

**UNDERSTANDING INTERPERSONAL HOSTILE-DOMINANCE  
AND ITS ROLE IN AGGRESSION OCCURRING IN HOSPITAL  
PSYCHIATRY SERVICES**

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Submitted in partial fulfilment of the degree of  
Doctor of Psychology (Clinical)  
(Forensic Specialisation)

August 2014

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This thesis is dedicated to my husband, Ty, who has been a constant source of support and encouragement during the pursuit of my postgraduate degree and the composition of this thesis. I am truly thankful for having you in my life.

Also, to my parents, Joye and John, who have loved me unconditionally and provided me with every opportunity in life for the things that I aspired to achieve.

... ..

... If this is to be achieved, man must evolve for all human conflict a method which rejects revenge, aggression and retaliation. The foundation of such a method is love.  
MARTIN LUTHER KING, JR., *Nobel Peace Prize Acceptance Speech, 1964*

But I'm not afraid of storms for I'm learning how to sail my ship  
LOUISA MAY ALCOTT, *Little Women*

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### Declaration for thesis based or partially based on conjointly published or unpublished work

#### General Declaration

In accordance with Monash University Doctorate Regulation 17.2 Doctor of Philosophy and Research Master's regulations the following declarations are made:

I hereby declare that 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.

This thesis includes one original paper accepted for publication in a peer reviewed journal and three papers submitted to peer reviewed journals. The core theme of the thesis relates to the understanding of interpersonal hostile-dominance and its role in aggression occurring in hospital psychiatry services. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the candidate, working within the School of Psychological Sciences under the supervision of Professor Michael Daffern and Dr Stuart Lee.

The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.

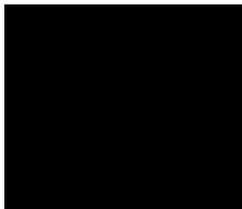
In the case of Chapters Four, Five, Six, and Seven, my contribution to the work involved the following:

<b>Thesis chapter</b>	<b>Publication title</b>	<b>Publication Status</b>	<b>Nature and extent of candidate's contributions</b>
Four	Predictors of Aggression in Psychiatric Hospitals: Interpersonal and Personality, General Aggression Model-Specified, and Clinical Factors	Submitted	Reviewed literature; study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper 75%
Five	Characteristics of Interpersonal Hostile-Dominance in Psychiatric Inpatients	Accepted for Publication	Reviewed literature; study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper 75%
Six	An Examination of the Stability	Submitted	Reviewed literature;

	of Interpersonal Hostile-Dominance and its Relationship with Psychiatric Symptomatology and Post-Discharge Aggression		study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper 75%
Seven	Evaluating the Relationship Between Childhood Abuse and Neglect, Interpersonal Hostile-Dominance, and Aggression in Psychiatric Hospitals	Submitted	Reviewed literature; study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper 75%

I have renumbered sections of submitted or published papers in order to generate a consistent presentation within the thesis.

**Signed:**



**Date:** 15 Aug 2014

## **Abstract**

Staff and patients of hospital psychiatry services are commonly confronted by the aggressive behaviour of patients. Such behaviour can result in numerous, and varied, adverse outcomes that ultimately reduce the quality of care that can be offered.

Psychiatric services and mental health legislation place great emphasis on providing services within the least-restrictive environment; this means that prompt identification and treatment of patients at risk of aggression and violence is critical. Thus, elucidation of the personal features of patients that influence aggression is an important focus for empirical research. Moreover, it is essential that in explicating such features, the contextual nature of aggression occurring in hospital psychiatry services be considered.

In this thesis, a number of personal features relevant to aggression in hospital psychiatry services are discussed. The main focus is on understanding interpersonal hostile-dominance (HD) and its relationship with aggression in hospital psychiatry services through the integration of two complementary theoretical models: the General Aggression Model (GAM) and Interpersonal Theory. The GAM is a comprehensive aggression theory, while Interpersonal Theory highlights the importance of relational functioning in understanding personality and interpersonal behaviour.

Underpinning this dissertation are four distinct, yet related research aims: (1) To assess the influence of interpersonal and personality factors, GAM-specified cognitions and related affective states, and clinical factors on psychiatric inpatient aggression; (2) To delineate interpersonal HD in psychiatric inpatients; (3) To examine the stability of HD and its relationship with psychiatric symptoms and aggression over time; and (4) To explore whether HD mediates the relationship between childhood abuse and neglect and aggressive behaviour in psychiatric inpatients.

For the empirical component of this research, 200 adult psychiatry inpatients were assessed using the Positive and Negative Syndrome Scale (PANSS), the State-Trait Anger Expression Inventory-2: Trait Anger scale (STAXI-2:TA), the Measures of Criminal Attitudes and Associates: Attitudes Towards Violence scale (MCAA:ATV), the Schedule of Imagined Violence (SIV), the Childhood Trauma Questionnaire (CTQ), the Psychopathy Check List: Screening Version (PCL:SV), the Impact Message Inventory-Circumplex (IMI-C), and the Overt Aggression Scale (OAS). Assessments took place within five days of their admission to the low-dependence environment. Forty-one participants were available at six months post-hospital discharge for follow-up assessment using the PANSS, IMI-C, and the Life History of Aggression Questionnaire: Aggression subscale (LHA:A).

In relation to the first aim, results showed that HD, psychopathy, the tendency to rehearse aggressive scripts, positive attitudes towards violence, trait anger, and disorganised and excited symptoms predicted psychiatric inpatient aggression. However, only HD remained as a significant unique predictor in the hierarchical regression analysis, confirming the importance of HD in the prediction of psychiatric inpatient aggressive behaviour.

In relation to the second aim, interpersonal, affective, and behavioural features of psychopathy, the tendency to rehearse aggressive scripts, and positive, negative, disorganised, and excited psychiatric symptoms remained as significant unique predictors of HD in a hierarchical regression model. This suggests that HD reflects a characteristic tendency towards interpersonal, affective, and behavioural problems marked by hostility and dominance, combined with a tendency toward frequent aggressive script rehearsal, and more severe psychopathology.

In relation to the third aim, results showed that HD was stable over time, despite an overall reduction in psychiatric symptoms, and that HD was associated with greater symptom severity over time. Furthermore, it was found that elevated HD and greater severity of excited psychiatric symptoms in the community, along with more severe positive psychiatric symptoms in the hospital and in the community, were associated with aggressive behaviour occurring post-discharge. These findings implicate HD as a risk factor for more severe psychopathology, and highlight HD as a risk factor for post-discharge aggression.

In relation to the final aim, childhood abuse and neglect experiences were commonly reported, with between 41% and 50.5% of participants reporting having experienced at least moderate severity of the different forms of childhood maltreatment. More severe emotional, physical, and sexual abuse, and physical neglect in childhood were associated with higher HD in adulthood. Higher levels of HD and all forms of childhood abuse and neglect were associated with aggression; HD mediated the relationship between childhood abuse and neglect, and aggression. These results indicate that childhood maltreatment contributes to interpersonal HD, which then influences aggressive behaviour.

Together, these findings highlight the importance of HD and Interpersonal Theory to the problem of aggression in hospital psychiatric services. These results are also important to the GAM and suggest interpersonal style and Interpersonal Theory should have an important role in models that seek to account for interpersonal aggression and violence. Additionally, this body of research enhances conceptualisations of HD and reinforces the importance of understanding the developmental impact of childhood abuse and neglect experiences from an interpersonal

perspective. By assessing interpersonal style on admission, patients with elevated levels of HD can be identified. HD can then be considered in subsequent treatment plans and aggression prevention strategies. Post-discharge assessments of HD would also be useful. Reductions in HD, and therefore aggression, might be achieved through a broad intervention that covers interpersonal and affective characteristics, emotional and behavioural regulation, cognitions and psychiatric symptoms, in an interpersonally informed framework.

## Papers Published or Submitted During Candidature

Podubinski, T., Lee, S., Hollander, Y., & Daffern, M. (2014). *Predictors of aggression in psychiatric hospitals: interpersonal and personality, general aggression model-specified, and clinical factors*. Manuscript submitted for publication.

Podubinski, T., Lee, S., Hollander, Y., & Daffern, M. (in press). Characteristics of interpersonal hostile-dominance in psychiatric inpatients. *Psychiatry: Interpersonal and Biological Processes*.

Podubinski, T., Lee, S., Hollander, Y., & Daffern, M. (2014). *An examination of the stability of interpersonal hostile-dominance and its relationship with psychiatric symptomatology and post-discharge aggression*. Manuscript submitted for publication.

Podubinski, T., Lee, S., Hollander, Y., & Daffern, M. (2014). *Evaluating the relationship between childhood abuse and neglect, interpersonal hostile-dominance, and aggression in psychiatric hospitals*. Manuscript submitted for publication.

## Acknowledgements

This thesis not only represents my own work at the keyboard, but also over half a decade of collaboration with my two supervisors, Professor Michael Daffern and Dr Stuart Lee. During this time I have experienced extensive professional and personal development that can be attributed to their enduring support and encouragement. Ultimately, I owe both a debt of gratitude for their assistance in completing this thesis. Throughout my candidature, Michael has offered thoughtful guidance, critical comments, a sprinkling of praise, and a great deal of infectious passion for this research. At times, his enthusiasm was my only reason for preserving. Above all, I feel very fortunate that I have been exposed to Michael's knowledge in this area; he is not only a great mind, but also a great teacher and mentor. I have also been lucky to have access to Stuart's vast statistical knowledge, which, when combined with his judicious approach to this endeavour, helped to keep me grounded and sane. One could not have asked for more integrious, supportive, and committed supervisors.

I would also like to acknowledge the assistance I have received from Dr Yitzchak Hollander, who helped to get this project off the ground and familiarise me with staff at the Alfred Hospital Inpatient Psychiatry Department. Yitz also offered valuable clinical insight that benefited the shaping of each manuscript presented in this thesis. Thank you also to the doctors and nurses at the Alfred Hospital Inpatient Psychiatry Department who generously gave their time to assist me in this research; your contribution was pivotal for the completion of this thesis and has been greatly appreciated. Likewise, I am eternally grateful for the input of each patient who participated in this study. This thesis would never have been brought to fruition if it weren't for you all.

I am also appreciative of the help extended to me by Miriam Pacewicz who kindly assisted with various tedious tasks, including photocopying and data entry. My brother Cale, and my husband, Ty, also dedicated a few hours to such tasks. Thank you for providing me with extra time for the more interesting areas of this research.

To the friends who walked beside me and eased the burden during the completion of this research, and in particular my incredible friend Hannah, who was there when I took my first steps down this path and has always been ready with moral support and a bottle of something. I would also like to recognise the support given to me by Marnie, Dylan, Katha, and Scott. They made a big move in the middle of my candidature less isolating and have provided me with an exciting and enjoyable social life outside of this thesis. They have also provided an enormous amount of encouragement, which helped to get me through as my motivation waned. In addition, I would like to thank the wonderful individuals in my DPpsych cohort, in particular Daniel, Alicia, Yvette, Belinda, and Brindha, who were always there with invaluable advice, companionship, and a floor to sleep on. I'm glad we were able to achieve this together.

I have been blessed with a very loving and supportive family. My parents, Joye and John, have been a source of unconditional love and practical support for as long as I can remember. They have been there for me during the challenges, joined me in my triumphs, and have never had anything but confidence in me. They have instilled in me a respect for education and taught me the importance of having a good sense of humour and valuing the people in my life. I am eternally grateful for every sacrifice they made for me, and every opportunity they gave me. For this, and much more, I am forever in their debt.

I would like to give a special thank you to my sister, Anika, and her partner, Matthew, who shared their home in Melbourne with me when I didn't have one. They also cooked me countless meals and cared for me during a period of illness. Their support throughout this time has meant a lot. Overall, I am lucky to be a part of such a wonderful and supportive extended sibship; no matter where we have been in the world, Anika, Matthew, and Cale have always had my back.

To my in-laws, Julie, Keith, Piaf, and Steve, who have asked questions, listened, and shown an ongoing interest in this research. Their company was always a welcome distraction and prevented me from becoming too absorbed in this work. Thanks for always having my favourite foods on hand, providing me with highbrow literature, sharing wine and chips time, and giving me a comfortable place to sleep.

As for my husband, Ty, I find it very difficult to express my appreciation because it is endless. These past few years have not been easy, but he has stuck by my side even when I have been at my worst. Throughout it all Ty has been my most enthusiastic cheerleader, my best friend, and my rock; without his love, support, and patience I would have been lost. Thank you.

**INTRODUCTION AND THESIS OVERVIEW**

## **Background to the Thesis**

Hospital psychiatry services are often concerned with the prevention and management of patients' aggressive behaviour. However, aggression perpetrated by psychiatric patients is a complex and pervasive problem. Australian studies have found that between 11.2% (Carr et al., 2008) and 13.7% (Barlow, Grenyer, & Ilkiw-Lavalle, 2000) of patients admitted to hospital for psychiatric assessment and treatment were aggressive at least once. In their review of inpatient violence and aggression, Bowers et al. (2011) calculated the mean international proportion of acute psychiatry patients displaying violent behaviour to be 26.2%, and the mean Australian proportion of acute psychiatry patients displaying violent behaviour to be approximately 18%. Regarding post-discharge aggressive behaviour, Hartvig, Alfarnes, Skjønberg, Moger, and Østberg (2006) found the prevalence of aggression during one year following discharge to be 26%, while Steadman et al. (1998) recorded a prevalence rate of 27.5%. More recently, Amore et al. (2013) found that one-year post-discharge 69.7% of former inpatients had engaged in verbal aggression or aggression towards objects and 19.3% had engaged in physical aggression.

These prevalence rates are troubling, since aggressive behaviour in mental health patients has been linked with a number of negative outcomes. These include physical injury (Foster, Bowers, & Nijman, 2007), psychological harm (Currid, 2008; Kindy, Petersen, & Parkhurst, 2005), disruptions to the daily milieu (e.g. increased absenteeism; Nijman, Bowers, Oud, & Jansen, 2005), disruptions to therapeutic relationships (Bowers, Simpson, & Alexander, 2003; Watts & Morgan, 1994), increased cost of service delivery (LeBel & Goldstein, 2005), and ultimately reductions in the level of care that can be offered (for review see Bowers et al. 2011). Furthermore,

aggression is not only common but its management can be contentious. Restrictive interventions, such as restraint and seclusion, are commonly used in Australia (Happell & Gaskin, 2011; Lee et al., 2013) and overseas (Raboch et al., 2010; Steinert et al., 2010). However, the use of restrictive interventions may have negative consequences (Duxbury, 2002; Meehan, Bergen, & Fjeldsoe, 2004; Ryan & Happell, 2009).

Restrictive interventions can evoke feelings of distress, anger, and powerlessness (El-Badri & Mellsop, 2008; Kontio et al., 2012; Roberts, Crompton, Milligan, & Groves, 2009), exacerbate psychiatric symptoms (El-Badri & Mellsop, 2008), and can result in a decreased likelihood of attending prescribed outpatient follow-up mental health treatment (Currier, Walsh, & Lawrence, 2011). For patients with trauma histories, restrictive interventions may be experienced as retraumatising (Muskett, 2014).

Within Australia the negative impact of restrictive practices has been recognised, and there has been a focus on reducing restrictiveness of care and increasing patient input into, and influence over, treatment. For example, refer to the Department of Health, Victoria, Australia's (2013) overview of literature in relation to the practice of restrictive interventions in healthcare settings, and the *Mental Health Act 2014* (Vic), which promotes recovery-oriented practices and least-restrictive assessment and treatment. However, restrictive practices are sometimes seen as therapeutic and essential to managing aggressive behaviour (Happell & Harrow, 2010; Happell & Koehn, 2010; Van der Merwe, Muir-Cochrane, Jones, Tziggili, & Bowers, 2013), perhaps due to a lack of alternative approaches (Gaskin, Elsom, & Happell, 2007; Happell & Koehn, 2010). Despite these concerns, the practice of restraint and seclusion remain firmly entrenched within contemporary mental health units; according to the Chief Psychiatrist's annual report 2011–12, during 2011 to 2012 Victorian mental health

facilities used seclusion 4265 times, and mechanical restraint was used on 593 occasions (Department of Health, Victoria, Australia, 2012). Within this context, early intervention practices that promptly identify and ameliorate risk factors for aggressive behaviour are likely to be helpful. For this to occur, a thorough understanding of the aetiology of inpatient, and outpatient aggression is necessary, and thus, investigation of the factors that influence aggressive behaviour in psychiatric hospitals is an important focus for empirical research.

While researchers have explored many avenues in an attempt to understand why patients behave aggressively, integrative models of aggressive behaviour have often been neglected. The General Aggression Model (GAM; Anderson & Bushman, 2002) is a contemporary model of aggressive behaviour that synthesises multiple strands of research and theory to provide a rich conceptual framework for understanding the aetiology of aggressive behaviour. Its central contention is that individual propensity to aggress is influenced by the nature of the information available and how it is processed, across both time and situation. While aggressive behaviour in hospital psychiatric services may be elucidated through the application of the GAM, the GAM may be improved through the integration of theories that emphasise relational functioning and personality, such as Interpersonal Theory (Pincus & Ansell, 2013; Pincus, Lukowitsky, & Wright, 2010). This is particularly pertinent given research has noted the interpersonal nature of inpatient aggression (Daffern, Howells, & Ogloff, 2007). Furthermore, research has consistently shown interpersonal hostile-dominance (HD) to be associated with aggression in secure psychiatric settings (Daffern, Duggan, Huband, & Thomas, 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). Overall, both the GAM and Interpersonal

Theory have significant clinical utility. Their integration may enhance conceptualisations of aggressive behaviour in psychiatric settings, and aid in the development of interventions designed to treat and manage individuals who seem to be at an increased risk of acting aggressively.

