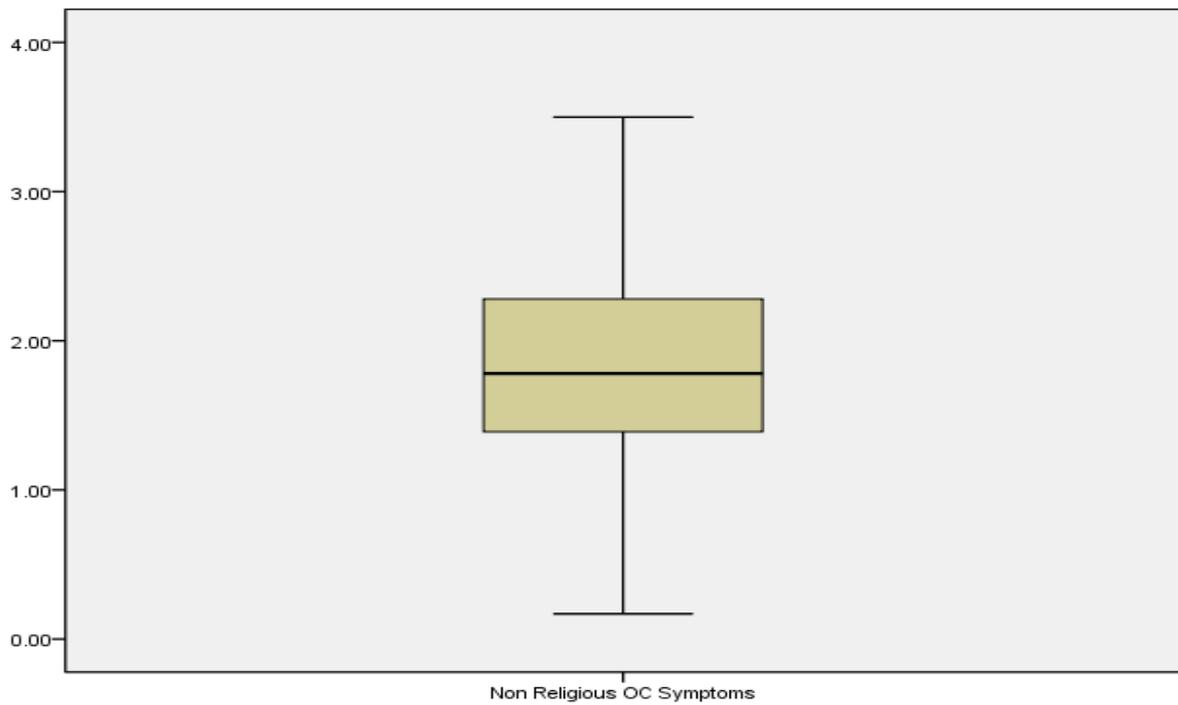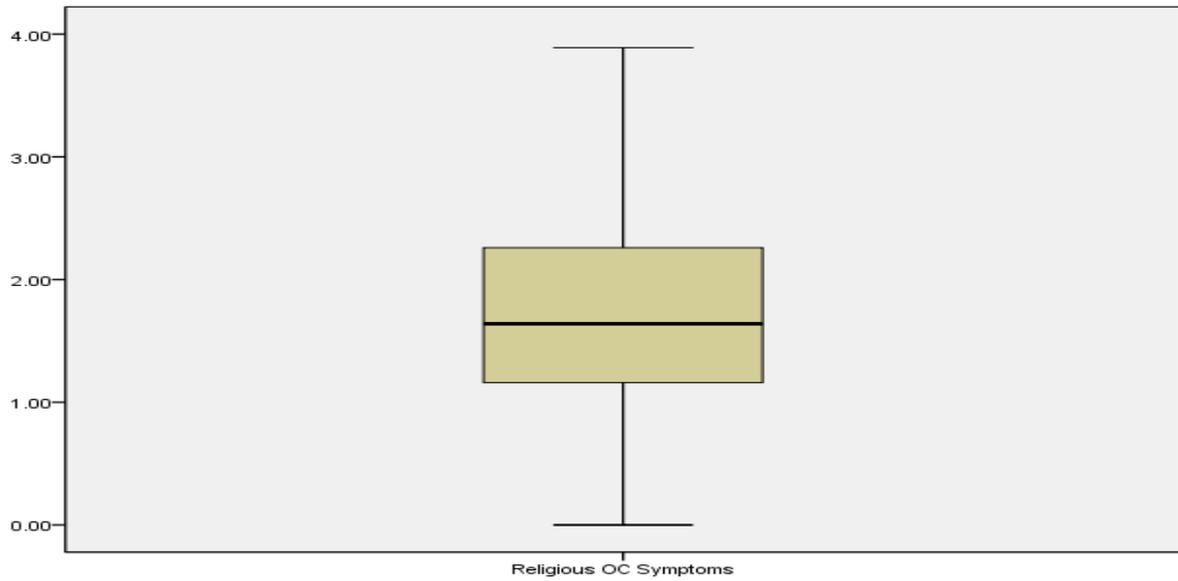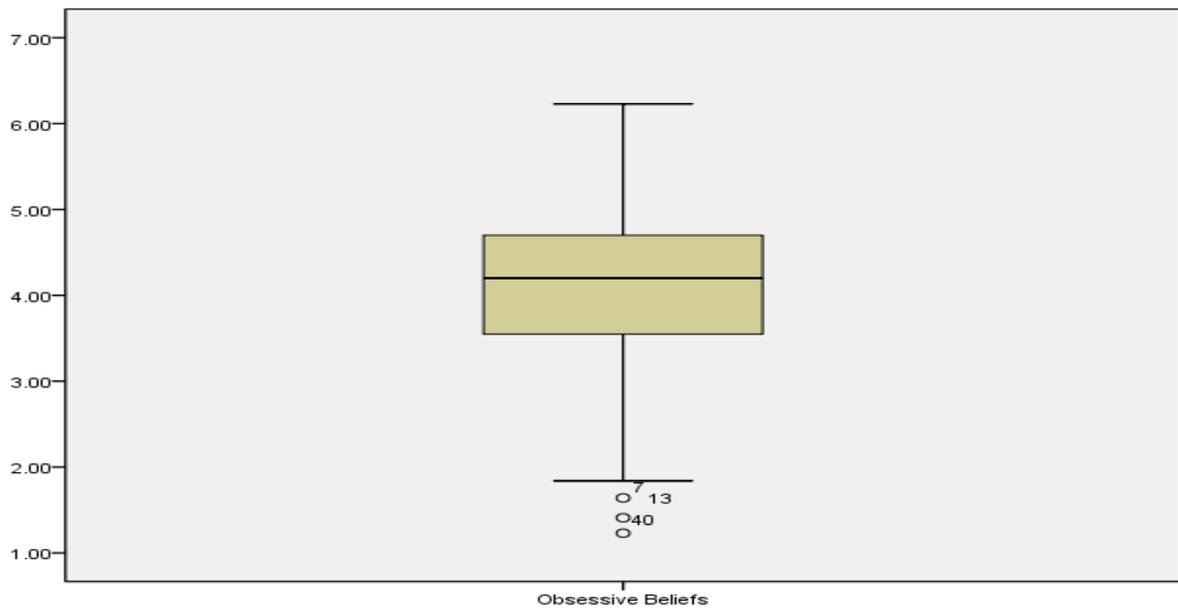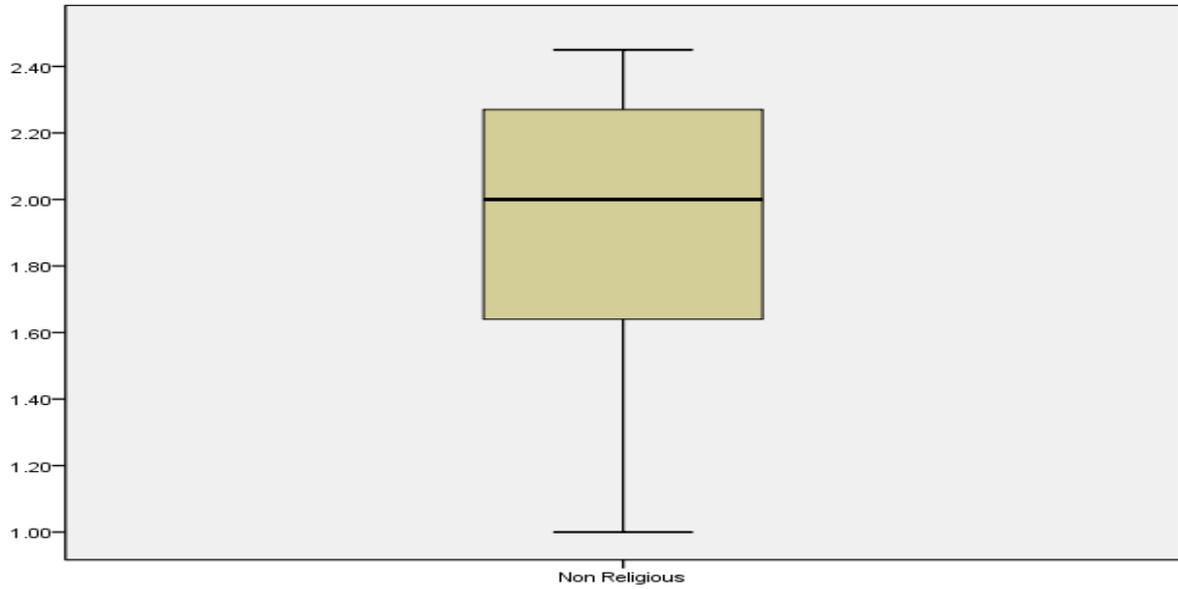
**Low-religiosity exposed group**
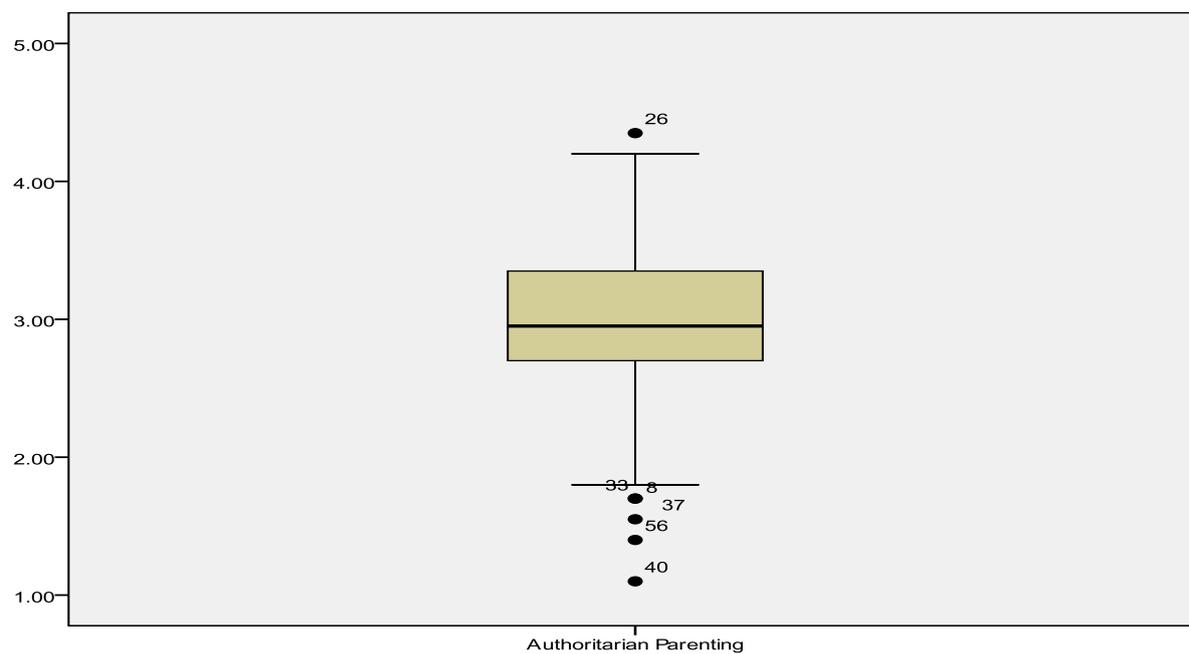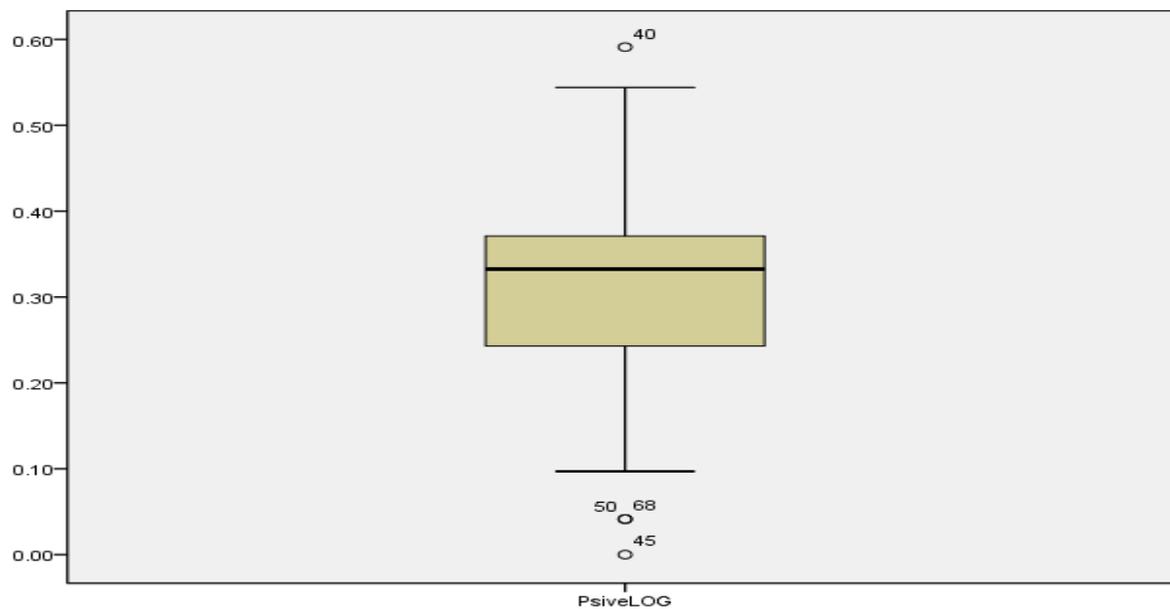
Appendix K (iii)