The central focus of this thesis is therefore on understanding HD and its relationship with aggressive behaviour occurring in hospital psychiatry services through the integration of two complementary theoretical models: The GAM and Interpersonal Theory. As the GAM recognises that aggressive behaviour is the product of multiple interacting factors (Anderson & Bushman, 2002), a number of personal features relevant to HD and aggression in hospital psychiatry services are examined in this thesis. These features can be organised into personality (i.e. psychopathy), GAM-specified (i.e. aggression-related cognitions and their related affective states), and clinical (i.e. psychiatric symptoms) factors, as well as factors that may impact the development of a HD interpersonal style (i.e. childhood trauma).

The reason for including the above factors in an exploration of HD and its relationship with aggression occurring in psychiatric services is twofold. Firstly, research has shown that psychopathy (e.g. Hare 1991, 2003), aggression-related cognitions and their related affective states (e.g. Gilbert, Daffern, Talevski, & Ogloff, 2013), and psychiatric symptoms (for review see Bowers et al., 2011) have all been associated with aggressive behaviour. Secondly, there may be overlap among the variables. For example, psychopathy is characterised by a HD interpersonal style (for review see Blackburn, 2005). Regular rehearsal of aggression-related cognitions, such as violent scripts or normative beliefs supportive of violence, or the tendency to experience the affective state of anger may also increase interpersonal HD. A HD

relational approach may also be a barrier to therapeutic alliance and treatment adherence (Cookson, Daffern, & Foley, 2012) impacting the severity of symptoms (Podubinski, Daffern, & Lee, 2012), which in turn increases the risk of aggression.

The relevance of HD to aggressive behaviour has not been evaluated in combination with other personality, GAM-specified, and clinical symptoms. Second, although HD has been associated with psychopathy (for review see Blackburn, 2005) and psychiatric symptoms (Daffern, Thomas et al., 2010; Podubinski et al., 2012), delineation of HD has not been undertaken with reference to the GAM-specified aggression-related cognitions and their related affective states. Third, while HD is thought to be a relatively stable characteristic, unaffected by changes in psychiatric symptoms (Podubinski et al., 2012), it is currently unknown whether HD is relevant to post-discharge aggression occurring in the community. Finally, a link exists between childhood trauma and hostility in adulthood (Dragioti, Damigos, Mavreas, & Gouva, 2012; Roy, 2001), childhood trauma and higher levels of aggression in psychiatric inpatients (Brodsky et al., 2001), and HD and aggressive behaviour in psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). Furthermore, Interpersonal Theory suggests that exposure to childhood trauma can adversely impact adaptive interpersonal functioning (Pincus & Ansell, 2013; Pincus et al., 2010); individuals who experience childhood trauma may learn that social interactions are threatening, and adjust their approach to interpersonal encounters accordingly (D'Andrea, Ford, Stolbach, Spinazzola, & van der Kolk, 2012). Adopting a HD interpersonal style may be regarded as self-protective and helpful for coping with feelings of vulnerability arising from trauma and preventing further victimisation. In certain situations, aggressive

behaviour may be seen as a useful strategy to regain dominance and avoid feelings of vulnerability. Given this, it is possible that HD mediates the relationship between childhood trauma and aggressive behaviour in psychiatric inpatients. However, this hypothesis has not previously been tested. Addressing these gaps is important; a better understanding of HD and the problem of aggression in psychiatric services, as well as the developmental impact of childhood abuse and neglect experiences from an interpersonal perspective will be gained. This may lead to better assessment, management, and treatment approaches for psychiatric patients likely to be at an increased risk of acting aggressively.

Before going further, it is important to define some key terms used throughout this thesis. A key focus of this research is the aggressive behaviour of psychiatric patients, both during their admission and post-discharge. As such, it is important to define the terms aggression and violence. Aggression is defined as any behaviour intended to harm another person who does not want to be harmed, while violence is defined as aggression that has extreme harm as its goal, such as injury or death (Anderson & Bushman, 2002; Bushman & Huesmann, 2010). Thus, all violent acts are aggressive but not all aggressive acts are violent. For the purpose of this thesis, aggressive behaviour includes verbal and physical aggression against others, as well as physical aggression against objects (e.g. breaking objects or throwing objects dangerously). This matches the classifications used in the Overt Aggression Scale (OAS; Silver & Yudofsky, 1987; Yudofsky, Silver, Jackson, Endicott, & Williams, 1986), a widely used measure of inpatient aggression.

## **Research Aims**

Against this background, the research presented in this thesis was underpinned by four broad and interrelated aims:

### **Research Aim One**

While much has been written on the nature of aggression in psychiatric hospitals, comprehensive models of aggressive behaviour, such as the GAM have often been neglected. Furthermore, in light of the interpersonal nature of aggression, the GAM may be improved through the integration of theories that emphasise relational functioning and personality, such as Interpersonal Theory. Integration of the GAM and Interpersonal Theory will provide a strong theoretical framework for the explication of a range of factors relevant to aggression, and will thereby enhance conceptualisations of aggressive behaviour in psychiatric settings. This can then guide the development of interventions designed to treat and manage aggressive behaviour. Thus, the first research aim is to assess the influence of interpersonal and personality factors, GAM-specified cognitions and related affective states, and clinical factors on psychiatric inpatient aggression.

### **Research Aim Two**

While HD has been consistently highlighted as being associated with aggression in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006), little is known about the factors that might contribute to a characteristic HD interpersonal style. Given the potential clinical consequences of HD, its delineation is important and will facilitate increased specificity of treatment targeting HD and aggressive behaviour. Thus, the second research aim is to investigate the contribution of aggression-related

personality symptoms, cognitive and affective characteristics, and psychiatric symptoms to HD in psychiatric inpatients.

### **Research Aim Three**

Research shows that interpersonal HD in psychiatric patients is a relatively stable characteristic that does not fluctuate with changes in psychiatric symptomatology (Podubinski et al., 2012). Thus, given HD is associated with aggression in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006), it is possible that HD is implicated in aggression occurring in the community post-discharge. However, no research has explored this proposition. An understanding of this relationship will be important for initial treatment and discharge planning; inpatient and post-discharge interventions specifically tailored for highly HD individuals may lead to improvements in pro-social behaviour following discharge. Thus, the third research aim is to examine the stability of HD and its relationship with psychiatric symptoms and aggression over time.

### **Research Aim Four**

While a link exists between childhood trauma and hostility in adulthood (Dragiotti et al., 2012; Roy, 2001), childhood trauma and higher levels of aggression in psychiatric inpatients (Brodsky et al., 2001), and HD and aggressive behaviour in psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006), no research has looked at the interrelationships between all three variables. Interpersonal Theory suggests that exposure to childhood trauma can have an adverse impact on adaptive interpersonal functioning (Pincus & Ansell, 2013; Pincus et al., 2010). It is possible that individuals

who experience childhood trauma view the world as a threatening place. Their approach to interpersonal encounters is adjusted accordingly; a characteristic HD interpersonal style may be adopted to cope with feelings of vulnerability arising from the trauma, and to prevent further victimisation. In certain situations, aggressive behaviour may be seen as a useful strategy to regain dominance and avoid feelings of vulnerability. However, this hypothesis has not been tested. Addressing this gap will help to conceptualise the developmental impact of childhood abuse and neglect experiences from an interpersonal perspective, which will in turn lead to theoretically informed interventions aimed at reducing aggression risk. As such, the fourth research aim is to explore whether HD mediates the relationship between childhood abuse and neglect and aggressive behaviour in psychiatric inpatients.

### **Thesis Outline**

This thesis comprises eight chapters. At the time of submission, it includes one article that has been accepted for publication and three manuscripts submitted to peer-reviewed journals.

Chapter Two presents a comprehensive review of the relevant literature and orients readers to the central themes of the thesis. The literature review covers several domains including a discussion of the GAM, Interpersonal Theory and interpersonal HD, the relationship between HD and psychiatric inpatient and post-discharge aggression, and the relationship between HD and other variables associated with aggressive behaviour, including psychopathy, GAM-specified cognitive characteristics and their related affective states, and symptoms of psychiatric illness. Also discussed is

the developmental impact of childhood trauma on interpersonal functioning and the interrelationships between childhood trauma, HD, and aggressive behaviour.

Chapter Three provides an extended description of the methodology used in the subsequent chapters. Specifically, Chapter Three details participants, measures, the procedure and information relating to data analysis.

Chapter Four presents data exploring the first research aim of this thesis. The influence of interpersonal (HD) and personality (psychopathy) factors, GAM-specified cognitions and related affective states (violent scripts, attitudes towards violence, and the tendency to experience anger) and clinical factors (psychiatric symptoms) on psychiatric inpatient aggression is assessed.

Chapter Five describes data exploring the second research aim, and investigates the contribution of personality (i.e. psychopathy), cognitive and affective characteristics (violent scripts, attitudes towards violence, and the tendency to experience anger), and psychiatric symptoms to HD in psychiatric inpatients.

Chapter Six offers data exploring the third research aim. The stability of HD and its relationship with psychiatric symptoms is examined, and consideration is given to how this relates to aggression occurring in the community post-discharge from hospital.

Chapter Seven presents data exploring the fourth research aim. The relationship between childhood maltreatment, HD, and aggressive behaviour in psychiatric inpatients is examined, and the ability of HD to mediate the relationship between childhood maltreatment and aggression is explored.

Chapter Eight, the final chapter of this thesis, presents the integrated discussion. Emergent findings from the thesis as presented in the four empirical chapters are outlined and the implications considered with regard to the assessment and management

of inpatient and post-discharge aggressive behaviour. The limitations of the research and future research directions are also discussed.

**LITERATURE REVIEW**

## Introduction

Aggressive behaviour is a common occurrence in many psychiatric hospitals (Barlow, Grenyer, & Illkiw-Lavalle, 2000; Bowers et al., 2011; Carr et al., 2008). It is associated with a number of adverse outcomes that ultimately reduce the quality of care that is offered to patients (for review see Bowers et al., 2011). As a result, the prevention and management of psychiatric inpatient aggression is a major organisational concern. This concern continues post discharge, where aggressive behaviour is a pervasive problem in patients who have been discharged from hospital (Amore et al., 2013; Hartvig, Alfarnes, Skjønberg, Moger, & Østberg, 2006; Steadman et al., 1998). However, despite considerable research focus on the prevention and management of aggressive behaviour, there are significant limitations in knowledge concerning effective interventions.

Staff members in hospital psychiatry settings regularly use restrictive interventions, such as restraint and seclusion, to prevent and manage aggression, both in Australia (Happell & Gaskin, 2011; Lee et al., 2013) and internationally (Raboch et al., 2010; Steinert et al., 2010). Furthermore, they are sometimes seen as therapeutic and essential to the promotion of safety in these environments (Happell & Harrow, 2010; Happell & Koehn, 2010; Van der Merwe, Muir-Cochrane, Jones, Tziggili, & Bowers, 2013). However, the negative impact of these practices is increasingly being acknowledged (Currier, Walsh, & Lawrence, 2011; Duxbury, 2002; El-Badri & Mellisop, 2008; Meehan, Bergen, & Fjeldsoe, 2004; Muskett, 2014; Roberts, Crompton, Milligan, & Groves, 2009; Ryan & Happell, 2009). Within Australia, there has been a move towards reducing restrictiveness of care and increasing patient input into, and influence over, their treatment (e.g. Victoria's new *Mental Health Act 2014* (Vic),

which promotes recovery oriented practices and least-restrictive assessment and treatment). Within this context, early intervention practices that promptly identify, target, and reduce the risk factors for aggressive behaviour are likely to be helpful. Investigation of the factors that influence aggressive behaviour in psychiatric services is therefore an important focus for empirical research.

Researchers have explored many avenues in an attempt to understand why patients behave aggressively. However, integrative models of aggressive behaviour have often been neglected. The General Aggression Model (GAM; Anderson & Bushman, 2002) is a contemporary model of aggressive behaviour that synthesises multiple strands of research and theory to provide a rich conceptual framework for understanding the aetiology of aggressive behaviour. While aggressive behaviour in hospital psychiatric services may be elucidated through the application of the GAM, the GAM may be improved through the integration of theories that emphasise relational functioning and personality, such as Interpersonal Theory (Pincus & Ansell, 2013; Pincus, Lukowitsky, & Wright, 2010). The value of this has been shown with research finding that the most common antecedents to aggression within psychiatric hospitals are interpersonal in nature (Daffern, Howells, & Ogloff, 2007). Furthermore, research has consistently shown interpersonal hostile-dominance (HD) to be associated with aggression in secure psychiatric settings (Daffern, Duggan, Huband, & Thomas, 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). Overall, the GAM and Interpersonal Theory are complementary and each has significant clinical utility. Their integration may enhance conceptualisations of aggressive behaviour in psychiatric settings, and aid in the

development of interventions designed to treat and manage individuals who seem to be at an increased risk of acting aggressively.

This literature review thus seeks to elucidate HD and its relationship with aggressive behaviour occurring in psychiatric settings through the integration of the GAM and Interpersonal Theory. As the GAM recognises that aggressive behaviour is the product of multiple interacting factors (Anderson & Bushman, 2002), a number of personal features relevant to HD and aggression in hospital psychiatry services will be examined. These features comprise personality (i.e. psychopathy), GAM-specified (i.e. aggression-related cognitions and their related affective states), and clinical (i.e. psychiatric symptoms) factors, as well as factors that may impact the development of HD (i.e. childhood trauma). Thus, this literature review covers several domains, including a discussion of the GAM, Interpersonal Theory and interpersonal HD, the relationship between HD and psychiatric inpatient and post-discharge aggression, and the relationship between HD and other variables associated with aggressive behaviour, such as psychopathy, GAM-specified cognitive characteristics and their related affective states, and psychiatric symptoms. Also discussed is the developmental impact of childhood trauma on interpersonal functioning, and the interrelationships between childhood trauma, HD, and aggressive behaviour.

### **The General Aggression Model**

The General Aggression Model is a social cognitive theory of aggression that unifies multiple strands of extant theory and research and provides a sophisticated framework for understanding aggressive behaviour (Anderson & Carnagey, 2004; Gilbert & Daffern, 2010). It was designed to integrate several domain-specific theories

of aggressive behaviour, including Cognitive Neoassociation Theory (Berkowitz, 1989, 1990, 1993), Social Learning Theory (Bandura, 1983, 2001; Mischel, 1973, 1999; Mischel & Shoda, 1995), Script Theory (Huesmann, 1986, 1998), Excitation Transfer Theory (Zillmann, 1983), and Social Interaction Theory (Tedeschi & Felson, 1994; for review see Anderson & Bushman, 2002). The GAM's central contention is that individual propensity to aggress is influenced by the nature of the information available and how it is processed, across both time and situation. Accordingly, aggressive behaviour is recognised as being the product of multiple interacting factors; both precipitating situational factors and predisposing personal characteristics are said to contribute to aggressive action (Anderson & Bushman, 2002).

The overall focus of the GAM is “the person in the situation” (Anderson & Bushman, 2002, p. 34), or one cycle of an ongoing social interaction. Three main proximal factors are emphasised during this interaction: (a) person and situation inputs, (b) cognitive, affective, and arousal internal state routes through which the input variables have their impact, and, (c) outcomes of an appraisal and decision-making processes leading to thoughtful or impulsive action during the encounter (Anderson & Bushman, 2002). In addition to these main components, distal factors, comprising biological and environmental influences that manifest in personality, are said to facilitate the proximal factors that directly increase aggression or that decrease normal inhibitions against aggression (Anderson & Carnagey, 2004; Anderson, Gentile, & Buckley, 2007; DeWall, Anderson, & Bushman, 2011).

### **Person and Situation Inputs**

Both personal and situational input variables are included in the GAM. The situational causes of aggressive behaviour are those features of an interaction that

increase the likelihood of aggressing (Anderson & Carnagey, 2004). For example, aggressive cues, provocation, frustrated motives, pain and discomfort, and incentives may all trigger aggression. Person factors include the characteristics that a person brings to the situation, such as traits, sex, beliefs, attitudes, values, long-term goals, and behavioural scripts, that comprise an individual's preparedness to aggress (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007). Both situation and person factors influence aggressive behaviour by impacting cognition, affect, and arousal (Anderson & Bushman, 2002; Anderson & Carnagey, 2004).

### **Present Internal State Routes**

The input variables create a present internal state, which comprises cognitions, affect and arousal. The contents of these three routes are interconnected and may influence one another (Anderson & Bushman, 2002; Anderson & Carnagey, 2004).

### **Appraisal and Decision-Making Process**

Results from the inputs enter into the appraisal and decision making process through their effect on cognition, affect, and arousal; the outcome of this decision process determines action (Anderson & Bushman, 2002; Anderson & Carnagey, 2004). The appraisal and decision-making process can be relatively immediate or more controlled and thoughtful, and relates to what a person infers from the interaction and how a person perceives the situation. A person's present internal state largely determines the type of inferences made, and in turn, the outcome of the appraisal and decision-making process can influence a person's present internal state (Anderson & Bushman, 2002).