Low-religiosity exposed group

Appendix K (iv)
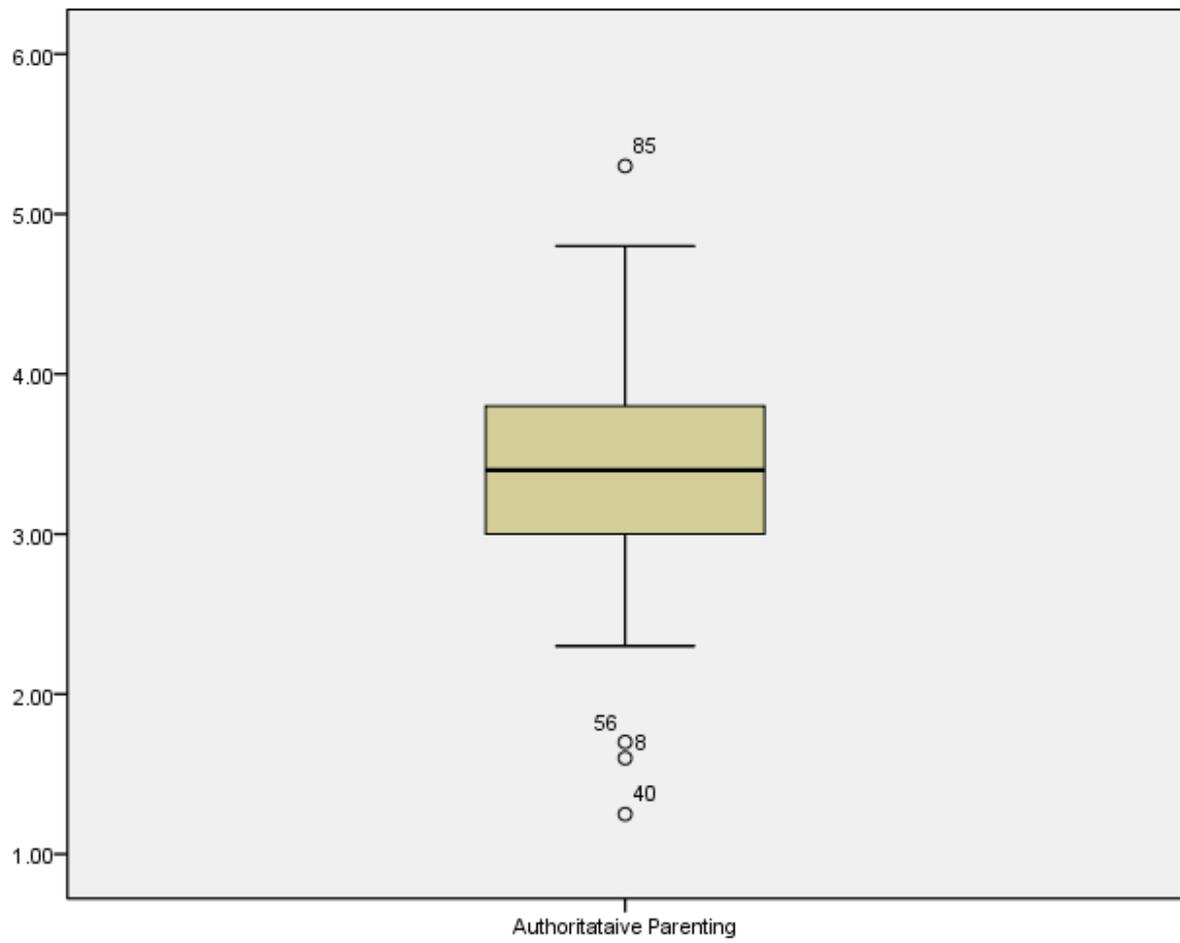
APPENDIX L: Low-religiosity exposed group

Low-religiosity exposed group
Appendix L (i)

Normal Q-Q Plot of Religious OC Symptoms
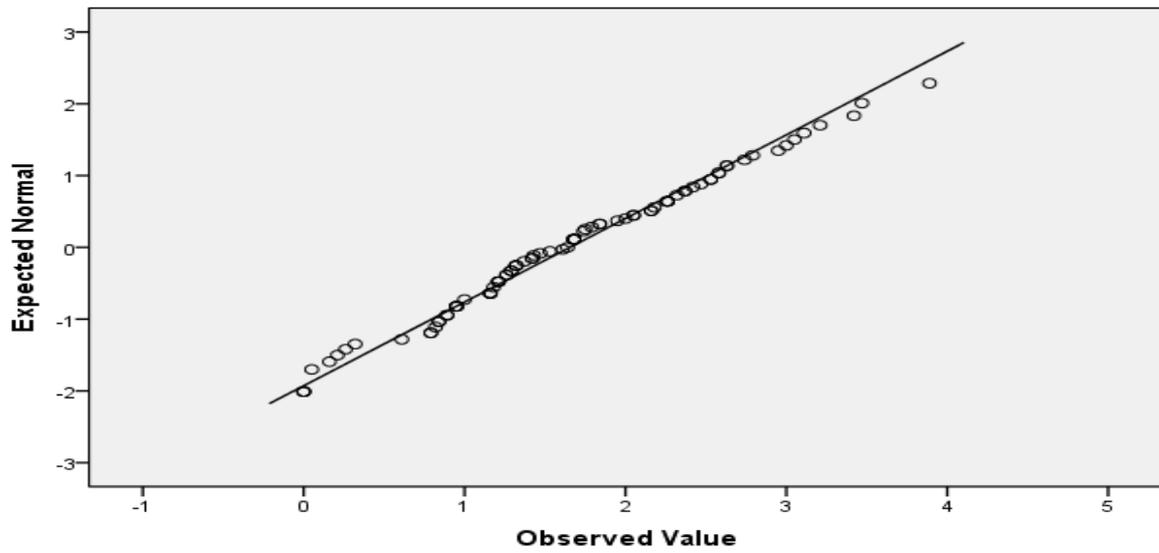
Normal Q-Q Plot of Non Religious OC Symptoms
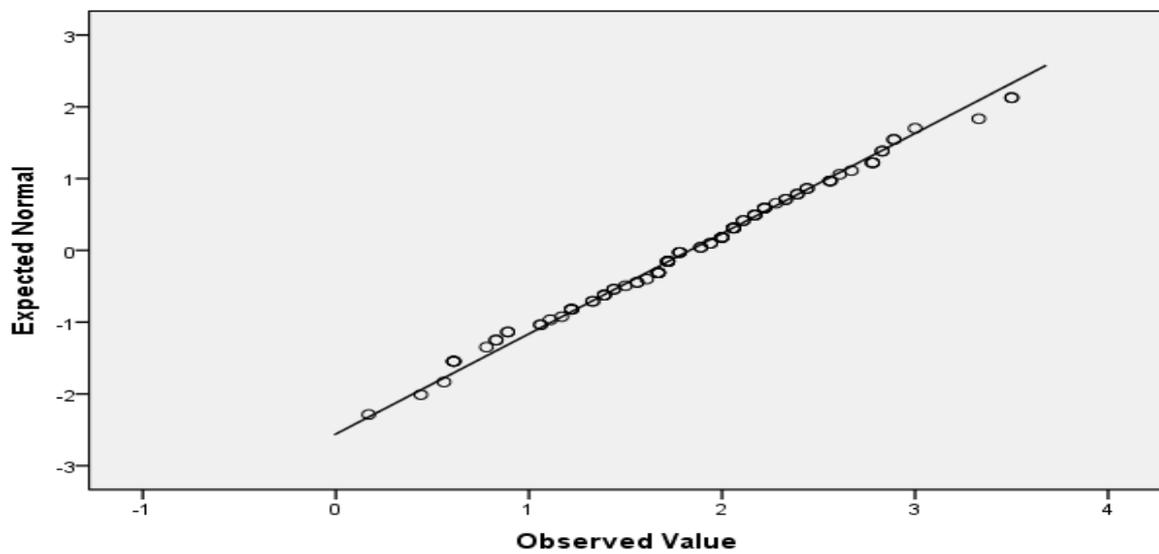
Low-religiosity exposed group

Appendix L (ii)