## **Knowledge Structures and Personality**

The GAM highlights the importance of several aggression-related cognitions, referred to as *knowledge structures*. The knowledge structures represent strongly interconnected concepts relating to prior knowledge about aggression (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003). The knowledge structures develop from a person's interaction with their environment, and contain behavioural programs and beliefs, which are also linked to related affective states. They influence a person's understanding of their environment, and guide their responses to different situations (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003; Gilbert & Daffern, 2010). The knowledge structures are reinforced and strengthened through repeated experiences, and over time, if frequently retrieved and practiced, their activation can become largely automatic (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003; Gilbert & Daffern, 2010). When activated, the knowledge structures elicit particular affective states, for instance anger. These affective states can interfere with cognitive-processing regarding the appropriateness of aggressive acts, thereby reducing inhibitions against acting aggressively (Anderson & Bushman, 2002).

In discussions regarding how knowledge structures contribute to the development of aggressive individuals, the role of learning and personality are often implicated (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007). According to the GAM, a person's experiences lead to the development of knowledge structures that once learned are resistant to change; this leads to enduring cognitive patterns on which personality is established (Anderson & Bushman, 2002;

Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003; Gilbert & Daffern, 2010; Huesmann, 1998; Mischel & Shoda, 1995). Both biological factors (e.g. a person's ability to learn and perform certain behaviours) and environmental factors (e.g. a person's social environment and family practices) can influence what is incorporated into a person's knowledge structures (Anderson et al., 2007). Furthermore personality can influence an individual's construal of, and reaction to, new social encounters (Anderson & Carnagey, 2004), thereby influencing the types of experiences a person is exposed to, and in turn influencing the learning, rehearsal, and reinforcement of certain knowledge structures.

Overall, the GAM suggests that past interactions influence the development of an aggressive personality, which in turn influences proximal factors (i.e. person and situation) during an interaction (Anderson & Carnagey, 2004). During each interaction knowledge structures are learned, rehearsed, reinforced, and established; aggression is largely based on the application of aggression-related knowledge structures, with more aggressive individuals holding knowledge structures that are more enduring, elaborate, and readily accessible (Anderson & Bushman, 2002; Gilbert & Daffern, 2010).

### **Knowledge Structures, Related Affective States, and Aggression**

The knowledge structures highlighted by the GAM include aggression-related behavioural scripts (i.e. scripts denoting how a person should interact with their environment), attitudes (i.e. a person's beliefs about the acceptability of aggressive acts), and their related affective states (e.g. anger; Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003). Aggressive individuals are believed to be more likely to hold scripts that emphasise aggression as an appropriate way of relating to their environment, have attitudes that are

more positive towards aggressive behaviour, and have a tendency to frequently experience anger (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003). Research has largely substantiated these hypotheses (e.g. Gilbert, Daffern, Talevski, & Ogloff, 2013; Hosie, Gilbert, Simpson, & Daffern, 2014).

**Aggressive Behaviour and Violent Scripts.** Violent scripts provide information about how a person should interact with their environment. They act as a guide for behaviour and social problem solving, enabling an individual to make predictions about how a situation will unfold, how a person should respond, and the likely outcome of the response, based on an amalgamation of past experiences and observations (Anderson & Bushman, 2002; Gilbert & Daffern, 2010; Gilbert et al., 2013; Hosie et al., 2014; Huesmann, 1998). With frequent rehearsal, the activation of violent scripts can become relatively automatic, as the availability of those scripts in memory is reinforced and their links with related knowledge structures strengthened (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003; Gilbert et al., 2013; Huesmann, 1998). The selection and retrieval of scripts can be influenced by the extent to which the script is rehearsed, the interpretation of social cues, the current affective state or level of arousal, and the activation of associated content, such as attitudes towards violence (Gilbert et al., 2013).

While considerable theoretical attention has been paid to the development of violent scripts and their role in aggressive behaviour, the empirical research in this area is scant. Furthermore, few measures exist that can be used to assess the nature of an individual's scripts. One measure that is able to do this is the Schedule of Imagined Violence (SIV; Grisso, Davis, Vesselinov, Appelbaum, & Monahan, 2000), which

screens for violent imagery through self-reported responses to eight categories (presence, recency, frequency, chronicity, similarity/diversity in type of harm, target, change in seriousness of harm, and proximity to target). In one study, the SIV was used to examine scripts in psychiatric patients, finding that one third of inpatients reported experiencing recent thoughts of violence towards others; twice as many as that reported by a non-clinical sample. In addition, the degree of violent script rehearsal reported by inpatients was found to be predictive of violence after discharge (Grisso et al., 2000). Additional studies have provided evidence for the relevance of violent scripts, as measured by the SIV, to aggressive behaviour in non-clinical (Kelty, Hall, & Watt, 2011; Nagtegaal, Rassin, & Muris, 2006) and offender (Gilbert et al., 2013; Hosie et al., 2014) populations (for review see Gilbert & Daffern, 2010).

**Aggressive Behaviour and Attitudes Towards Violence.** Attitudes towards violence refer to a person's beliefs about the acceptability of aggressive acts. Beliefs are established over time, stored in memory, and can be linked to form generalisations about acceptable behaviour. An individual's beliefs can influence the effect of activated scripts, with scripts that are considered normal and acceptable more likely to be enacted (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson & Huesmann, 2003; Gilbert & Daffern, 2010; Hosie et al., 2014). The GAM proposes that habitually aggressive individuals select scripts based on situational cues that reflect activation of inappropriate, aggressive behaviour. These scripts increasingly contribute to violence when the person believes that violence is a favourable response in that situation (Gilbert & Daffern, 2010). The use of beliefs in filtering scripts and evaluating a response can be affected by past situational cues, current events, and affective states (Gilbert & Daffern, 2010; Huesmann, 1998; Huesmann & Guerra, 1997).

Previous studies have provided support for the role of aggression-supportive beliefs in aggressive behaviour (e.g. Archer & Haigh, 1997a,b; Gilbert et al., 2013; Healy & O'Donnell, 2006; Hosie et al., 2014; Kelty et al., 2011; Mills, Kroner, & Forth, 2002; Mills, Kroner, & Hemmati, 2004; Polaschek, Calvert, & Gannon, 2009; Polaschek, Collie, & Walkey, 2004; Pratt et al., 2010; Robinson, Paxton, & Jonen, 2011; Van Hiel, Hautman, Cornelis, & De Clercq, 2007). This area is particularly well developed in offending populations, with research finding aggression-supportive beliefs to be predictive of aggressive behaviour in offenders (Archer & Haigh, 1997a; Gilbert et al., 2013; Healy & O'Donnell, 2006; Hosie et al., 2014), violent offending (Kelty et al., 2011; Polaschek et al., 2009) and violent recidivism (Mills et al., 2004). In a recent meta-analysis examining the contribution of social learning theory variables in predicting various forms of antisocial behaviour, Pratt et al. (2010) found that attitudes favourable to criminal behaviour, assessed across 143 effect sizes, significantly predicted individuals who engaged in anti-social behaviours, including predicting violent behaviour (overall mean effect size estimate .218). Aggression-supportive beliefs are related to self-reported violence and aggression in non-offending samples (Archer & Haigh, 1997b; Robinson et al., 2011; Van Hiel et al., 2007), however research into the role of such beliefs in psychiatric aggressive behaviour appears to be non-existent.

**Aggressive Behaviour and Anger.** The GAM contends that emotional states and emotion regulation influence the way in which social information is processed, with negative affective states such as anger believed to encourage aggression more so than positive affective states (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson & Huesmann, 2003). Anger is thought to influence aggressive behaviour by

activating violent scripts and aggression-supportive beliefs, maintaining aggressive intentions over time, increasing overall arousal, and reducing the ability to appraise a situation in a way that may discourage aggressive behaviour (Anderson & Bushman, 2002; Robertson, Daffern, & Bucks, 2012). Aggressive behaviour is frequently preceded by feelings of anger, more so than any other emotion (Novaco, 2007), and research has identified a close relationship between high levels of anger and aggressive behaviour in forensic (Cornell, Peterson, & Richards, 1999; Gilbert et al., 2013; Hosie et al., 2014; Novaco & Taylor, 2004), clinical (McNiel, Eisner, & Binder, 2003; Posternak & Zimmerman, 2002), and non-clinical (Fives, Kong, Fuller, & DiGiuseppe, 2011; Tafrate, Kassinove, & Dundin, 2002; Taft et al., 2006) populations. Anger has been found to particularly influence aggressive behaviour following provocation (Bettencourt, Talley, Benjamin, & Valentine, 2006). In a recent review of inpatient violence and aggression, Bowers et al. (2011) highlighted anger as having a role in aggressive behaviour, including as an antecedent.

Only a few studies have examined the contribution of violent scripts, attitudes towards violence, and anger to aggressive behaviour. In offender populations, rehearsal of violent scripts, attitudes towards violence, and anger have been found to be predictive of aggressive behaviour (Gilbert et al., 2013; Hosie et al., 2014). These findings suggest that these constructs should not be considered discretely; for example those individuals who are anger prone are also likely to access violent scripts and hold more aggression-supportive beliefs (Gilbert et al., 2013). However such examination has not been undertaken in a population of psychiatric inpatients. The GAM has much to offer in explicating aggressive behaviour in psychiatric patients, and the role of aggression-related knowledge structures and associated affective states requires empirical

investigation in psychiatric populations to better understand aggression in this population.

### **Criticism of The Knowledge Structures**

The focus on the knowledge structures has been criticised by Ferguson and Dyke (2012). They contend that disproportionate attention is given to aggression being a cognitive learning process to the detriment of other biological, environmental, and personality factors, which they suggest may be key variables in understanding aggressive behaviour. While the GAM does incorporate a range of distal factors (Anderson & Carnagey, 2004; Anderson et al., 2007; DeWall et al., 2011), these are rarely elaborated on without reference to the knowledge structures and other proximal factors. Thus, while the GAM offers an articulate framework for understanding aggression in psychiatric hospitals, it may benefit from the integration of theories of relational functioning, such as Interpersonal Theory. Integrated, these two theories would present a more comprehensive model of aggressive behaviour, with increased clinical relevance for addressing the multiple causes of inpatient aggression.

### **Interpersonal Theory**

While the GAM focuses on the interaction between a person and their environment (Anderson & Bushman, 2002), Interpersonal Theory emphasises the interpersonal situation (Pincus & Ansell, 2013; Pincus et al., 2010). That is, Interpersonal Theory highlights the importance of relational functioning in understanding personality (Pincus & Ansell, 2013; Pincus et al, 2010), and in particular on the overt and covert interactional patterns between (at least) two persons (Kiesler, 1996). Psychiatric inpatient aggression is largely interactional in nature (Daffern et al.,

2007), and Interpersonal Theory offers a coherent framework for understanding how interpersonal factors might contribute to aggression.

### **Assumptions of Interpersonal Theory**

There are four main assumptions underlying contemporary Interpersonal Theory, which highlight its integrative nature and unique characteristics (Pincus & Ansell, 2013). These include: (1) Personality and psychopathology are best understood by studying at least two person's conjoint behaviours during their interactions, (2) Interpersonal behaviour encompasses not only overt behaviour occurring during an interaction, but also private and unobservable (i.e. perception, mental representations, memories, fantasies, and expectations) interactional patterns, (3) All interpersonal behaviour, both normal and pathological, represents a blend of two basic motivations: *Agency*, which emphasises influence, control, or mastery over the self, other people and the environment, and *Communion*, which refers to connection with others, and (4) Interpersonal behaviour invites a complementary reaction; corresponding on the Communion dimension (i.e. high communal motives invite high communal motives) and reciprocal on the Agency dimension (i.e. high agentic motives invite low agentic motives; Horowitz et al., 2006; Kiesler, 1996; Pincus & Ansell, 2013; Pincus et al., 2010).

### **The Interpersonal Circle and Interpersonal Style**

According to Interpersonal Theory, Agency and Communion can be considered the fundamental building blocks for personality; both dimensions encompass enduring patterns of perceiving, thinking, feeling, and behaving (Pincus & Ansell, 2013). As such, structural models derived from Agency and Communion, such as the Interpersonal Circle (IPC), can assist in the conceptualisation, organisation, description, and

assessment of interpersonal motives, dispositions, and behaviours across various situations (Kiesler, 1996; Pincus & Ansell, 2013). The IPC is an empirically derived model that, at its most basic level, organises the dimensions of Agency and Communion on vertical and horizontal axes respectively within a two-dimensional circular space. Agency is said to range from submission to dominance, while Communion is said to range from hostility to friendliness (Kiesler, 1996; Pincus & Ansell, 2013; Pincus et al., 2010). In general, a person's interpersonal style can be thought of as the balance between the dimensions of Communion and Agency (Edens, 2009).

The use of the IPC to classify individuals in terms of their interpersonal style allows for the description of their typical pattern of relating to others, encoding new interpersonal information, and making mental representations of themselves and others. However, while a person's characteristic interpersonal style can be considered relatively stable across interpersonal situations, certain situations may dictate that a person demonstrates other traits or behaviours in order to improve their ability to satisfy their motives and goals. A person's ability to do this may help to discriminate maladaptive functioning from adaptive functioning.

### **Maladaptive Versus Adaptive Interpersonal Functioning**

Contemporary Interpersonal Theory has devised a number of approaches for the study of interpersonal functioning, and only those that are relevant to this thesis are discussed here. For a full review of the approaches, refer to Pincus and Ansell (2013), Pincus et al. (2010), or Pincus and Wright (2011).

To discriminate adaptive from maladaptive interpersonal functioning, Leary (1957) originally proposed four ways of describing interpersonal behaviour: (1) moderation versus *intensity* (i.e. enacting behaviours in intense forms), (2) flexibility

versus *rigidity* (i.e. displaying a limited repertoire of interpersonal behaviours), (3) stability versus *oscillation* (i.e. inconsistency in interpersonal behaviour), and (4) accuracy versus *inaccuracy* (i.e. the fit or match of behaviour to a given situation). These four patterns of interpersonal adjustment and maladjustment can be defined and measured with reference to the IPC, and they remain among the major constructs used to describe psychopathology (Pincus & Wright, 2011). Contemporary Interpersonal Theory largely focuses on behavioural intensity and rigidity; maladjusted individuals engage in extreme interpersonal behaviours and lack the flexibility to use a broad range of interpersonal behaviours that different interpersonal situations may warrant (Kiesler, 1996; Pincus & Wright, 2011). These interpersonal variables are considered to be *static individual differences*, comprising traditional behavioural and dispositional characteristics that can be derived from established psychological assessment procedures (Pincus & Wright, 2011).

The use of static individual difference variables to conceptualise psychopathology has proved fruitful, and many forms of psychopathology have been shown to have core maladaptive interpersonal patterns (e.g. psychopathy; for review see Blackburn, 2005). However, a great deal of symptomatology does not consistently present with a single interpersonal pattern. Rather, interpersonal style and psychopathology influence one another to produce variability in symptom expression. This is termed interpersonal *pathoplasticity* (Millon, 2005; Pincus & Wright, 2011), and helps to account for the lack of one-to-one coherence between some forms of psychopathology and interpersonal styles.

When describing maladaptive interpersonal functioning it is also important to contextualise interpersonal behaviour within the interaction (Kiesler, 1996; Pincus &

Ansell, 2013; Pincus & Wright, 2011). To do this, Interpersonal Theory describes *interpersonal signatures*, including *Complementarity*, *Acomplementarity*, and *Anticomplementarity*. Broadly, these interpersonal signatures are related to the communal and agentic motivations demonstrated by one person in response to the perceived communal and agentic motivations of others during an interaction (Fournier, Moskowitz, & Zuroff, 2009; Pincus & Wright, 2011).

Interpersonal Complementarity occurs when responses during an interaction are corresponding on the Communion dimension and reciprocal on the Agency dimension (Pincus & Ansell, 2013; Pincus et al., 2010). For instance, a friendly approach would invite a friendly response, while a dominant approach would invite a submissive response. Interpersonal Complementarity leads to a balanced and productive interpersonal interaction, as the agentic and communal needs of both persons are met during the interaction (Kiesler, 1996; Pincus & Ansell, 2013). As such, deviations from Complementarity are likely to disrupt interpersonal relations and may be indicative of maladaptive interpersonal functioning (Fournier et al., 2009; Hopwood, Wright, Ansell, & Pincus, 2013; Pincus et al., 2010; Pincus, Lukowitsky, Wright, & Eichler, 2009). For instance, if a person misinterprets an authoritative approach as threatening, they may respond in a way that reduces the threat, rather than acquiesce. If such misinterpretations and responses become consistent, this may be indicative of behavioural intensity and rigidity, and psychopathology.

Both Acomplementarity and Anticomplementarity refer to patterns of interaction that disrupt interpersonal relations (Pincus & Ansell, 2013; Pincus et al., 2010).

Acomplementarity occurs when only one of the two rules of Complementarity are met, that is, responses correspond on the communion dimension or are reciprocal on the

agency dimension but never both. For example, a friendly-dominant approach is met with a friendly-dominant response. Anticomplementarity occurs when neither correspondence on communion or reciprocity on agency is exhibited (Pincus & Ansell, 2013; Pincus et al., 2010). For example a friendly-dominant approach is met with a hostile-dominant response. Interaction patterns such as Complementarity and Anticomplementarity arouse discomfort (Kiesler, 1996); Complementarity interactional patterns instigate negotiation towards or away from greater Complementarity, and Anticomplementarity interactional patterns lead to disintegration of the interaction (Pincus & Ansell, 2013; Pincus et al., 2010).

### **The Interactional Nature of Psychiatric Inpatient Aggression**

The conceptualisation of interactional maladaptive behaviour proposed by Interpersonal Theory offers an eloquent way of elucidating aggression within psychiatric hospitals. During inpatient psychiatric treatment, Complementarity and Anticomplementarity interpersonal interactions are likely to occur, particularly when patients are exhibiting maladaptive interpersonal functioning. For example, a patient who has a persistent need for dominance may respond to staff demands and requests with behaviour that attempts to control the situation. Rather than submit to this behaviour, staff will typically respond in a non-reciprocal manner (i.e. assertiveness) in an attempt to regain control. This may lead to a disruption in the interpersonal relationship, where the patient is increasingly motivated to command the situation and does so through an aggressive act (Daffern, Thomas et al., 2010). Given this, patients with certain characteristic interpersonal styles may be more likely to engage in aggressive acts, due to the associated interactional motivations and goals, patterns of interacting with others and the environment, and their self- and world-view. Consistent

with this, interpersonal HD has been found to be highly relevant to explaining the occurrence of aggressive behaviour in psychiatric hospitals (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006, Doyle & Dolan, 2006).

### **Interpersonal Hostile-Dominance and Aggression**

Research exploring the relationship between interpersonal style and aggressive behaviour in psychiatric hospitals has focused on personality-disordered and mentally ill patients, in both forensic and civil psychiatric settings. Although still in its infancy, the results of this research have provided good evidence for the importance of interpersonal style, and in particular interpersonal HD, in aggressive behaviour. Typically, these studies have employed one of two tools for measuring interpersonal style: The Chart of Interpersonal Reactions in Closed Living Environments (CIRCLE; Blackburn & Renwick, 1996) and the Impact Message Inventory (IMI; Kiesler, 1987) or the Impact Message Inventory Circumplex (IMI-C; Kiesler & Schmidt, 2006). The CIRCLE is an observational scale that permits staff to record an individual's interpersonal style as it is exhibited within an institutional context. In contrast, the IMI and IMI-C are self-report transactional inventories that work on the assumption that the interpersonal style of one person can be validly defined and measured by assessing the covert responses of another person.

Recent studies utilising the CIRCLE have found that higher CIRCLE scores on Dominance, Coercion, and Hostility are associated with aggressive behaviour in incarcerated personality disordered offenders (Dolan & Blackburn, 2006) and forensic psychiatric inpatients (Doyle & Dolan, 2006). Higher CIRCLE scores on Coercion have

also been associated with aggressive behaviour in personality disordered psychiatric inpatients (Daffern, Tonkin et al., 2010). Studies utilising the IMI have found aggression to be associated with interpersonal dominance in personality disordered psychiatric inpatients (Daffern et al., 2008). Further, recent studies using the IMI-C have found aggression to be associated with interpersonal HD in civil and forensic psychiatric inpatients (Daffern, Thomas et al., 2010), and interpersonal dominance in civil psychiatric inpatients (Cookson, Daffern, & Foley, 2012; for review see Harris, Oakley, & Picchioni, 2014). With regard to the Coercion subscale on the CIRCLE, Daffern, Tonkin et al. (2010) note that interpersonal coercion is characterised by both extreme hostility and dominance. As such, the two measures of interpersonal style produce comparable results, with all studies implicating interpersonal styles that are highly dominant and hostile in patients who act aggressively.

While the CIRCLE and the IMI/IMI-C produce similar results regarding the relationship between interpersonal style and aggressive behaviour, the IMI-C asks assessors to consider the impact another person is having on them, and consequently how they are relating to that person. As noted by the GAM, when studying aggressive behaviour, it is important to understand the role of the person in the situation. Thus, the use of assessment tools that encourage staff to reflect on their own interpersonal behaviour may be useful for services trying to modify practices that might contribute to an escalation in conflict.

### **The Relevance of Interpersonal Hostile-Dominance to Psychiatric Inpatient Aggression**

From the perspective of Interpersonal Theory, patients with high interpersonal HD may have schemas and expectations that motivate them to act in a hostile and

dominant manner. Interpersonal interactions may be approached with a hostile attitude, and the view that the world is an unreceptive and unfriendly place; domineering behaviour may be deemed necessary to protect self-interests and to satisfy goals and motives. Over time, interpersonal interactions that affirm these schemas and expectations may strengthen the motivation to act in a hostile and dominant manner, leading to maladaptive interpersonal functioning. As such, highly HD patients may rigidly and intensely enact hostile and dominant behaviours, and may be unable to adapt their behaviour to the particular demands of the inpatient routine. When demands are made of highly HD patients (e.g. take medication), they may feel as though they are being forced into submission, which may in turn be viewed as threatening. Aggression may be seen as an appropriate response, to restore dominance and protect oneself (Daffern, Thomas et al., 2010).

Unfortunately, the studies assessing interpersonal HD and psychiatric patients' aggressive behaviour have all utilised inpatient, both forensic and civil, and prison samples, making the relevance of HD to aggressive behaviour in civil patients discharged to the community less clear. However, it is likely that even in the community environment psychiatric patients are subjected to multiple demands that may be viewed as threatening to patients' agentic motives. For instance, patients may still be required to be compliant with medication and attend meetings with health professionals, while at the same time navigating family and employment demands. Given this, it is possible that HD is also relevant to community aggression post-discharge. Furthermore, little is known about the characteristics that delineate HD. Elucidation of these characteristics would facilitate increased specificity of treatment targeting HD and aggressive behaviour. Further research in both these areas is needed.

## **Interpersonal Theory, Personality, and Aggressive Behaviour**

Contemporary Interpersonal Theory considers interpersonal relations and their impact on the self-concept to be central to understanding personality and personality pathology (Pincus & Ansell, 2013; Pincus et al., 2010; Pincus & Wright, 2011). The IPC encapsulates this by providing a circular representation of individual differences in a variety of interpersonal domains, including traits, problems, values, and covert and overt interactional patterns. As such, all individualities within these domains can be described as blends of the IPC's two underlying dimensions, Agency and Communion (Pincus et al., 2010; Widiger, 2010). Contemporary Interpersonal Theory therefore provides a sophisticated framework for the study of personality and personality pathology.

### **The Interpersonal Circle and the Five-Factor Model of Personality**

Arguably, the Five-Factor Model (FFM) is the predominant dimensional model of personality and personality pathology (Schmidt, Wagner, & Kiesler, 1999; Widiger & Trull, 2007). The FFM comprises five broad domains of personality encompassing affective, experiential, motivational, and interpersonal traits (McCrae & Costa, 1989). Although there is some disagreement about the best term to describe each domain, the five domains are commonly identified as extraversion, agreeableness, neuroticism, conscientiousness, and openness (Ghaed & Gallo, 2006; Schmidt et al., 1999; Widiger & Trull, 2007).

The IPC and the FFM were developed independently, however, it is generally acknowledged that they are complementary and interactive models (DeYoung, Weisberg, Quilty, & Peterson, 2013; Pincus, 2002; Pincus, Gurtman, & Ruiz, 1998; Trapnell & Wiggins, 1990; Wiggins & Pincus, 2002; Widiger, 2010). The IPC

dimensions of Agency and Communion are conceptually similar to the extraversion and agreeableness dimensions of the FFM, and the relationship between extraversion and agreeableness and the IPC is well documented (DeYoung et al., 2013; Hofstee, de Raad, & Goldberg, 1992; McCrae & Costa, 1989; Pincus, 2002; Pincus et al., 1998; Saucier, 1992; Schmidt et al., 1999; Trapnell & Wiggins, 1990; Wiggins & Pincus, 2002).

Overall, most researchers consider the FFM dimensions of extraversion and agreeableness to be approximately 45-degree rotations of the IPC dimensions of agency and communion, with extraversion and agreeableness loading most strongly on the IPC region of friendly-dominance and friendly-submissiveness respectively (DeYoung et al., 2013; Hopwood, 2010; McCrae & Costa, 1989; Pincus, 2002; Schmidt et al., 1999; Wiggins & Pincus, 2002; Wiggins & Trapnell 1996). From this research, a general conclusion has been that extraversion and agreeableness are the “interpersonal” domains of the FFM. Neuroticism, conscientiousness, and openness are considered “intrapsychic” domains respectively concerning emotional stability versus dysregulation, conscientiousness or constraint versus disinhibition and irresponsibility, and open-minded, eccentric, and creative intellect versus closed-mindedness (Schmidt et al., 1999; Widiger, 2010; Widiger & Trull, 2007).

The integration of the IPC with other personality taxonomies, such as the FFM, conceptually and empirically establishes Interpersonal Theory as a theory of personality; indeed, much of personality is interpersonal (Widiger, 2010). By drawing on, and integrating, many theoretical approaches, a more comprehensive understanding of interpersonal phenomena and personality is obtained (Horowitz et al., 2006; Pincus & Ansell, 2013). Accordingly, Interpersonal Theory is an appropriate approach for elucidating the distal and interpersonal factors of the GAM that are associated with

aggressive behaviour. This includes not only interpersonal HD, but also other dimensions of personality pathology that are relevant to aggressive behaviour.

### **Hostile-Dominance, Psychopathy, and Aggressive Behaviour**

The concept of psychopathy has been influenced by a number of prominent theorists, including Cleckley (1941), Hare (1991), and McCord & McCord (1964). While no tenaciously held definition of psychopathy currently exists, psychopathy is generally understood to be a constellation of personality features relating to emotional-interpersonal detachment accompanied by persistent behavioural deviancy and disinhibition (Hare, 2003; Patrick, Fowles, & Krueger, 2009). Over the years, various ways of conceptualising and assessing psychopathy have been developed (see Patrick, Drislane, & Strickland, 2012; Skeem, Polaschek, Patrick, & Lilienfeld, 2011). In order to reconcile and integrate these perspectives, a Triarchic model of psychopathy (Patrick et al., 2009) was developed.

The Triarchic model incorporates historical and contemporary conceptualisations of psychopathy, as well as concepts and findings from the broader personality, psychopathology, and neurobiological literatures (Patrick, 2010; Patrick et al., 2009; Skeem et al., 2011). It proposes that psychopathy can be conceptualised in terms of three distinct but intersecting phenotypic constructs: *disinhibition*, *boldness*, and *meanness* (Patrick, 2010; Patrick et al., 2012; Patrick et al., 2009). Disinhibition is said to encompass a general propensity toward impulse control problems entailing a lack of planfulness and foresight, impaired affect and urge regulation, and deficient behavioural restraint. Boldness is said to refer to high social effectiveness and self-confidence, the ability to remain calm and focused in stressful situations, rapid recovery from stressful events, and a high tolerance for risk and uncertainty. Meanness is said to

describe attributes including deficient empathy, a lack of close attachments, abrasiveness, exploitativeness, and empowerment through cruelty or destructiveness (Patrick, 2010; Patrick et al., 2012; Patrick et al., 2009; Skeem et al., 2011). Although the model has not been rigorously tested, it does provide a comprehensive and integrative conceptualisation of psychopathy.

Currently, the dominant instrument for assessing psychopathy is Hare's (2003) Psychopathy Checklist-Revised (PCL-R). The PCL-R is multifactorial, with two correlated sub-factors. The first factor (F1) reflects the interpersonal and affective components of psychopathy, while the second factor (F2) is related to traits and behaviours indicative of a socially deviant lifestyle (Blackburn, 2009; Blackburn, Logan, Donnelly, & Renwick, 2008; Hare, 2003). Although alternative three-factor (which comprises interpersonal, affective, and behavioural sub-factors; Cooke, Michie, Hart, & Clark, 2004) and four-factor (which comprises the sub-factors from the three-factor solution plus an antisocial facet; Hare & Neumann, 2005) solutions have been proposed (for review see Cooke, Michie, & Skeem, 2007), the two-factor model is the most extensively researched to date (Skeem et al., 2011). While the PCL-R was developed prior to the Triarchic model of psychopathy, it has been proposed that the elements of disinhibition, boldness, and meanness, are captured, to varying degrees, by the PCL-R (Patrick et al., 2012; Patrick et al., 2009; Skeem et al., 2011). For example, the interpersonal items of the PCL-R reflect tendencies towards toughness, superiority, and exploitativeness, which relates to elements of meanness (Patrick et al., 2012).

Although psychopathy is usually treated as a unitary construct captured through the total PCL-R score, high scorers are increasingly being thought of as a heterogeneous group, differing in facet profiles. As such, distinct subtypes of psychopathy have been

conceptualised, with the most common division being the primary-secondary distinction (Blackburn, 2009). Primary psychopathy has traditionally been theorised as being underpinned by an inherited affective deficit, while secondary psychopathy is theorised as reflecting an acquired affective disturbance (Blackburn, 2009; Karpman, 1941, 1948; Poythress & Skeem, 2006; Skeem, Johansson, Andershed, Kerr, & Louden, 2007; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Researchers have also attempted to distinguish primary and secondary psychopathy through psychopathic traits, trait anxiety, personality characteristics and personality pathology, and clinical features (e.g. Hicks, Markon, Patrick, Krueger, & Newman, 2004; Skeem et al., 2007; for review see Blackburn, 2009 and Skeem et al., 2003).

A fourfold typology of psychopathy has also been developed, with each type distinguished on the basis of their interpersonal patterns (e.g. Blackburn, 1971, 1975, 1986, 1996; Blackburn et al., 2008; for reviews see Blackburn, 1998a, 2009). The four types have been labelled: *primary psychopaths*, *secondary psychopaths*, *controlled*, and *inhibited*. Primary and secondary psychopaths are both characterised by high hostility and impulsiveness, with the chief distinction between them being the degree of social withdrawal. HD is most prominently associated with primary psychopaths, who are described as being low in social withdrawal (i.e. extraverted, confident, dominant, and low to average anxiety). Secondary psychopaths are typically high in social withdrawal (i.e. withdrawn, low self-confident, submissive, moody, and emotionally disturbed). The controlled type may represent a variant of primary psychopathy and is typically defensive, controlled, sociable, very low in anxiety, and high in self-esteem, while the inhibited type may represent a variant of secondary psychopathy and is typically shy, withdrawn, controlled, moderately anxious, and low in self-esteem (Blackburn, 1996,

2009; Blackburn et al., 2008). Overall, research into the differentiation of psychopathic subtypes is still in its infancy, and although there is as yet little agreement on the optimal means of identifying subgroups, there is evidence for significant variations between subtypes in psychopathology and personality.

Characterisations of psychopathy frequently identify interpersonal characteristics such as superficial charm, a lack of close attachments, a lack of empathy, callousness, manipulativeness and deceitfulness. Such characteristics are readily located in the HD quadrant of the IPC. Somewhat unsurprisingly then, researchers have explored how Interpersonal Theory can inform an understanding of psychopathy (Blackburn 1998a; Blackburn & Maybury, 1985; Harpur, Hart, & Hare, 2002; Kosson, Steurwald, Forth, & Kirkhart, 1997; Leary 1957). Early conceptualisations described the interpersonal behaviour of psychopaths as reflecting high levels of both hostility and dominance (Blackburn & Maybury, 1985; Leary, 1957). Extant research has corroborated this description, finding that psychopathy is associated with interpersonal HD (Blackburn, 1998a; Fullam & Dolan, 2006; Harpur et al., 2002; Kosson et al., 1997; for review see Blackburn, 2005). In one study utilising a sample of forensic patients with schizophrenia, Fullam and Dolan (2006) found that higher psychopathy scores were associated with higher levels of interpersonal coercion and hostility (i.e. HD), as well as increased aggressive behaviour. Interpersonal theory offers a range of explanations for the interpersonal behaviour of psychopaths. These include that the individual anticipates HD reactions from others and behaves in ways to elicit them, and that their behaviour is an attempt to maintain status and power within a social environment from which they feel alienated (i.e. a dispositional tendency towards high agency and the rejection of communion; Blackburn, 2005).

Research has shown a relationship between psychopathy and aggression and violence (see Dhingra & Boduszek, 2013; Hare, 1991, 2003; Skeem & Cooke, 2010; Skeem & Mulvey, 2001; Skeem et al., 2011). Thus, given the relationship between HD and psychopathy (for review see Blackburn, 2005), for psychopaths, aggression may be seen as an appropriate way of maintaining dominance over, or manipulating, others. Tools measuring psychopathy, and in particular the PCL-R, are often used by forensic psychologists to aid risk-assessment to inform legal decisions regarding future dangerousness (Skeem et al., 2011). A shorter, screening version of the PCL-R is available, the Psychopathy Checklist: Screening Version (PCL:SV; Hart, Cox, & Hare, 1995), and has been found to be a relatively strong predictor of violence among civil patients (Skeem & Mulvey, 2001).

A small number of studies have been conducted in which the relationship between aggression risk and psychopathy and interpersonal style was tested. Daffern et al. (2008) found interpersonal dominance to be a stronger predictor of aggression (defined as physical and verbal aggression, and property damage) than psychopathy in personality disordered inpatients. Similarly, Dolan & Blackburn (2006) found interpersonal dominance, coercion, and hostility to be better predictors of verbal aggression than psychopathy in incarcerated personality disordered offenders. These findings suggest that interpersonal style may be more relevant to the assessment of psychiatric inpatient aggressive behaviour than psychopathy, possibly reflecting the intensely interpersonal nature of inpatient treatment. By evaluating interpersonal functioning, interactions with others are emphasised. In contrast a focus on psychopathy will likely miss important nuances of interpersonal functioning; it is a much broader conceptualisation of personality pathology encompassing affective, interpersonal,

lifestyle, and antisocial components. If replicated, these findings have implications for inpatient violence risk assessment measures that often incorporate measurement of psychopathy. Overall, there has been a substantial focus on offender populations in examinations of psychopathy and aggression, and psychopathy and HD, which limits the generalisability of the results to non-offender populations. Further research is thus needed to elucidate the link between psychopathy, HD, and aggression.