Normal Q-Q Plot of Non Religious
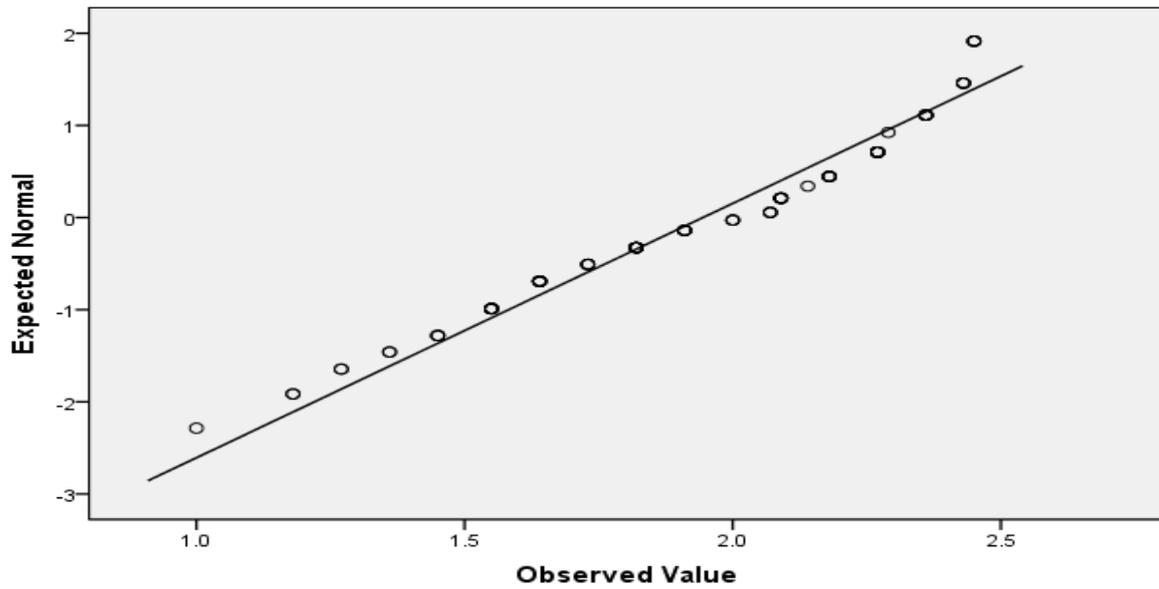
Normal Q-Q Plot of Obsessive Beliefs
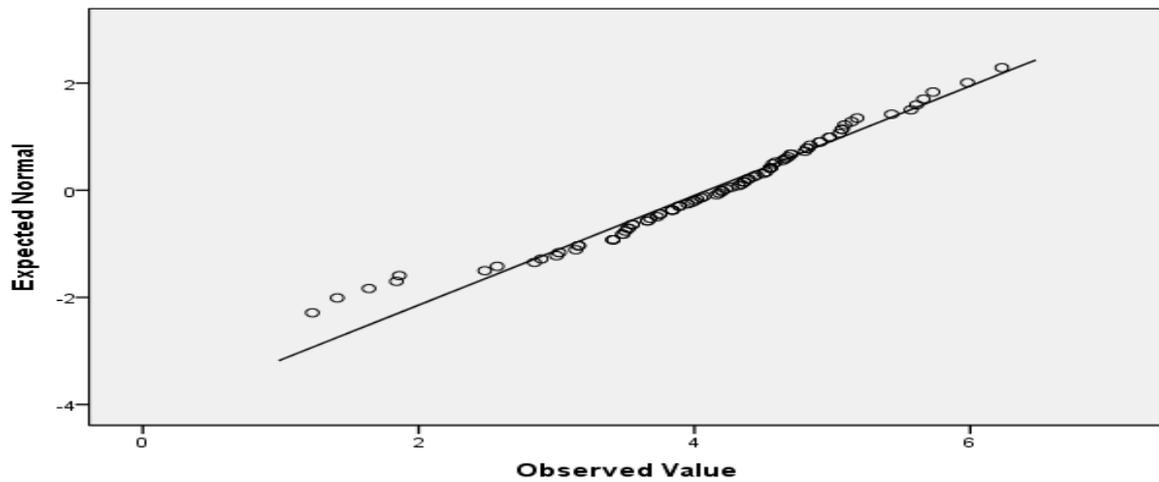
Low-religiosity exposed group

Appendix L (iii)

Normal Q-Q Plot of PsiveLOG
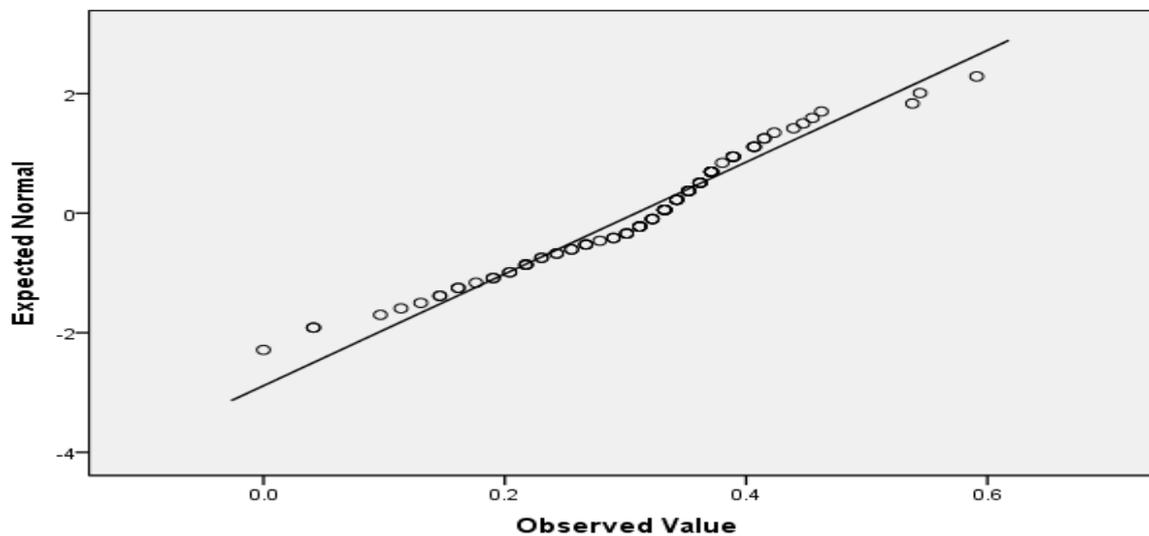
Normal Q-Q Plot of Authoritarian Parenting
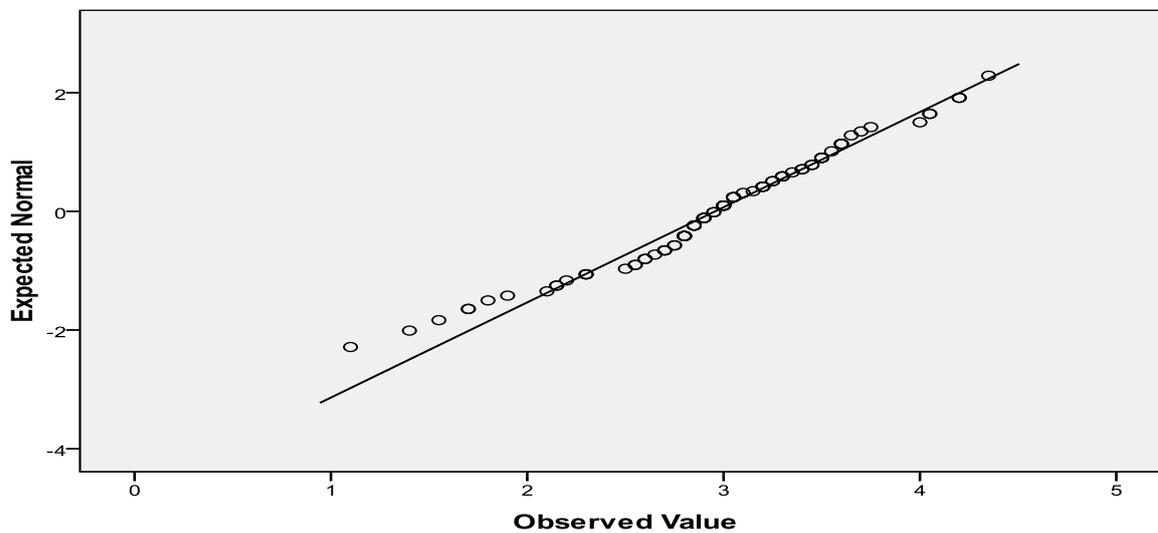
Low-religiosity exposed group

Appendix L (iv)