### **Hostile-Dominance, Personality Disorder, and Aggressive Behaviour**

Interpersonal interactions and relationships are frequently irritated by personality pathology (Hopwood et al., 2013). As such, maladaptive interpersonal behaviour is central to conceptualisations of personality pathology across many different theoretical and diagnostic models. For example, Interpersonal Theory considers psychopathology and personality pathology to be fundamentally interpersonal (e.g. Hopwood et al., 2013; Pincus & Wright, 2011) and the DSM-5 (APA, 2013) considers interpersonal behaviour in diagnostic criteria. One element of the DSM-5 criteria for personality disorder is the inflexibility and pervasiveness of a person's interpersonal functioning. The importance of interpersonal functioning in personality disorders is also highlighted in the alternative hybrid dimensional-categorical model presented in Section III of the DSM-5.

Elucidating personality disorders in terms of their distinct individual consistencies, i.e. their interpersonal style, can provide a framework for understanding the disruptions in interpersonal relations that may predispose people towards increased aggression risk.

There is a great deal of research that considers personality disorders in terms of their associated interpersonal styles (e.g. Blackburn, 1998b; DeJong, van den Brink, Jansen, & Schippers, 1989; Matano & Locke, 1995; Morey, 1985; Overholser, 1996; Pincus & Wiggins, 1990; Sim & Romney, 1990; Soldz, Budman, Demby, & Merry,

1993; Trull, Ueseda, Conforti, & Doan, 1997; Wagner, Riley, Schmidt, McCormick, & Butler, 1999). This body of research generally shows that narcissistic, paranoid, and antisocial personality disorders fall within the hostile and dominant quadrant of the IPC, histrionic personality disorder falls within the friendly and dominant quadrant, dependent personality disorder falls within the friendly and submissive quadrant, and schizoid and avoidant personality disorders fall within the hostile and submissive quadrant (for pictorial summaries see Horowitz et al., 2006; Widiger, 2010). Borderline, obsessive-compulsive, and schizotypal personality disorders are often not included in IPC representations of personality disorders, as they appear to have no distinct interpersonal styles, or are heterogeneous in their IPC configuration (e.g. borderline personality disorder; Wright, Hallquist, Beeney, & Pilkonis, 2013; Wright, Hallquist, Morse et al., 2013).

The risk of aggressive behaviour varies between personality disorders, and research has found that those personality disorders high in HD (i.e. narcissistic, paranoid, and antisocial) are most often linked with aggression (for review see Gilbert & Daffern, 2011). This again highlights the importance of interpersonal HD in understanding aggression in mentally disordered populations. It also indicates that knowledge regarding Interpersonal Theory and interpersonal style may assist clinicians in the prediction, treatment, and management of aggressive behaviour in psychiatric patients. Furthermore, to the extent that interpersonal HD is a stable, dispositional characteristic, the treatment and management of aggressive behaviour may benefit from the incorporation of long-term interventions aimed at reducing HD and the “aggressive personality”.

### **Interpersonal Theory, and Cognitions, Affect, and Arousal**

Rehearsal of violent scripts, attitudes towards violence, and anger have been found to be predictive of aggressive behaviour in offender populations (Gilbert et al., 2013; Hosie et al., 2014), and these components of the GAM have much to offer in elucidating aggressive behaviour in psychiatric patients. However, the GAM largely considers aggression to be a cognitive learning process; a person's experiences lead to the development of knowledge structures that in turn lead to enduring cognitive patterns on which personality is established (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson et al., 2007; Anderson & Huesmann, 2003; Gilbert & Daffern, 2010; Huesmann, 1998; Mischel & Shoda, 1995). Given this, it is important to consider how such GAM components relate to other components of an aggressive personality, such as a HD interpersonal style.

### **Hostile-Dominance and Violent Scripts, Attitudes Towards Violence, and Anger**

Given the relationship between aggressive behaviour and HD (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006), it is likely that due to their hostile worldview and desire for interpersonal dominance, highly HD individuals hold knowledge structures that prepare them to behave aggressively. Furthermore, HD individuals may be prone to perceiving a wide range of interactions as unwelcoming, threatening, and intimidating, and to habitually interpret this negative affect as anger. There is some evidence for a relationship between HD and anger, with one study finding a positive correlation between anger and a coercive interpersonal style, or HD (Doyle & Dolan, 2006), in a sample of forensic psychiatric inpatients. However, analysis of these associations was not a direct objective of the study, and as such this correlation was not further

examined. Another study found that violent script rehearsal was negatively correlated with the FFM domains of agreeableness and conscientiousness, aggression-supportive beliefs negatively correlated with agreeableness, and anger negatively correlated with agreeableness and conscientiousness and positively with neuroticism (Hosie et al., 2014). The negative correlation with agreeableness for all three GAM-specified constructs suggests HD may be associated with these characteristics (i.e. The HD quadrant of the IPC is associated with low agreeableness; e.g. Hopwood, 2010). However, the correlations with the other FFM domains also suggest that these GAM-specified constructs are a combination of interpersonal and intrapsychic characteristics. If HD is associated with these GAM constructs, they have the potential to become targets for treatment aimed at reducing HD and therefore aggression. Research in this area is therefore required, and would also assist in furthering the characterisation of interpersonal HD.

### **Hostile-Dominance, Mental Illness, and Aggressive Behaviour**

**Mental Illness and Aggressive Behaviour.** Popular academic opinion regarding the relationship between mental illness and aggressive behaviour has shifted over the years. While early research found a relationship between mental illness and aggression, and served to reinforce stereotypical beliefs about the dangers posed by people with a mental illness (e.g. Lagos, Perlmutter, & Saexinger, 1977), later research rebutted this position by demonstrating that mental illness does not necessarily contribute to an increased likelihood of acting aggressively (e.g. Monahan & Steadman, 1983). However, the conventional view has evolved to one acknowledging that there is a small, but statistically robust and clinically relevant, relationship between certain

symptoms of mental illness and aggression (for reviews see Douglas, Guy, & Hart, 2009, and more recently, Bowers et al., 2011).

Studies focusing on the clinical characteristics that precipitate inpatient aggressive behaviour have found schizophrenia and psychosis more generally to be associated with violence (Douglas et al. 2009; Fazel, Gulati, Linsell, Geddes, & Grann, 2009; McNiel & Binder, 1994; Walsh, Buchanan, & Fahy, 2002). However, it has also been suggested that active symptomatology, rather than the presence of a diagnosed disorder, may trigger aggressive behaviour. Within this context, most studies have demonstrated the relevance of positive symptoms of psychosis, such as delusions, conceptual disorganisation, hallucinations, and paranoia (McNiel & Binder, 1994; McNiel, Eisner, & Binder, 2000, Swanson et al., 2006). Additionally, it has also been argued that it is not positive symptoms *per se*, but rather the patient feeling as though they are being threatened or losing control to an external force that instigates aggressive behaviour. While some studies have demonstrated the importance of these threat-control override (TCO) symptoms to aggressive behaviour (Link & Stueve, 1994; Nederlof, Muris, & Hovens, 2011; Stompe, Ortwein-Swoboda, & Schanda, 2004; Swanson, Borum, Swartz, & Monahan, 1996), other studies have not (Appelbaum, Robbins, & Monahan, 2000; Skeem et al., 2006).

The inconsistency in the types of symptoms associated with aggressive behaviour may be due in part to methodological variability. The relationship between mental illness and aggressive behaviour has been examined in many different samples, using many different research designs, and the conceptualisation and measurement of mental illness and aggression has been varied across studies (Douglas et al., 2009). Additionally, it is now acknowledged that many factors beyond symptoms influence

aggression, including substance use and withdrawal, environmental stressors, and interpersonal interactions (Bowers et al., 2011; Daffern et al., 2007; Daffern, Thomas et al., 2010; Elbogen & Johnson, 2009). Thus, as suggested throughout this review, and by the GAM, understanding aggression requires consideration of a broad range of variables and their interrelationships. From the GAM's perspective, psychiatric symptoms likely influence cognitions, affect, and arousal, and are likely affected by distal (interpersonal or personality) factors, such as HD.

**Mental Illness and Hostile-Dominance.** The use of the IPC to classify individuals in terms of their agentic and communal characteristics is often referred to as “interpersonal diagnosis”. Interpersonal diagnosis assumes that psychopathology and personality are inextricably linked, with most mental disorders, illnesses, and symptoms viewed as being embedded within the context of personality and interpersonal functioning (Hopwood et al., 2013; Pincus & Ansell, 2013; Pincus et al., 2010; Pincus & Wright, 2011). Like personality disorders, psychiatric diagnoses and symptomatology can be understood with regard to interpersonal patterns, and broadly described in terms of distinct individual consistencies, or interpersonal styles. Such information can provide initial ideas for formulation and tailored treatment approaches.

Interpersonal HD has been found to be associated with certain diagnoses and symptoms that are often linked with aggression. For instance, Morrison (1992) found that schizophrenia was related to a coercive interactional style, while Fullam and Dolan (2006) found that forensic patients with schizophrenia and psychopathy had more coercive (i.e. HD) and hostile interpersonal styles than individuals with schizophrenia and low level of psychopathy. These results suggest that the aggressive behaviour often associated with a diagnosis of schizophrenia and psychopathy may be attributed in part

to interpersonal HD. However, the symptoms associated with a diagnosis of schizophrenia can vary between individuals and over time, and it is therefore important to consider whether HD is associated with specific symptoms, particularly given that psychiatric symptoms are more accurate than diagnosis at predicting aggression (McNiel & Binder, 1994).

Most studies of interpersonal style in psychiatric inpatients do not indicate the symptomatic status of participants at the time of testing. The few studies that have done so have assessed symptoms using the Brief Psychiatric Rating Scale-18 (BPRS-18; Overall & Gorham, 1962). Doyle and Dolan (2006) found that aggressive forensic patients were more likely to have a dominant, coercive (i.e. HD), and hostile interpersonal style, as well as a higher BPRS-18 total score and higher BPRS-18 hostility-suspiciousness, agitation-excitement, and anxiety-depression subscale scores. While, BPRS-18 total score was significantly, and positively correlated with coercive and hostile interpersonal styles, this study did not specify correlations between BPRS-18 subscale scores and interpersonal style. Nevertheless, these results suggest that coercive and hostile interpersonal styles may be associated with specific symptoms, and in particular those symptoms characterised by hostility-suspiciousness, agitation-excitement, and anxiety-depression.

While the Doyle and Dolan (2006) study assessed relatively stable patients with mild symptomatology in long-term care, Daffern, Thomas et al. (2010) explored the relationship between interpersonal style and aggression in acutely unwell psychiatric inpatients. This study found that interpersonal HD was significantly and positively correlated with the BPRS-18 paranoid-disturbance scale, and to a lesser extent with BPRS-18 total score and the BPRS-18 withdrawal/retardation subscale. Aggressive

patients were also found to be higher in interpersonal dominance and HD, and scored higher on the BPRS-18 thinking-disturbance subscale, however, multivariable analysis found that only HD was a significant predictor of aggressive behaviour. Research by Cookson et al. (2012) and Podubinski, Daffern, and Lee (2012) yielded similar results regarding the interpersonal style and psychiatric symptoms relationship, with HD positively correlated with the BPRS-18 paranoid-disturbance subscale. The Cookson et al. (2012) study also found that aggressive participants had higher interpersonal dominance and hostility, with logistic regression showing interpersonal dominance was the only variable that predicted aggression. Symptomatology did not differentiate aggressive from non-aggressive patients. Podubinski et al. (2012) did not include a measure of aggressive behaviour for follow-up aggression in the community; however, HD was correlated with paranoid-disturbance over a one-year follow-up.

Overall, these results suggest that those symptoms most often associated with aggressive behaviour, such as paranoia, conceptual disorganisation, and hallucinations, are also associated with interpersonal HD. They also show that interpersonal style, and particularly those interpersonal styles characterised by hostility and dominance, are important correlates of aggression and in some studies they explain more variance in aggressiveness than psychiatric symptoms. However, these results should be interpreted cautiously, as there may be construct overlap between the BPRS-18 and measures of interpersonal style, which may account for some of these relationships. For instance, the BPRS-18 includes the item hostility, which may relate more to personality characteristics (i.e. interpersonal style) than psychiatric symptoms. Therefore, variance in HD attributable to psychiatric symptoms measured by BPRS-18 subscales using the hostility item, such as paranoid-disturbance, may be explained by this overlap. Using

other measures of psychiatric symptoms, such as the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987) may reduce this overlap and facilitate increased clarity regarding the relationship between psychiatric symptoms and interpersonal HD.

### **Interpersonal Style and Aggression in the Community**

Research has established that interpersonal HD and symptoms of paranoia are associated, and that while both correlate with inpatient aggressive behaviour, interpersonal HD has, in some studies, explained greater variance in aggression. This may elevate its importance in the study of aggressive behaviour in psychiatric inpatients. However, while the assessment and management of aggression may benefit from consideration of interpersonal HD, little is known about the relevance of HD to aggression among psychiatric patients in the community post-hospital discharge. Clarification of the stability of HD, the relationship between HD and psychiatric symptoms over time, and the relative impact of HD and psychiatric symptoms on post-discharge aggressive behaviour is therefore needed, and will assist in treatment and discharge planning, and possibly the prevention of post-discharge aggression.

There is evidence for both stability and instability of interpersonal traits, depending on how stability is operationalised. A recent study evaluated college students in their first, second, and fourth years of college, and found excellent structural (i.e. how the interpersonal scales relate to each other over time), and high rank-order (i.e. the maintenance of individual differences over time) and ipsative (i.e. the stability of an individual's personality profile over time) stability over the duration of the study. Mean increases on the Affiliation axis were found to mask differential rates of change among

the octant scales, along with significant individual variation in the rates of change. Interpersonal differentiation (i.e. the degree to which an individual identifies with a certain interpersonal style) and prototypicality (i.e. the degree of consistency in an interpersonal profile) were related to higher stability in overall interpersonal style (Wright, Pincus, & Lenzenweger, 2012). These results suggest that as a whole, interpersonal style is relatively stable, although the specific traits that make up an interpersonal style may change over time, possibly as a way of promoting effective functioning across situations. However, this study utilised a student sample, in a relatively consistent environment. Thus, results may not generalise to psychiatric patients whose mental state may fluctuate, and whose living conditions and interpersonal environment may be unstable.

In a study of the stability of HD in psychiatric patients, Podubinski et al. (2012) found that interpersonal HD was relatively stable over time, despite abating symptoms of paranoia; nevertheless, higher HD was associated with increased paranoia at both admission to a psychiatric inpatient unit and at 12-month follow-up. These results show that interpersonal HD is not simply a consequence of psychiatric illness (i.e. paranoia causes HD), and that HD may impact symptom severity. Reductions in HD may therefore be associated with improvements in symptomatology, as shown in the Interpersonal Psychotherapy (IPT) research (e.g. Markowitz, Bleiberg, Christos, & Levitan, 2006). Furthermore, the association between HD and inpatient aggressive behaviour (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006) combined with the relative stability of interpersonal HD (Podubinski et al., 2012) indicates that HD may also be linked to community aggression post-discharge. However, Podubinski et al. (2012) did

not use a measure of aggression that would allow evaluation of the relationship between aggression in the community and HD, and as such the role of HD in aggressive behaviour following discharge requires elucidation. Clarification of this issue will be important for discharge treatment planning. Reductions in inpatient and post-discharge aggression may be achieved by targeting the assessment and treatment of HD, and by modifying interventions (e.g. how staff approach and interact with patients high in HD) likely to be perceived as a threat to patients' personal control.

Evidence for the effectiveness of treatments targeting interpersonal behaviour is in the early stages of development. A small body of evidence exists suggesting that supportive psychotherapy can contribute to improvements in general interpersonal behaviour (Haase et al., 2008; Rosenthal, Muran, Pinsker, Hellerstein, & Winston, 1999). Interpersonally driven therapies have also been developed, with a focus on the maladaptive interpersonal patterns predisposing, precipitating, and perpetuating psychological distress (i.e. IPT, Binder & Betan, 2013; Bleiberg & Markowitz, 2008; Robertson, Rushton, & Wurm, 2008). While therapies such as IPT have shown efficacy in the treatment of various disorders, most research has neglected the mechanism by which symptom improvement occurs (Markowitz et al., 2006). The little research that has been conducted has found that resolving interpersonal problems is related to symptom improvement (Markowitz et al., 2006). Recent research has illustrated the benefits of treating forensic patients with personality disorder who have high interpersonal HD; reductions in HD can be attained with intense cognitive behavioural oriented inpatient treatment, and these reductions are in turn associated with a reduced likelihood of criminal recidivism (Daffern et al., 2013). Thus, the extant research in this area suggests that maladaptive interpersonal functioning is amenable to change, and that

such changes may be associated with improvements in other areas, including symptomatology and offending behaviour.

### **The Development of Interpersonal Hostile-Dominance in Psychiatric Inpatients**

As a comprehensive theory of personality and psychopathology, Interpersonal Theory offers a framework for explaining the developmental factors associated with disordered self-concepts and maladaptive patterns of relating to others. Often emphasised is the significance of early interpersonal situations associated with attachment, and the continuing impact of these early experiences on current functioning (Horowitz et al., 2006; Pincus & Ansell, 2013; Pincus et al., 2010). In articulating the developmental processes associated with maladaptive interpersonal functioning, Interpersonal Theory draws from Attachment Theory, with attachment theorists alluding to the manifestation of communal and agentic motivations early in infancy (see Cassidy & Shaver, 2008). For instance, Attachment Theory suggests that infants strive to balance two motivations: staying close and connected to their caregiver and exploring their environment (Breidenstine, Bailey, Zeanah, & Larrieu, 2011; Cassidy & Shaver, 2008). These two fundamental tasks can be considered early manifestations of communal and agentic motivations (Horowitz et al., 2006; Pincus & Ansell, 2013; Pincus et al., 2010). A child's early experiences can influence the evolution of communal and agentic motivations; repeated experiences become schematised interpersonal representations that guide perception, emotion, and interpersonal behaviour and shape future interpersonal functioning (Bartholomew & Horowitz, 1991; Cassidy & Shaver, 2008; Gallo, Smith, & Ruiz, 2006; Pincus & Ansell, 2013; Pincus et al., 2010). This process has significant implications for personality and

psychopathology (Shorey & Snyder, 2006).

### **Childhood Trauma and Interpersonal Hostile-Dominance**

Although there is no research that has specifically explored the relationship between childhood trauma and interpersonal HD, much has been written on the relationship between childhood trauma and subsequent psychopathology. Research has shown that childhood maltreatment is strongly implicated as a risk factor in the development of personality disorders and personality pathology (Afifi et al., 2011; Bierer et al., 2003; Cohen et al., 2014; Grover et al., 2007; Johnson, Cohen, Brown, Smailes, & Bernstein, 1999; Lobbestael, Arntz, & Bernstein, 2010; Tyrka, Wyche, Kelly, Price, & Carpenter, 2009; Waxman, Fenton, Skodol, Grant, & Hasin, 2014). As has been previously discussed, both personality disorders and personality pathology are in general characterised by persistent problems with interpersonal functioning.

Research exploring the relationship between childhood maltreatment and personality pathology do not often differentiate between specific types of maltreatment or specific personality disorders. The small body of research that does suggests cluster A (paranoid, schizotypal, and schizoid) and B (histrionic, narcissistic, borderline, and antisocial) personality disorders are most consistently associated with childhood maltreatment (Afifi et al., 2011; Cohen et al., 2014; Grover et al., 2007; Johnson et al., 1999; Lobbestael et al., 2010; Waxman et al. 2014). Examination of the relationship between specific maltreatment types (e.g. sexual abuse, physical abuse, emotional abuse, physical neglect, and emotional neglect) and personality pathology has been undertaken in a few studies, with results showing little consistency (Afifi et al., 2011; Bierer, 2003; Cohen et al., 2014; Lobbestael et al., 2010; Waxman et al., 2014). Thus, few general inferences can be drawn.

These results suggest a relationship between HD in psychiatric patients and exposure to childhood maltreatment is likely. HD has been consistently associated with antisocial, narcissistic, and paranoid personality disorders (e.g. Blackburn, 1998b; Pincus & Wiggins, 1990); these personality disorders have also been linked with childhood maltreatment (Afifi et al., 2011; Cohen et al., 2014; Grover et al., 2007; Johnson et al., 1999; Lobbestael et al., 2010; Waxman et al. 2014). In support of this proposition are the findings from a small body of research examining childhood trauma as it relates to the personality dimension of hostility in adulthood (Dragioti, Damigos, Mavreas, & Gouva, 2012; Roy, 1999, 2001). Dragioti et al. (2012) found that in a sample of 595 healthy individuals, higher interpersonal hostility was observed among participants reporting childhood trauma. Similarly, Roy (2001) found that in a sample of 294 patients being treated for substance dependence, patients with childhood abuse or neglect experiences had more severe hostility. However, this study was limited in terms of reliance on self-reported hostility, measured using the Hostility and Direction of Hostility Questionnaire (HDHQ; Foulds, 1965), which may be susceptible to social desirability effects. Furthermore, many of the items on the HDHQ refer to pathognomic qualities (e.g. paranoia), and thus levels of hostility assessed using the HDHQ may vary as a function of psychiatric symptomatology.

### **Childhood Trauma, Interpersonal Hostile-Dominance, and Aggressive Behaviour**

When admitted to hospital, psychiatric patients with high HD inevitably encounter situations in which they cannot achieve interpersonal dominance. In a sample of 142 psychiatric inpatients, 54% reported being confronted by frightening or violent patients, most had experienced coercion (e.g. seclusion or restraint), and many had experienced medications used as a threat or punishment (Frueh et al., 2005). For

patients with a history of childhood sexual abuse or physical assault, an increase in reports of distressing experiences (e.g. verbal bullying by staff, the use of medication as a threat or punishment, or being threatened with physical violence or physically assaulted by another patient) was also found. Such encounters likely lead to HD patients acting aggressively to reassert personal control; previous trauma experiences may result in a person adopting a more HD interpersonal approach to protect against future risk to self.

In line with Interpersonal Theory, traumatic experiences in childhood can cause attachment difficulties and change an individual's perception of themselves, the world, and others. As these experiences become internalised, maladaptive patterns of relating to others, problems encoding new interpersonal information, and making mental representations of the self and others likely develop. Self-protective strategies may be employed to cope with feelings of vulnerability arising from the traumatic experience (Pincus & Ansell, 2013; Pincus et al., 2010). Thus, HD may be fostered by early traumatic experiences that act as a catalyst for maladaptive interpersonal functioning. Within psychiatric hospitals, feelings of threat and vulnerability may be heightened; psychiatric inpatients often have little control over their treatment, the day-to-day routine, and interpersonal interactions. As such, aggressive behaviour may become a self-protective strategy utilised by patients high in HD to regain dominance and avoid feelings of vulnerability.

Exposure to childhood maltreatment has been shown to be associated with a greater risk of aggressive and antisocial behaviour (Anda et al., 2006; Brezo et al., 2008; Brodsky et al., 2001; Cohen, Brown, & Smailes, 2001; Connor, Doerfler, Volungis, Steingard, & Melloni, 2003; Cullerton-Sen et al., 2008; Klimes-Dougan & Kistner,

1990; Manly, Kim, Rogosch, & Cicchetti, 2001; McGrath, Nilsen, & Kerley, 2011; Salzinger, Feldman, Hammer, & Rosario, 1993; Sarchiapone, Carli, Cuomo, Marchetti, & Roy, 2009; Sternberg, Baradaran, Abbott, Lamb, & Guterman, 2006). While elucidation of this link has rarely been the focus of psychiatric inpatient aggression studies, there is a small amount of research to suggest that the association between childhood maltreatment and aggressive behaviour exists in psychiatric inpatient populations (Brodsky et al., 2001). Furthermore, research has also found that psychiatric inpatients with trauma histories are more likely to experience restrictive practices, and in particular seclusion and restraint, during their inpatient stay (Frueh et al., 2005; Fryer, Beech, & Byrne, 2004; Hammer, Springer, Beck, Menditto, & Coleman, 2011; Millstein & Cotton, 1990; Steinert, Bergbauer, Schmid, & Gebhardt, 2007). Restrictive methods are often used to manage aggressive behaviours in psychiatric inpatients (Hammer et al., 2011; Steinert et al., 2007), and as such these results plausibly suggest a relationship between childhood trauma and psychiatric inpatient aggression.

Overall, research suggests that a link exists between childhood trauma and hostility in adulthood (Dragioti et al., 2012; Roy, 2001), childhood trauma and higher levels of aggression in psychiatric inpatients (Brodsky et al., 2001), and HD and aggressive behaviour in psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). Thus, it is possible that HD mediates the relationship between exposure to childhood maltreatment and aggressive behaviour in psychiatric inpatients. However, this hypothesis is speculative, and further research is required to properly examine the relationship between childhood trauma, interpersonal HD and psychiatric inpatient aggression.

## **Avenues for Future Research**

### **The Explication of Psychiatric Inpatient Aggression**

Although much has been written on the nature of aggression in psychiatric hospitals, comprehensive models of aggressive behaviour, such as the GAM, have often been neglected. Furthermore, in light of the interpersonal nature of aggression, the GAM may be improved through the integration of theories that emphasise relational functioning and personality, such as Interpersonal Theory. Integration of the GAM and Interpersonal Theory will provide a strong theoretical framework for the explication of a range of factors relevant to aggression, and will thereby enhance conceptualisations of aggressive behaviour in psychiatric settings. This can then guide the development of interventions designed to treat and manage aggressive behaviour.

In explicating the factors relevant to psychiatric inpatient aggression, numerous factors should be examined, particularly as the GAM recognises that aggressive behaviour is the product of multiple interacting factors (Anderson & Bushman, 2002). Interpersonal and personality factors (i.e. HD and psychopathy), GAM-specified constructs (i.e. violent scripts, attitudes towards violence, and anger), and clinical factors (i.e. psychiatric symptoms) should be studied. Such a combination of factors will also help to test the importance of interpersonal HD as compared to other factors also considered relevant to aggression occurring in psychiatric services.

### **The Characterisation of Interpersonal Hostile-Dominance**

HD has been consistently highlighted as being associated with aggression in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). However, although HD is theorised to be an attribute of personality, there is little information

pertaining to the factors that might contribute to a characteristic HD interpersonal style. Given the potential clinical consequences of HD, its delineation is important and will facilitate increased specificity of treatment targeting HD and aggressive behaviour. Psychopathy (for review see Blackburn, 2005) and psychiatric symptoms such as paranoia (e.g. Podubinski et al., 2012) have been shown to be associated with HD, however, there is only a theoretical link between HD and aggression-related cognitive and affective characteristics. Thus, in characterising HD, aggression-related personality factors (i.e. psychopathy), cognitive and affective characteristics (violent scripts, attitudes towards violence, and anger), and psychiatric symptoms should be utilised.

### **The Stability of Hostile-Dominance and its Relationship with Psychiatric Symptoms and Aggression Over Time**

Research shows that interpersonal HD in psychiatric patients is a relatively stable characteristic that does not fluctuate with changes in psychiatric symptomatology (Podubinski et al., 2012). Given HD is associated with aggression in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006), it is likely that HD is also implicated in aggression occurring in the community post-hospital discharge. However, no research has explored this proposition. An understanding of this relationship will be important for initial assessments and treatment and discharge planning; HD may be amenable to treatment and inpatient and post-discharge interventions specifically tailored for highly HD individuals may lead to improvements in pro-social behaviour following discharge. Reductions in HD may also lead to improvements in psychopathology, as HD likely impacts symptom severity (Podubinski et al., 2012).

## **The Relationship Between Childhood Maltreatment, Interpersonal Hostile-Dominance, and Psychiatric Inpatient Aggression**

A link exists between childhood trauma and hostility in adulthood (Dragioti et al., 2012; Roy, 2001), childhood trauma and higher levels of aggression in psychiatric inpatients (Brodsky et al., 2001), and HD and aggressive behaviour in psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). Interpersonal Theory suggests that exposure to childhood trauma can have an adverse impact on adaptive interpersonal functioning (Pincus & Ansell, 2013; Pincus et al., 2010). It is possible that individuals who experience childhood trauma develop the view that the world is a threatening place. Their approach to interpersonal encounters is adjusted accordingly; a characteristic HD interpersonal style is adopted to cope with feelings of vulnerability arising from the trauma, and to prevent further victimisation. In certain situations, aggressive behaviour may be seen as a useful strategy to regain dominance and avoid feelings of vulnerability. However, this hypothesis has not been tested. Addressing this gap will help to conceptualise the developmental impact of childhood abuse and neglect experiences from an interpersonal perspective, which will in turn lead to theoretically informed interventions aimed at reducing aggression risk.

### **Conclusion**

Psychiatric hospital employees are regularly confronted by aggressive behaviour. Aggression can result in adverse outcomes that ultimately reduce the quality of care that can be offered. The prevention and management of aggression is therefore a major organisational concern. Furthermore, the focus on promoting least-restrictive

practices means that early intervention practices that promptly identify, target, and reduce the risk factors for psychiatric inpatient aggressive behaviour are needed. Research into aggression in psychiatric hospitals has often neglected theories and models of aggressive behaviour. Furthermore, aggression occurring in psychiatric services is interpersonal in nature, with interpersonal HD showing particular relevance. Thus, future research should focus on understanding HD and its relationship with aggressive behaviour occurring in hospital psychiatry services through the integration of two complementary theoretical models: the GAM and Interpersonal Theory. A number of features relevant to HD and aggression in hospital psychiatry services should be utilised, including personality (i.e. psychopathy), GAM-specified (i.e. aggression-related cognitions and their related affective states), and clinical (i.e. psychiatric symptoms) factors. Factors that may impact the development of adaptive interpersonal functioning and influence a HD interpersonal style (i.e. childhood trauma) should also be examined. This review suggests a number of avenues for future research; a comprehensive understanding of aggression in psychiatric services may lead to more effective management and prevention of aggressive behaviour.

**RESEARCH METHODOLOGY**

## **Research Methodology Overview**

The various constructs of interest included in this thesis were examined in a single sample of psychiatric inpatients, of which a sub-set completed a repeat assessment at six months following the initial assessment. Although aspects of the methodology are presented in the method sections for each manuscript, this chapter describes the overall project design and outlines the methodology in detail.

## **Ethical Approval**

Ethical approval was obtained from the Monash University Human Research Ethics Committee (See Appendix A) and the Alfred Human Research Ethics Committee (See Appendix B). The research complied with the conditions of ethical approval agreed upon with each committee, including data collection and storage procedures. Annual progress reports were submitted to each committee, which included summarising the status of the research, providing interim results, and noting publications produced. The research also adhered to the ethical standards set out by the *National Statement on Ethical Conduct in Human Research* (National Health and Medical Research Council, Australian Research Council, & Australian Vice-Chancellors' Committee, 2007, updated March 2014) as well as the guidelines set out by the Australian Psychological Society's (2007) *Code of Ethics*.

Patients were recruited during the first five days of their admission to the Alfred Hospital Inpatient Psychiatry Department. As such, participants were likely to be more unwell and vulnerable than at later stages of their admission. However, inpatients are more likely to be aggressive during the earlier stages of the admission (Bowers et al., 2011). Thus, so that the relationship between interpersonal style and aggression could

be examined prospectively, it was necessary to assess participants as soon as possible after their admission to hospital.

Given the above, the wellbeing and comfort of participants was paramount, and only those participants well enough to give informed consent by their treating doctor were approached. The research ensured that individuals felt autonomous in their decision to participate, in order to avoid further compromising their psychological wellbeing or individual rights. Individuals were informed that their participation in the research was voluntary and that whether or not they participated would not have any bearing on the nature of their treatment during hospitalisation or in the community. Participants were informed their participation in the research was confidential, in the sense that their treating team would not have access to any research-specific data. Furthermore, it was explained that only aggregate data would be reported from the data obtained, and that there would be no possibility that a specific individual could be identified in any publication arising from the thesis. The limits to confidentiality were also outlined to participants prior to commencing the assessment. To ensure that issues of risk to self or other people were sufficiently managed, provisions were established whereby if a participant: a) disclosed information suggesting that they may be at risk of causing imminent harm to themselves or to other people, or b) was observed to become significantly distressed during the course of the assessment, the researcher sought permission to discuss these issues with their treatment team.

All participants signed a written consent form, however, it was emphasised that they were free to withdraw their consent at any stage. Participants completed the interview at a time that was convenient for them; the initial assessment interview took place during a one-off, approximately two-hour session. Due to concerns regarding

attrition, it was not possible to spread interviews over a number of sessions. However, participants were informed that they could take a break at any time if needed and they were offered breaks at approximately half-hour intervals throughout the assessment. Participants were monitored for any signs of distress throughout the assessment, and at the end they were given an opportunity to talk about anything that might have confused or concerned them.

## **Method**

### **Literature Search**

In order to prepare the literature review (Chapter Two) and project design for the empirical studies (Chapters Four, Five, Six, and Seven), literature searches were conducted on the Google Scholar, Ovid MEDLINE, PsycINFO, and PubMed databases. Various combinations of key words, including “interpersonal”, “hostile-dominance”, “psychiatric” “aggression”, “violence”, “psychopathy”, “personality disorders”, “social cognition”, “violent scripts”, “attitudes”, “anger”, “mental illness”, “symptoms”, “stability”, “development”, “childhood”, and “maltreatment” were used during searches. Further sources of information included relevant book chapters and journal articles obtained from the reference lists of the reviewed literature, the manuals of the instruments utilised in the research, two documents from the Department of Health, Victoria, Australia (*Chief Psychiatrist’s annual report 2011-12, 2012* and *Reducing restrictive interventions: Literature review and document analysis, 2013*), and the *Mental Health Act 2014 (Vic)*. Academic researchers in the relevant areas were also contacted directly in some instances in order to source unpublished or otherwise unavailable resources.