Normal Q-Q Plot of Authoritataive Parenting
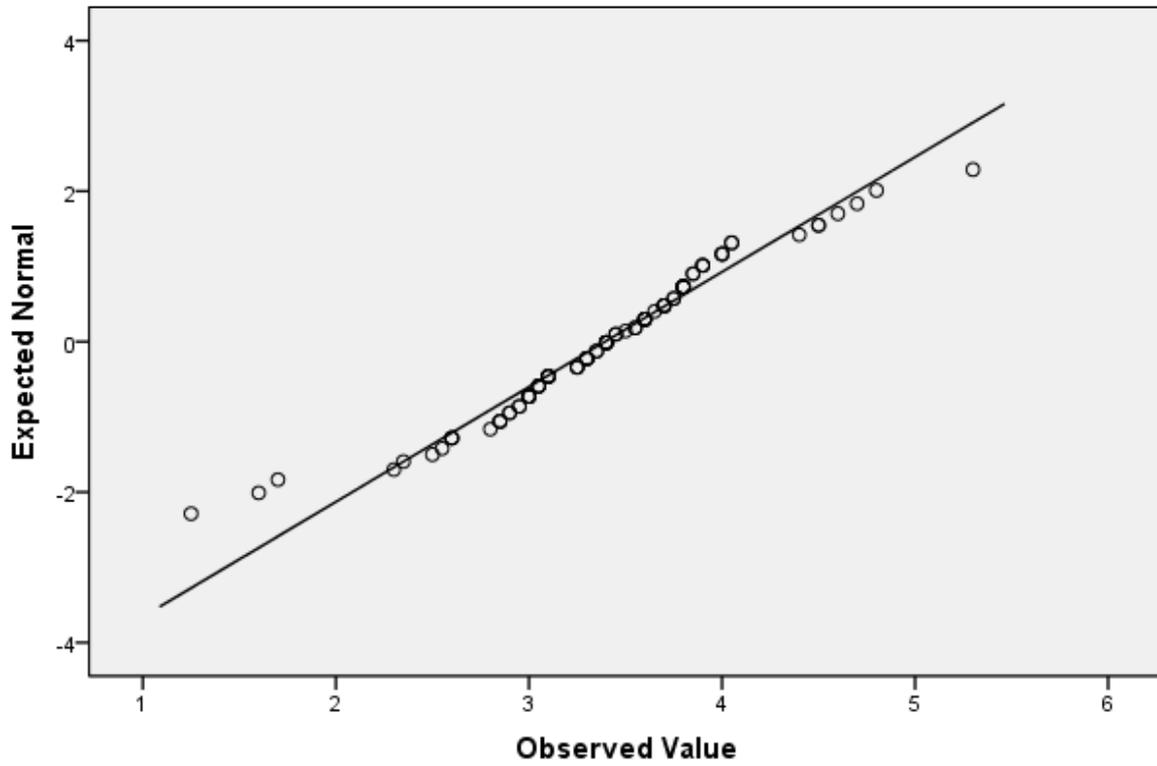
APPENDIX M: Low-religiosity non-exposed group

Low-religiosity non-exposed group

Appendix M (i)

Histogram

Mean =1.83
Std. Dev. =0.719
N =50

Histogram

Mean =2.03
Std. Dev. =0.118
N =50
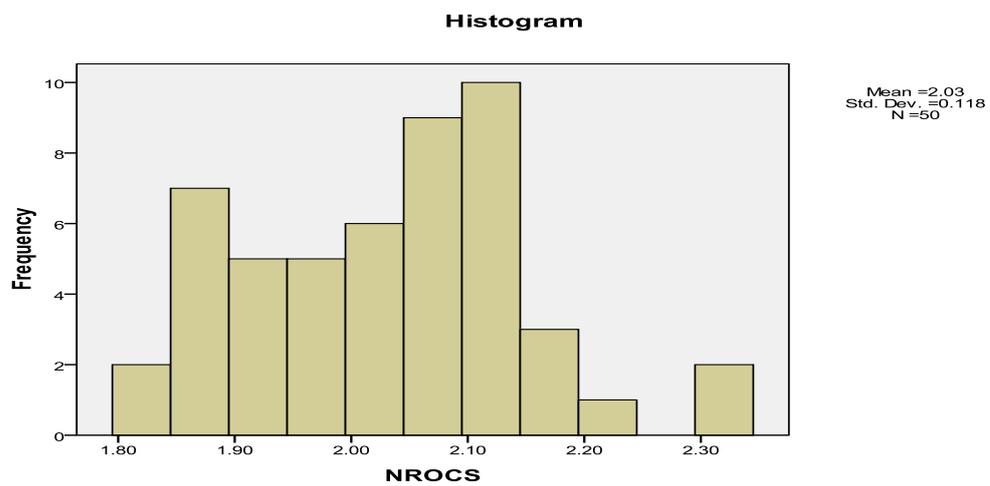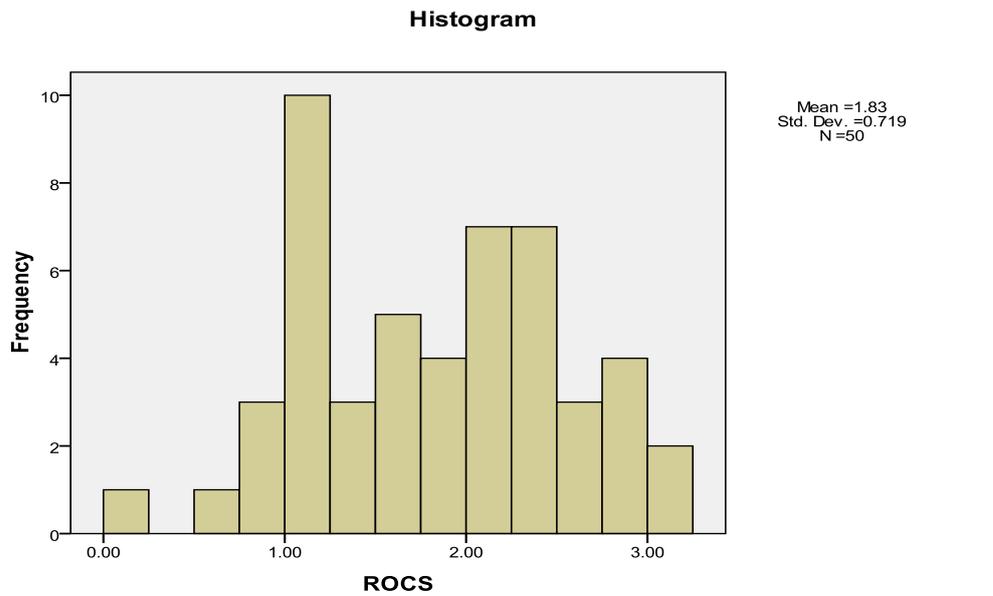
Low-religiosity non-exposed group

Appendix M (ii)

Histogram
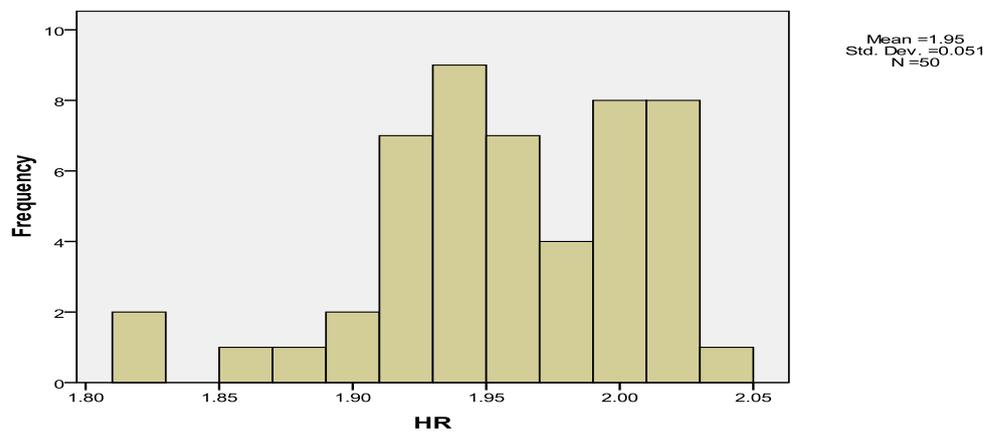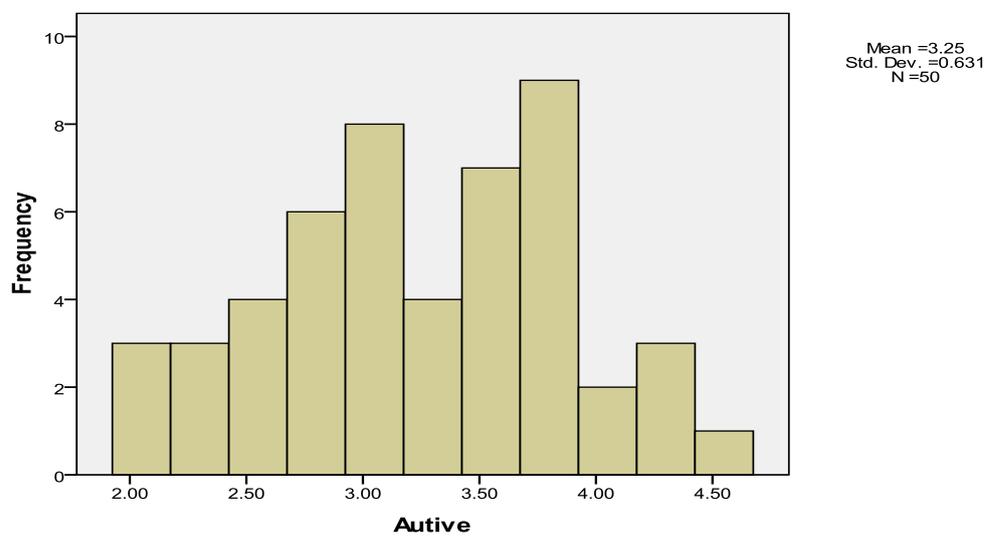
Mean =1.95
Std. Dev. =0.051
N =50