## **Research Design**

The present research focused on understanding interpersonal hostile-dominance (HD) and its relationship with aggressive behaviour occurring in hospital psychiatry services through the integration of two complementary theoretical models: The General Aggression Model (GAM; Anderson & Bushman, 2002) and Interpersonal Theory. Although both the GAM and Interpersonal Theory recognise that behaviour is influenced by both personal characteristics and situational factors (Anderson & Bushman, 2002; Pincus & Wright, 2011), the emphasis throughout this thesis was on highlighting those personal features relevant to aggression in hospital psychiatry services. In line with this, a number of interpersonal, personality, GAM-specified, clinical, and developmental factors were incorporated into the present study, including HD, psychopathy, violent scripts, normative beliefs supportive of aggression, anger, psychiatric symptoms, and childhood maltreatment. Evaluation of these factors comprised an extensive assessment, and as such there was limited scope for additional measures of situational factors.

The research utilised a prospective design, with the various interpersonal, personality, GAM-specified, clinical, and developmental factors assessed at two time points approximately six months apart. The empirical data described in Chapters Four, Five, and Seven are based on the data collected during the initial assessment, while the empirical data described in Chapter Six is based on responses from participants who completed both the initial assessment and the follow-up assessment.

The six-month time period between the initial assessment and the follow-up assessment was chosen after considering, and trying to improve upon, the attrition rate in Podubinski, Daffern, and Lee (2012). In this previous study, participants were drawn

from a pool of 122 inpatients, recruited during their admission to the two acute units at the Alfred Hospital Inpatient Psychiatry Department, Melbourne, Australia, between 1 March 2009 and 10 August 2009. From the 122 patients recruited, only 43 (35.25%) were available to take part in a 12-month follow-up, with over half ( $n=70$ , 57.38%) of the original participants unable to be followed-up due to not having current contact information or not answering phone calls. Given this, it was thought that the present study would benefit from reducing the length of time between the initial and follow-up assessments from one year to six months; the currency of participant's contact details might be preserved, and in turn a lower attrition rate observed.

Second to this, it should be noted that the small number of participants completing the follow-up assessment was unexpected. Based on Podubinski et al. (2012), it was estimated that at least 35.25% of the original participants would be available to participate in the follow-up study. Thus, with an initial  $n$  of 200 a follow-up sample size of at least 70 was initially anticipated. However, it was thought that the final sample size for the follow-up would be higher; it was hoped that the attrition rate would be lessened in the current study by reducing the length of time between the initial assessment and the follow-up assessment from one year to six months. In early conceptualisations of the analyses that would be used to examine the stability of HD and its relationship with psychiatric symptoms and aggression over time, paired-sample  $t$ -tests and a multiple regression were selected. Based on this, a power analysis originally determined that a sample size of 82 was needed to predict six-month aggression at follow-up with four predictors; a follow-up sample of 82 would also allow testing of the within subject difference between the initial and follow-up assessment in IMI-C HD and the five PANSS subscales, with detection of a moderate effect of  $d = 0.5$  ( $\alpha = .05$ )

and power of at least 0.95. Given this, the original aim was to obtain a follow-up sample of 82.

## **Participants**

**Initial assessment.** Participants were 200 patients admitted to two acute units at the Alfred Hospital Inpatient Psychiatry Department between the 12th of January 2012 and the 10th of October 2012. The sample included 132 men ( $M=38.12$  years,  $SD=11.14$  years) and 68 women ( $M=38.69$  years,  $SD=11.20$  years) with an age range of 19-64 years ( $M=38.32$  years,  $SD=11.13$  years). The average length of hospital stay for participants was approximately two weeks ( $M=14.59$  days,  $SD=15.96$  days).

The most common primary diagnosis (recorded on the day of the interview from the most recent case notes entered by the treating psychiatrist) was schizophrenia or another psychotic illness (55.5%), followed by unipolar depressive episode/disorder (11.5%), bipolar disorder or a manic episode (8.5%), borderline personality disorder (7.0%), alcohol or other substance induced disorders/related issues (6.5%), and acute stress reaction (4.5%). At the time of the interview, 4.0% of participants had no diagnosis, and 2.5% had other diagnoses (e.g. cluster “personality traits”).

**Follow-up assessment.** Forty-one participants (20.5%) were available to take part in a six-month follow-up study, with 126 not able to be followed-up due to not having current contact information or not answering phone calls, nine not consenting to follow-up contact when initially interviewed, three being too unwell to participate, and 21 refusing consent. A possible reason for the high attrition rate is that a notable proportion of people provided bed-based care by the Alfred Hospital Inpatient Psychiatry Department are homeless or at risk of homelessness (see Lee et al., 2014; Lee et al., 2010). Furthermore, many people are not residents of the hospital’s catchment area,

meaning that the service is not responsible for ongoing case management or care. Given this, it is likely that many participants' contact details changed without the researcher's knowledge, thus impacting the potential to invite people to complete the follow-up study.

Participants included 29 men ( $M=40.34$  years,  $SD=12.08$  years) and 12 women ( $M=37.92$  years,  $SD=14.49$  years) with an age range of 19-63 years ( $M=39.63$  years,  $SD=12.69$  years). For the 41 participants the average length of initial hospital stay was approximately two weeks ( $M=14.44$  days,  $SD=17.50$  days). The mean length of time between baseline interview and follow-up was approximately six months ( $M=192.44$  days,  $SD=64.30$  days). Thirty-one participants were living in the community at the time of follow-up, while 10 had been readmitted to the Alfred Hospital Inpatient Psychiatry Department.

For the 41 participants who completed follow-up assessments, the most common primary diagnosis at the time of the initial interview was schizophrenia or another psychotic illness (61%), followed by unipolar depressive episode/disorder (9.8%), bipolar disorder or a manic episode (7.3%), borderline personality disorder (7.3%), and alcohol or other substance induced disorders/related issues (4.9%); 7.3% had no diagnosis, and 2.4% had other diagnoses (e.g. cluster "personality traits").

### **Setting**

Alfred Psychiatry is the main provider of public mental health services to people living in the inner southeast suburbs of Melbourne, Australia. A hospital-based acute psychiatric response is provided to adult patients via two 28-bed units. Each unit offers care in low-dependency (requiring less intensive observation) and high dependency (for patients at higher risk of harm to self or others) environments.

To provide an indication of the representativeness of the recruited sample reference can be made to an audit of all patients admitted to the adult psychiatry units in 2010 (Lee et al., 2013). During 2010, 853 patients were admitted with, on average, 1.4 episodes (SD=1.2 episodes) of psychiatric hospitalisation during that year, and an average hospital length of stay of 17.4 days (SD=22.2 days). Patients were mostly male (57.1%). The most common primary diagnoses were schizophrenia or another psychotic illness (51.6%), bipolar disorder or a manic episode (12.2%), unipolar depressive episode/disorder (17.7%), alcohol or other substance induced disorders (7.6%), acute stress reaction (4.3%), and borderline personality disorder (3.4%). Based on this comparison, the sample recruited here can reasonably be considered representative of the Alfred Psychiatry inpatient population.

## **Measures**

### **Interpersonal and personality variables.**

*Interpersonal hostile-dominance.* The *Impact Message Inventory-Circumplex* (IMI-C; Kiesler & Schmidt, 2006) was used to assess participants' level of interpersonal HD. The IMI-C is a 56-item observer rated inventory that works on the assumption that the interpersonal style of one person can be measured by assessing the covert response of another person after interactions with, or observations of, the person being rated. The IMI-C items contain a number of words, phrases, and statements, which people use to describe how they are emotionally engaged or impacted when interacting with another person. For example, "When I am with this person she/he makes me feel uneasy", "When I am with this person she/he makes me feel that I want to stay away from her/him", and "When I am with this person it appears to me that she's/he's carrying a grudge". A four-point Likert scale is used to indicate how accurately each item

describes the raters' reaction to the person under consideration, with a score of 1 indicating the item describes the reaction not at all, a score of 2 indicating the item describes the reaction somewhat, a score of 3 indicating the item describes the reaction moderately so, and a score of 4 indicating the item describes the reaction very much so. IMI-C items are grouped into one of eight interpersonal style scales (Dominant, Hostile-Dominant, Hostile, Hostile-Submissive, Submissive, Friendly-Submissive, Friendly, and Friendly-Dominant), with the total score for each of the scales being the sum of the seven items on each scale. Internal consistency for the HD scale ranges from 0.69-0.96, with a median Cronbach's alpha coefficient of 0.81 (Kiesler & Auerbach, 2004). In the present study, internal reliability for the HD scale of the IMI-C was good ( $\alpha = .82$ ) at the initial assessment ( $n = 200$ ), and good ( $\alpha = .88$ ) at the follow-up assessment ( $n = 41$ ).

***Psychopathy.*** The presence of psychopathic traits was assessed using the *Psychopathy Checklist: Screening Version* (PCL:SV; Hart, Cox, & Hare, 1995), a 12-item rating scale based on, and highly correlated with, the Psychopathy Checklist-Revised (PCL-R; Hare, 1991). The PCL:SV is divided into two parts, paralleling the PCL-R's Factor 1 and Factor 2. Part 1 (F1) corresponds to the interpersonal and affective features of psychopathy, while Part 2 (F2) corresponds to the social deviance and lifestyle features. F1 comprises three affective items (Superficial, Grandiose, and Deceitful) and three interpersonal items (Lack of Remorse, Lack of Empathy, and Doesn't Accept Responsibility). F2 comprises three lifestyle items (Impulsive, Poor Behavioral Controls, and Lacks Goals), and three antisocial items (Irresponsible, Adolescent Antisocial Behavior, and Adult Antisocial Behavior). Each of the items on the PCL:SV are rated on a three point Likert scale according to the degree to which the

personality and behaviour of the individual being assessed matches the specified item description. A score of 0 suggests the item does not apply to the individual, a score of 1 indicates that the item applies to a certain extent but does not warrant a full match, while a score of 2 suggests that the item represents a good match. Items are then summed to produce scale scores for F1 and F2, as well as a total score. The PCL:SV demonstrates good internal consistency, with a weighted mean Cronbach's alpha across 11 studies of 0.84 for the total scale (0.81 for F1 and 0.75 for F2; Hart et al., 1995). In the present study, internal reliability at the initial assessment ( $n = 200$ ) was acceptable ( $\alpha = .63$ ) for F2 and poor ( $\alpha = .51$ ) for F1.

#### **GAM-specified variables.**

***Violent scripts.*** The *Schedule of Imagined Violence* (SIV; Grisso, Davis, Vesselinov, Appelbaum, & Monahan, 2000) was used to assess the tendency to rehearse aggressive scripts. The SIV is a semi-structured interview that screens for aggressive scripts through participants' self-reported responses to eight criteria (presence, recency, frequency, chronicity, similarity/diversity in type of harm, target, change in seriousness of harm, and proximity to target). Information provided by respondents is assigned to fixed response options within each category.

The SIV was first used as one of several tools designed to investigate risk factors for violence committed by people discharged from psychiatric inpatient facilities (MacArthur Violence Risk Assessment Study; Steadman et al., 1994; Steadman et al., 1998). In this research the nature and extent of participants' aggressive scripts were of interest, and since this application differs from the original manner in which the SIV was utilised (i.e. the prediction of impending violence), several amendments were made to the instrument (see Appendix C for a copy of the amended SIV). Consistent with

other research examining the relationship between aggressive script rehearsal and self-reported aggression (Gilbert, Daffern, Talevski, & Ogloff, 2013; Hosie, Gilbert, Simpson, & Daffern, 2014), the SIV was modified so that the initial question, “Do you ever have daydreams or thoughts about physically hurting or injuring other people?” was removed, and replaced with the ‘frequency’ item, “How often do you have thoughts about hurting or injuring other people?” The two month time period specifier was also removed from this item, resulting in eight possible response options: 0 = never, 1 = once every few years, 2 = several times a year, 3 = several times a month, 4 = once a week, 5 = several times a week, 6 = once a day, and 7 = several times a day. Participants who responded “never” to this item were not administered any further items.

The frequency of aggressive script rehearsal, as measured by the SIV, has been found to be associated with aggression (Gilbert et al., 2013; Grisso et al., 2000; Hosie et al., 2014). However, other SIV items focus on possible ‘types’ of aggressive scripts that may vary across people who engage in aggressive behaviour, and there is presently a lack of rationale to infer that one type of script rehearsal (e.g. holds scripts relating to a specific other as compared to multiple others) is associated more strongly with aggression than another (see Gilbert, 2011). As such, these items were not included in subsequent analyses.

***Normative beliefs supportive of aggression.*** The *Measures of Criminal Attitudes and Associates* (MCAA; Mills & Kroner, 2001) is a two-part self-report measure of criminal attitudes and associates. Part A is a quantified self-report measure of criminal associations and Part B is a 46-item assessment of attitudes consisting of four subscales: Attitudes Towards Violence, Sense of Entitlement, Criminal Intent, and Attitudes Towards Criminal Associates. For the purposes of the current research, only

the Attitudes Towards Violence scale (MCAA:ATV) was used, due to its association with aggressive behaviour (Gilbert et al., 2013; Hosie et al., 2014; Mills, Kroner, & Hemmati, 2004) and the importance of beliefs regarding aggression to the GAM (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson, Gentile, & Buckley, 2007; Anderson & Huesmann, 2003).

The MCAA:ATV scale contains 12 items measuring normative beliefs supportive of aggression (e.g. “It’s all right to fight someone if they stole from you” and “It’s understandable to hit someone who insults you”), and respondents indicate whether they ‘agree’ or ‘disagree’ with each item. These responses are then summed to produce a total MCAA:ATV scale score. Elevations on the MCAA:ATV scale suggest endorsement of violence-supportive attitudes, a willingness to use violence for instrumental purposes, and an overall tolerance towards violent behaviour (Mills & Kroner, 2001). The MCAA:ATV scale demonstrates good internal consistency with a Cronbach’s alpha coefficient of 0.80 in samples of incarcerated offenders (Mills, Kroner, & Forth, 2002). In the present study, internal reliability for the MCAA:ATV at the initial assessment ( $n = 200$ ) was good ( $\alpha = .84$ ).

**Anger.** The *State-Trait Anger Expression Inventory-2* (STAXI-2; Spielberger, 1999) is a 57-item inventory used to measure the experience, expression, and control of anger. The STAXI-2 consists of three scales: State Anger, Trait Anger, and Anger Expression and Control. As previous studies have shown that trait anger is associated with aggressive behaviour (Gilbert et al., 2013; Hosie et al., 2014; Taft et al., 2006), only the Trait Anger scale of the STAXI-2 (STAXI-2:TA) was used. Spielberger (1999) defines trait anger, as measured by the STAXI-2:TA, as the disposition to perceive a wide range of situations as annoying or frustrating, and the tendency to respond to these

situations with anger. The scale does not contain inferences about whether a person expresses or suppresses their anger (i.e. a behavioural component). When completing the STAXI-2:TA, participants rate their responses to ten statements such as “I am quick tempered” and “I get angry when I’m slowed down by others’ mistakes” using a four-point Likert scale ranging from 1 (*not at all*) to 4 (*very much so*). Responses are summed to yield a total score, with higher scores representing higher levels of trait anger. In line with Spielberger (1999) regarding the use of the STAXI-2 in research, the raw STAXI-2:TA scores were used during statistical analyses rather than the percentile conversions. Good internal consistency for the STAXI-2:TA is reported in both non-clinical adults (Cronbach’s alpha coefficient of 0.84 to 0.86) and psychiatric patients (Cronbach’s alpha coefficient of 0.87; Spielberger, 1999). In the present study, internal reliability for the STAXI-2:TA at the initial assessment ( $n = 200$ ) was good ( $\alpha = .86$ ).

#### **Clinical variables.**

***Psychiatric Symptoms.*** The *Positive and Negative Syndrome Scale* (PANSS; Kay, Fiszbein, & Opler, 1987) was used to assess current psychiatric symptomatology. The PANSS is a psychometrically sound 30-item rating instrument that evaluates the presence or absence and severity of positive and negative symptoms of schizophrenia, as well as general psychopathology. The PANSS total, as well as its subscales serve as measurement of a patient’s current symptom status. Symptoms are assessed in relation to an item descriptor, with severity ratings ranging from 1 (*absent*) to 7 (*extreme*). Normally, PANSS items are grouped into three subscales (Positive Symptoms, Negative Symptoms, and General Psychopathology), however recent literature suggests there are five subscales (Kelly, White, Compton, & Harvey, 2013). Accordingly, for the purpose

of the current research, PANSS items were grouped into five subscales: Positive, Negative, Disorganised, Excited, and Emotional Distress.

Symptoms on the Positive subscale include delusions, hallucinatory behaviour, grandiosity, suspiciousness/persecution, and unusual thought content. Symptoms on the Negative subscale are blunted affect, emotional withdrawal, poor rapport, passive/apathetic social withdrawal, lack of spontaneity and flow of conversation, motor retardation, disturbance of volition, and active social avoidance. Symptoms on the Disorganised subscale include conceptual disorganisation, difficulty in abstract thinking, stereotyped thinking, mannerisms and posturing, disorientation, poor attention, lack of judgement and insight, and preoccupation. Symptoms on the Excited subscale include excitement, hostility, uncooperativeness, and poor impulse control. Symptoms on the Emotional Distress subscale include somatic concern, anxiety, guilt feelings, tension, and depression.