Histogram

Mean =3.25
Std. Dev. =0.631
N =50

Low-religiosity non-exposed group

Appendix M (iii)

Histogram

Mean =4.13
Std. Dev. =0.817
N =50

Histogram

Mean =0.67
Std. Dev. =0.025
N =50
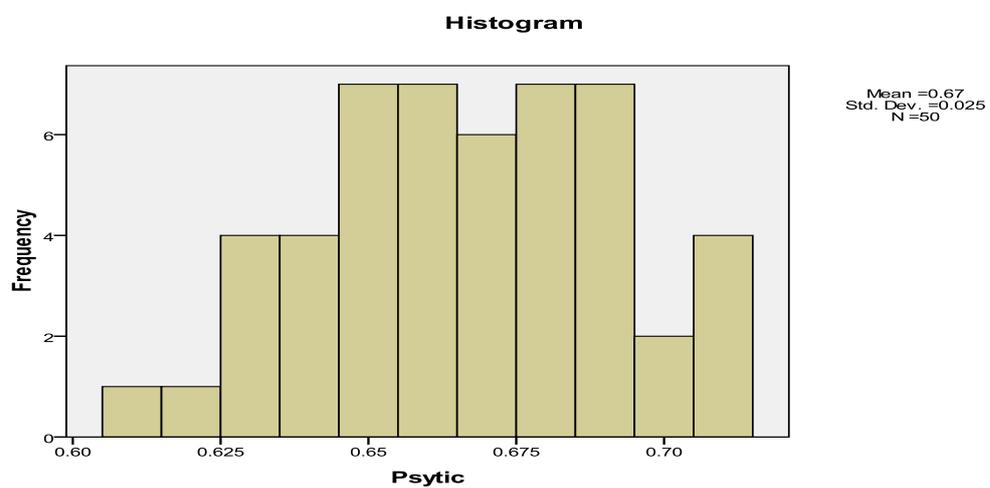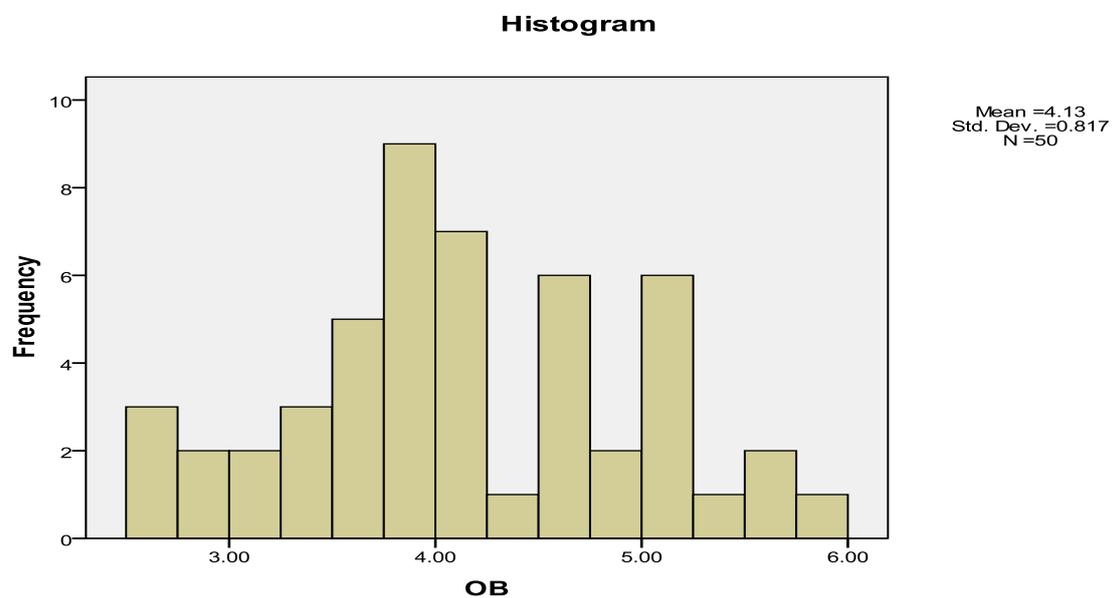
Low-religiosity non-exposed group

Appendix M (iv)

Histogram

Mean =3.17
Std. Dev. =0.023
N =50
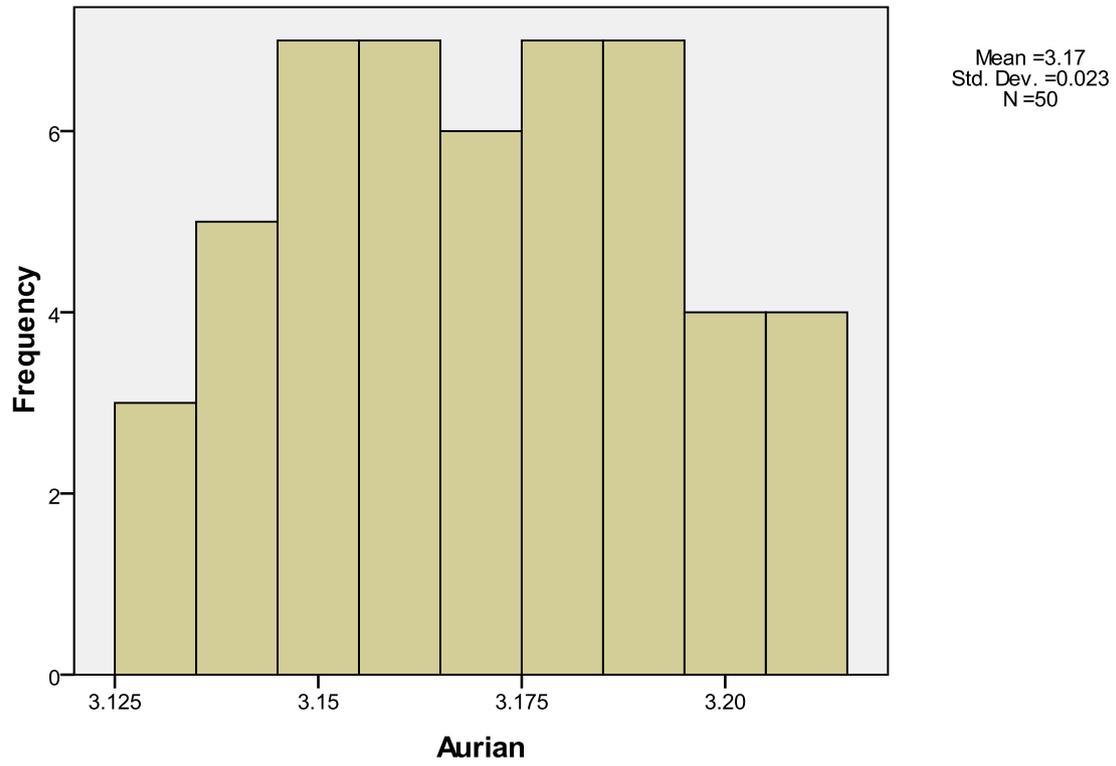
APPENDIX N: Low-religiosity non-exposed group

Low-religiosity non-exposed group
Appendix N (i)

Normal Q-Q Plot of ROCS
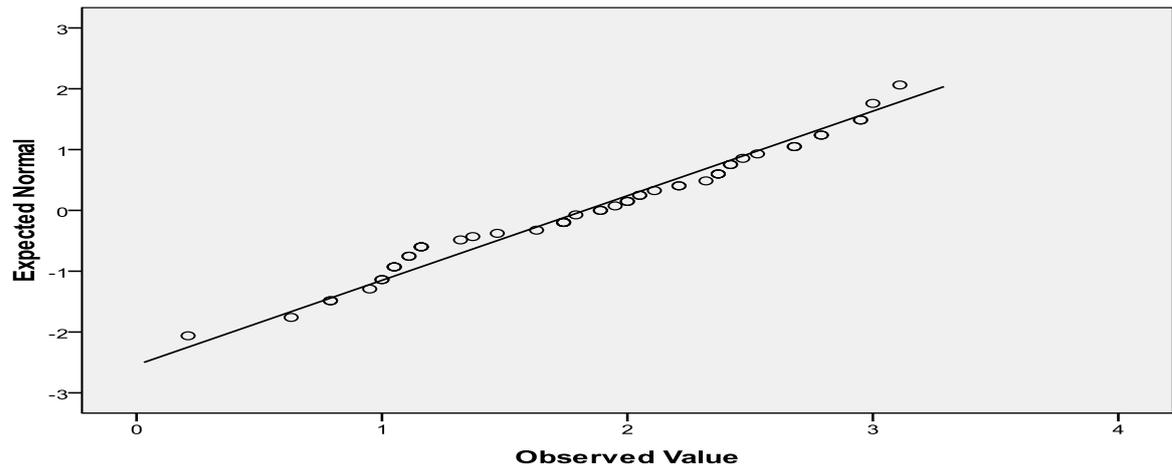
Normal Q-Q Plot of NROCS
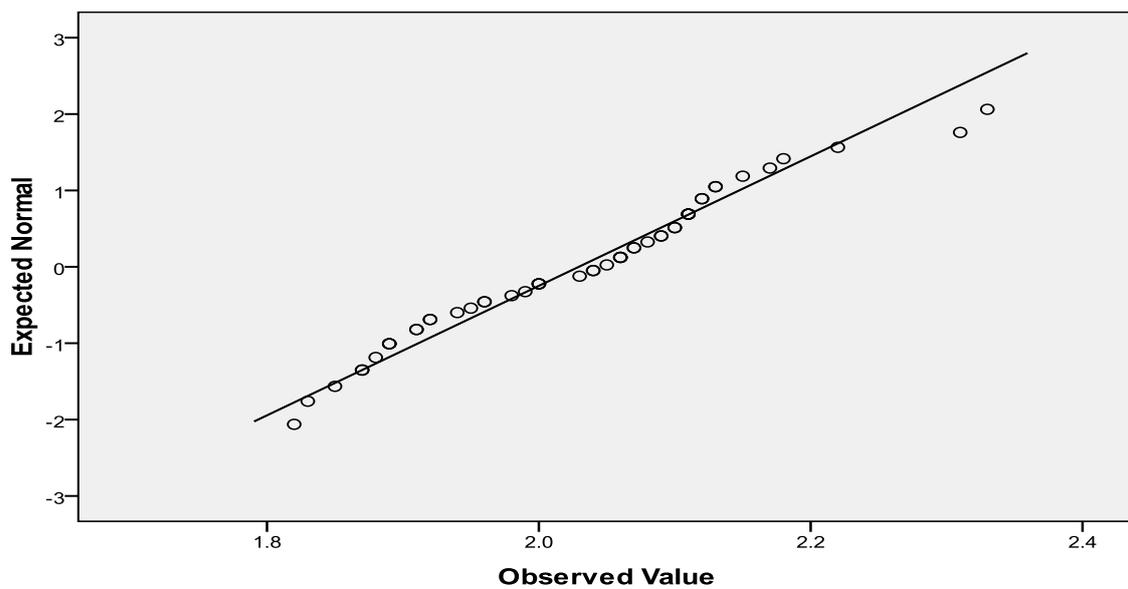
Low-religiosity non-exposed group
Appendix N (ii)

**Normal Q-Q Plot of HR**
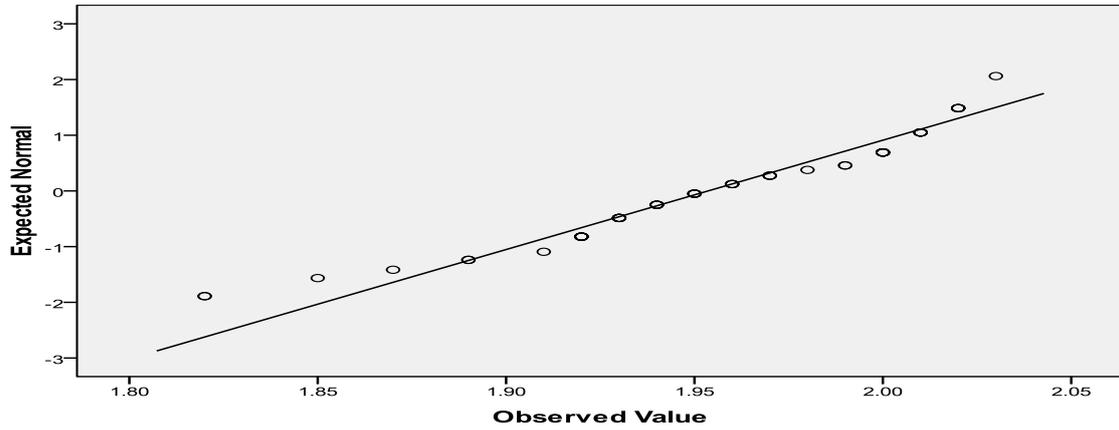
**Normal Q-Q Plot of Psive**
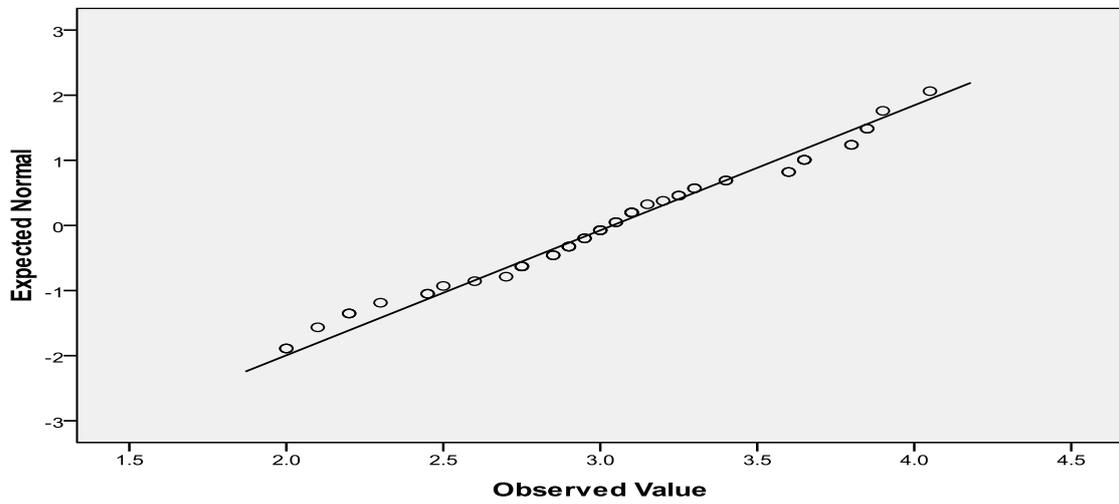
Low-religiosity non-exposed group
Appendix N (iii)

Normal Q-Q Plot of Autive
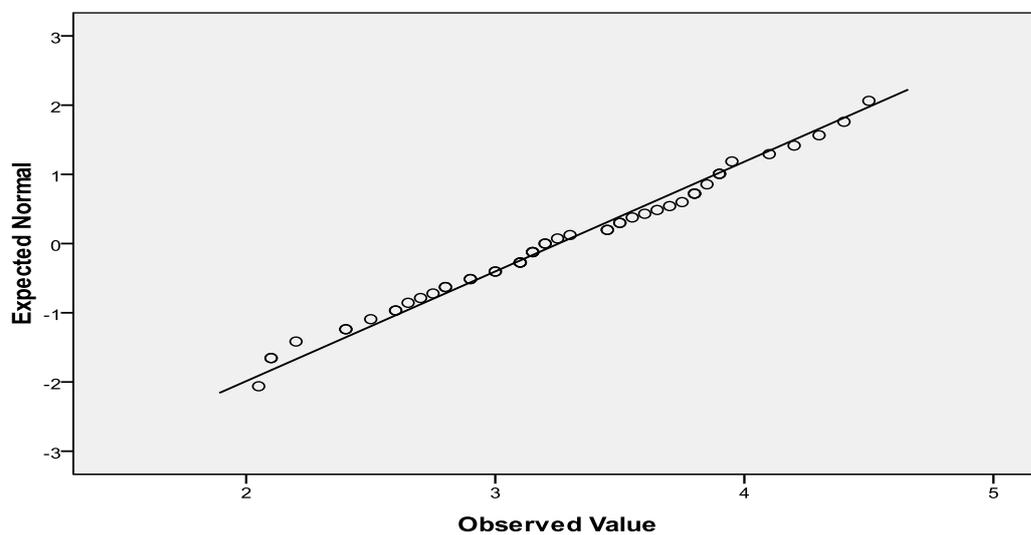
Normal Q-Q Plot of OB
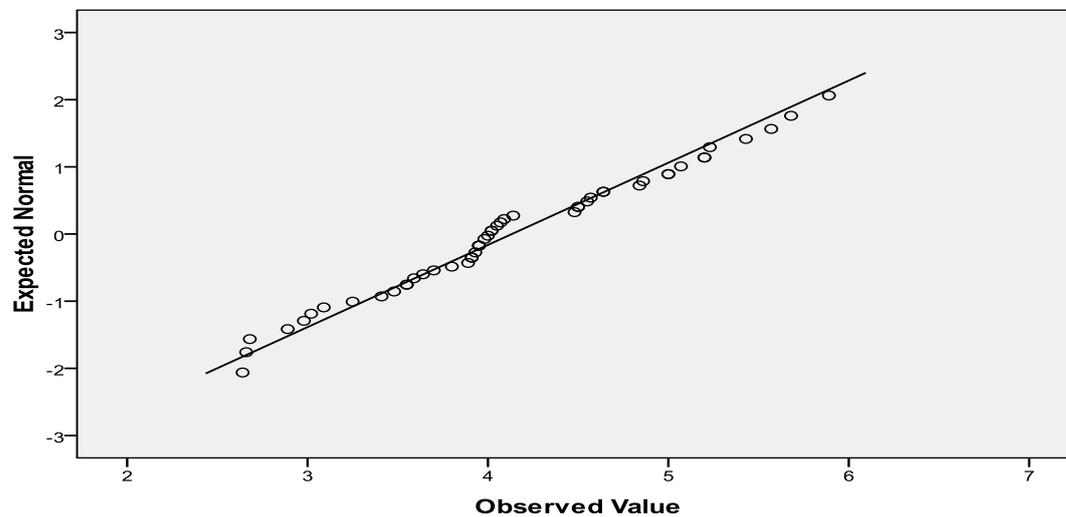
Low-religiosity non-exposed group

Appendix N (iv)

Normal Q-Q Plot of Psytic
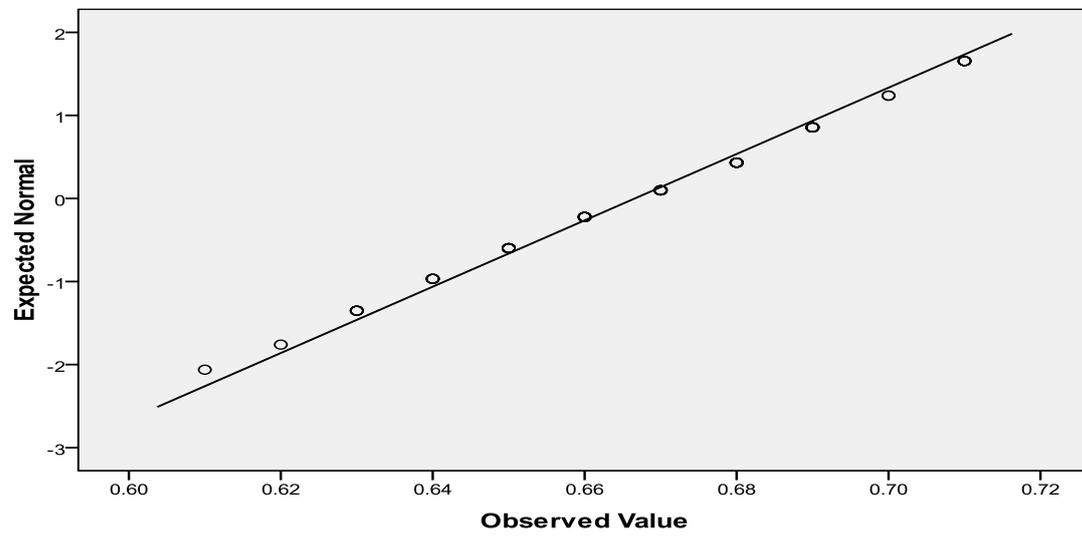
Normal Q-Q Plot of Aurian
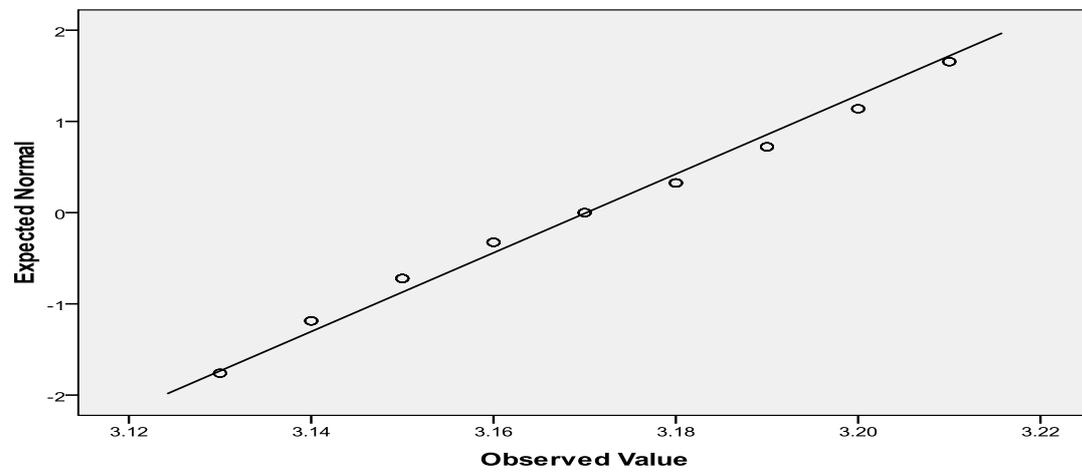
APPENDIX O: Low-religiosity non-exposed group

Low-religiosity non-exposed group
Appendix O (i)