In the present study, internal reliability at the initial assessment ( $n = 200$ ) was good for the PANSS Positive subscale ( $\alpha = .77$ ) and PANSS Negative subscale ( $\alpha = .73$ ), and poor for the PANSS Disorganised subscale ( $\alpha = .57$ ), PANSS Excited subscale ( $\alpha = .54$ ), and PANSS Emotional Distress subscale ( $\alpha = .52$ ). Internal reliability at the follow-up assessment ( $n = 41$ ) was good for the PANSS Positive subscale ( $\alpha = .83$ ), and PANSS Negative subscale ( $\alpha = .72$ ), acceptable for the PANSS Disorganised subscale ( $\alpha = .63$ ), and unacceptable for the PANSS Excited subscale ( $\alpha = .33$ ) and the PANSS Emotional Distress subscale ( $\alpha = .43$ ). That the PANSS Excited subscale and PANSS Emotional Distress subscale both had poor internal consistency at the initial assessment and unacceptable internal consistency at the follow-up assessment was likely due to inconsistent symptom manifestations within these subscales. That is, the items on these

subscales likely measured symptoms that did not co-occur with one another in this population.

Previous research investigating interpersonal HD and psychiatric symptoms has utilised the Brief Psychiatric Rating Scale-18 (BPRS-18; Overall & Gorham, 1962). See for instance Cookson, Daffern, & Foley (2012), Daffern, Thomas et al. (2010), and Podubinski et al. (2012). Overall, results from these studies have suggested that those symptoms most often associated with aggressive behaviour (e.g. paranoia, conceptual disorganisation, and hallucinations) are also associated with HD. However, these relationships may have been obscured, as the various BPRS-18 subscales reflect a combination of behavioural, as well as symptomatic, items. It was anticipated that the use of the PANSS could facilitate increased clarity regarding the relationship between psychiatric symptoms and interpersonal HD. This is because the five-subscale factor structure of the PANSS (Positive, Negative Disorganised, Excited, and Emotional Distress) reduces the overlap between behavioural and symptomatic items, particularly with regard to those positive psychotic symptoms that are most often associated with HD. Specifically, the behavioural items are now captured within the Excited subscale, whereas core positive psychotic symptomatology is captured within the PANSS Positive subscale, thus providing a purer measure of the relationship.

In addition to the above, while the PANSS was developed to assess positive and negative symptoms in patients with schizophrenia, it does include items related to general psychopathology. These items provide a separate but parallel measure of severity of schizophrenic illness that can serve as a point of reference, or control measure, for interpreting the syndromal scores (Kay et al., 1987). Given this, the PANSS has been used to assess symptom clusters in an array of patient groups. See for

example, Barrett, Mulholland, Cooper, and Rushe (2009) and Lindenmayer, Bossie, Kujawa, Zhu, and Canuso (2008) where the PANSS was used to assess symptoms in participants with bipolar disorder. In the current study, the PANSS was predominantly used to assess whether particular symptom clusters in the inpatient and community environment (i.e. severity of positive, negative, disorganised, excited, and emotional distress symptoms) were associated with increased or lowered aggression risk. As such, patients who score low on items measuring psychotic features are effectively a point of reference from which to judge severity of distinct psychotic manifestations.

### **Developmental variables.**

*Childhood maltreatment.* The *Childhood Trauma Questionnaire* (CTQ; Bernstein & Fink, 1998) was used to assess childhood abuse and neglect experiences. The CTQ is a retrospective, 28-item, self-report inventory. It comprises five subscales, three assessing abuse (Emotional, Physical and Sexual) and two assessing neglect (Emotional and Physical). Each subscale contains five items. Sample items include “I thought my parents wished I had never been born” (Emotional Abuse subscale), “I got hit so hard by someone in my family that I had to see a doctor or go to the hospital” (Physical Abuse subscale), “Someone tried to touch me in a sexual way, or tried to make me touch them” (Sexual Abuse subscale), “I felt loved” (Emotional Neglect subscale), and “I didn’t have enough to eat” (Physical Neglect subscale). In addition to the abuse and neglect subscales there is a three-item Minimization-Denial subscale to check for extreme response bias, specifically attempts by respondents to minimise their childhood abuse experiences. Participants respond to each item in the context of “When I was growing up ...” and answer according to a five-point Likert-type scale, ranging from 1 (*Never True*) to 5 (*Very Often True*). The CTQ has demonstrated internal

consistency across a range of samples, with a median Cronbach's alpha coefficient of 0.66 for the Physical Neglect scale to a median Cronbach's alpha coefficient of .92 for the Sexual Abuse subscale (Bernstein & Fink, 1998).

### **Aggressive behaviour.**

***Inpatient aggressive behaviour.*** The *Overt Aggression Scale* (OAS; Silver & Yudofsky, 1987) was used to measure aggressive behaviour during the period of each participant's admission to the Alfred Hospital Inpatient Psychiatry Department. The OAS classifies aggressive behaviour according to type (physical aggression towards others, verbal aggression towards others, physical aggression against objects, and aggression towards the self). In the current research, self-harm was not studied, and verbal and physical aggression towards others was expanded to include information about victims: whether they were staff or co-patients (See Appendix D for a copy of the amended OAS). As such, five types of aggression were rated: Physical Aggression Against Staff, Physical Aggression Against Other Patients, Verbal Aggression Against Staff, Verbal Aggression Against Other Patients, and Physical Aggression Against Objects. While each category is scored from 0 (*absent*) to 4 (*serious aggression or violence*), the current research utilised a dichotomous OAS score; aggressive behaviour during admission was scored as 1 (*present*) or 0 (*absent*), with a score in any category of the OAS giving an overall score of 1. The OAS was scored using two data sources: (1) review of case files for the period of hospital stay; and, (2) an interview with each patient's primary nurse following the patient's discharge from hospital. This ensured that any incidents of aggressive behaviour that were not recorded in the patients' case notes were captured.

***Aggression occurring post-discharge.*** The *Life History of Aggression*

*Questionnaire* (LHA; Coccaro, Berman, & Kavoussi, 1997) was used to measure post-discharge aggressive behaviour. The LHA is a semi-structured interview that assesses the total number of aggressive, anti-social, and self-aggressive acts engaged in since adolescence. The LHA consists of three subscales (Aggression, Consequences/Anti-Social Behavior, Self-Directed Aggression). For the purpose of the current research, only the Aggression subscale (LHA:A) was used. Furthermore, only aggression in the six months prior to follow-up and only aggression occurring in the community was considered.

The aggression subscale quantifies overt aggressive behaviour and is made up of five questions measuring verbal aggression (In the past six months have you ever shouted at, yelled at, or threatened people?), indirect aggression (In the past six months have you ever been so angry that you smashed or broke things?), non-specific fighting (In the past six months have you got into a physical fight with anyone?), physical assault (In the past six months have you ever deliberately physically hurt somebody and started a fight?), and temper tantrums (In the past six months have you ever become very angry and lost your temper?). Answers to each question are scored on a six point Likert scale, with 0 = zero events, 1 = one event, 2 = two or three events, 3 = four to nine events, 4 = ten or more events and 5 = more events than can be counted. For the purpose of this study, 50 events or more was also scored as a 5. The LHA:A has demonstrated internal consistency with a Cronbach's alpha coefficient of 0.87 (Coccaro et al., 1997). In the present study, internal reliability for the LHA:A at the follow-up assessment ( $n = 41$ ) was acceptable ( $\alpha = .69$ ).

## **Procedure**

For the current research, the various interpersonal, personality, GAM-specified,

clinical, and developmental factors were assessed in hospital for the full sample of 200 participants. For a subsample of 41 participants, a subset of the measures were repeated approximately six months following initial assessment. The student researcher (TP), who had experience and training in the administration of all measures, recruited all participants and administered all measures.

It should be noted that the IMI-C, PCL:SV, and PANSS require a person to exercise judgement regarding the presence of traits, characteristics, and symptoms. While inter-rater reliability was not assessed in the current study, every effort was made to ensure that the scoring of these measures was both reliable and valid. TP completed IMI-C training through the Centre for Forensic Behavioural Science (CFBS), PCL:SV training via a three-day workshop run by Professor James Ogloff, and PANSS training through the Monash Alfred Psychiatric Research Centre (MAPrc). Inter-rater reliability assessment formed a component of the training for the IMI-C, PCL:SV, and PANSS. Furthermore, ongoing supervision was available and utilised by TP. For the current study, TP regularly discussed the scoring of the IMI-C, PCL:SV, and PANSS with a supervisor experienced in the use of each of these measures.

In addition to the above, prior to the current research, TP had assessed 122 psychiatric inpatients using the IMI-C (see Daffern, Thomas et al., 2010). As part of this study, an inter-rater reliability analysis was undertaken; Cronbach's alpha was excellent ( $\alpha = .94$ ). A follow-up assessment of 42 of the original 122 participants recruited in Daffern, Thomas et al. (2010) was also undertaken by TP, with findings detailed in Podubinski et al. (2012). TP had also administered the Brief Psychiatric Rating Scale-18 (BPRS-18; Overall & Gorham, 1962), from which the PANSS is partly adapted from (Kay et al., 1987), in Daffern, Thomas et al. (2010) and Podubinski et al. (2012). Inter-

rater reliability analysis for this measure was undertaken in Daffern, Thomas et al. (2010), with Cronbach's alpha found to be excellent ( $\alpha = .92$ ).

**Initial assessment.** Patients in the Alfred Inpatient Psychiatry, Low Dependency Unit (LDU) and High Dependency Unit (HDU) deemed well enough to give informed consent by their treating doctor were approached within five days of their admission to LDU. The purpose and nature of the study was explained and patients who expressed an interest in the study were given an information sheet; if willing to participate, they signed a consent form. Participants were also informed regarding the possibility of participating in the follow-up assessment, and were asked whether they would be amenable to being contacted about the follow-up component of the study in the future. Participants who expressed an interest in this were asked to provide contact details.

Patients who consented to the initial assessment participated in an approximately two-hour semi-structured interview incorporating the PANSS, STAXI-2:TA, MCAA:ATV, LHA:A, SIV, and CTQ. At the end of the interview, participants were offered AUD \$20 as compensation for their time and effort. Following the interview, basic demographic data (sex, age, date of birth, diagnosis, and date of admission) was collected from participants' case files and the PCL:SV and IMI-C were completed. The PCL:SV was completed based on a review of each patients' medical file and on the information collected during the semi-structured interview, while the IMI-C was completed based on the researcher's impressions during the semi-structured interview. The date of discharge was noted and the OAS was completed following each participant's discharge.

**Follow-up assessment.** The follow-up assessment was conducted approximately six months after the initial assessment. Individuals who expressed an interest in taking

part attended the Alfred Hospital in order to be given a detailed explanation of the purpose and nature of the follow-up assessment; if willing to participate, they signed a consent form.

Participants who consented to the follow-up assessment participated in an approximately one-hour semi-structured interview incorporating the PANSS and the LHA:A. At the end of the interview participants were offered AUD \$20 as compensation for their time and effort. Following the interview, the IMI-C was completed based on the researcher's impressions during the semi-structured interview.

### **Approach to Statistical Analysis**

In order to examine the research aims guiding the current research, statistical analyses for research aims one, two, and three were undertaken using the statistical package PASW Statistics, Version 18.0. Statistical analysis for research aim four was undertaken using the statistical package IBM SPSS versions 20.0.

**Research aim one.** The first aim was addressed in Chapter Four and assessed the influence of interpersonal and personality factors, GAM-specified cognitions and related affective states, and clinical factors on psychiatric inpatient aggression. Raw data consisted of total scores for IMI-C HD and PCL:SV, answers to the 'frequency' item on the SIV, total scores for the MCAA:ATV, STAXI-2:TA, and three PANSS subscales (Positive, Disorganised, and Excited), and the dichotomous OAS score (aggression present or absent). The PANSS Positive, Disorganised, and Excited subscales were chosen as aggressive behaviour is most often associated with the symptoms incorporated in these subscales (for reviews see Bowers et al., 2011, and Douglas, Guy, & Hart, 2009).

Descriptive statistics, univariate parametric tests, and multivariate parametric

tests were used to address the specific hypotheses, as outlined in Chapter Four.

Univariate logistic regression was used to assess the unadjusted relationship between the dichotomous OAS score and IMI-C HD, PCL:SV, SIV, MCAA:ATV, STAXI-2:TA, and PANSS Positive, Disorganised, and Excited. Hierarchical multivariable logistic regression was then conducted to assess the ability of IMI-C HD and PCL:SV to predict the dichotomous OAS score, after controlling for the influence of PANSS Positive, Disorganised, and Excited, SIV, MCAA:ATV, and STAXI-2:TA. The significance threshold was set at  $\alpha = .05$ .

**Research aim two.** The second aim was addressed in Chapter Five and investigated the contribution of aggression-related personality symptoms, cognitive and affective characteristics, and psychiatric symptoms to HD in psychiatric inpatients. Raw data consisted of total scores for IMI-C HD, PCL:SV F1 and F2, answers to the ‘frequency’ item on the SIV, and total scores for the MCAA:ATV, STAXI-2:TA, and the five PANSS subscales (Positive, Negative, Disorganised, Excited, and Emotional Distress).

The specific hypotheses, as outlined in Chapter Five, were addressed using descriptive statistics, univariate parametric tests, and multivariate parametric tests. Pearson correlation analyses were conducted to determine the relationships between IMI-C HD and PCL:SV F1 and F2, SIV, MCAA:ATV, STAXI-2:TA and PANSS Positive, Negative, Disorganised, Excited, and Emotional Distress. Hierarchical multiple regression was then conducted to examine the extent to which PANSS Positive, Negative, Disorganised, Excited, and Emotional Distress predicted IMI-C HD, after first controlling for PCL:SV F1 and F2, and then SIV, MCAA:ATV, and STAXI-2:TA. The significance threshold was set at  $\alpha = .05$ .

Given that the PANSS Excited subscale measures behaviour, consideration was given to removing this subscale from analysis in the current study. However, the decision was made to retain this scale in the analysis. The reasoning for this was that the PANSS Excited subscale contains items reflecting behavioural manifestations of agitation (Montoya et al., 2011); agitation is often a precursor towards aggression (e.g. Bowers et al., 2011). Thus it was considered important to assess the relationship between behavioural manifestations of acute agitation and enacted aggression, as well as the relationship between the more persistent manifestation of HD and aggressive behaviour; higher hostile-dominance may lead to an increased likelihood of presenting as agitated in a hospital psychiatry setting, and in turn lead to an increased likelihood of acting aggressively. Despite this, it should be noted that the Hierarchical multiple regression was conducted excluding the PANSS Excitement subscale. The final model explained less variance when PANSS Excitement was excluded ( $R^2 = .61$ ) than when it was included ( $R^2 = .71$ ). Furthermore, with PANSS Excitement excluded, in the final model STAXI-2:TA became significant and PANSS Negative became non-significant. The significance of all other variables remained unchanged.

**Research aim three.** The third aim was addressed in Chapter Six and examined the stability of HD and its relationship with psychiatric symptoms and aggression over time. Raw data consisted of total scores for IMI-C HD and PANSS Positive, Negative, Disorganised, and Excited at initial assessment and follow-up, and total scores for LHA:A at follow-up. The PANSS Positive, Negative, Disorganised, and Excited subscales were chosen due to findings, detailed in Chapter Five, showing associations between these scales and HD.

The specific hypotheses, as outlined in Chapter Six, were addressed using

descriptive statistics and univariate parametric tests. Bivariate Pearson's correlations were used to determine the relationships between IMI-C HD and PANSS Positive, Negative, Disorganised, and Excited at both initial assessment and follow-up, and the relationships between IMI-C HD at initial assessment and follow-up and LHA:A at follow-up. At the six-month follow-up 10 participants had been re-admitted to the acute units at the Alfred Hospital Inpatient Psychiatry Department. As such, Two-Way Mixed-Model Analysis of Variance (ANOVA; Time [initial assessment vs. follow-up] x Location of Follow-Up [community or hospital]) were used to determine the stability of IMI-C HD and PANSS Positive, Negative, Disorganised, and Excited, and to explore whether the location of follow-up had an impact on the assessment of the stability of HD over time and psychiatric symptomatology. The significance threshold was set at  $\alpha = .05$ .

**Research aim four.** The final aim was addressed in Chapter Seven and explored whether HD mediates the relationship between childhood abuse and neglect and aggressive behaviour in psychiatric inpatients. Raw data consisted of total scores for the five CTQ subscales (Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, and Physical Neglect), the IMI-C HD, and the dichotomous OAS score (aggression present or absent).

In testing the primary hypothesis, as outlined in Chapter Seven, an initial assessment was performed of the relationship between the five CTQ subscales (independent variables; IV) and IMI-C HD (dependent variable; DV) using univariate linear regression. A subsequent analysis was performed using univariate logistic regression to test for a relationship between the five subscales of the CTQ and IMI-C HD (IV), and OAS presence of aggressive behaviour. A final analysis was performed to

test whether IMI-C HD mediated the relationship between childhood trauma and the presence of aggression, using the four criterion proposed by Baron and Kenny (1986) that are required for mediation: (1) that the IV is related to the DV, (2) that the IV is related to the Mediator, (3) that the Mediator is related to the DV, and (4) that after controlling for the effect of the Mediator, the IV is no longer related to the DV. Given the tested variables include a dichotomous DV and continuous Mediator and IVs, composite measures of the slope coefficients and standard errors adjusting for the different analysis methods and covariance between variables were calculated based on the equations presented in Mackinnon and Dwyer (1993). The Aroian version of the Sobel test was used to test for mediation significance (Preacher & Kelley, 2011). It should be noted that the Aroian version of the Sobel test is used to test partial mediation, in this case whether the indirect effect of the CTQ subscales on OAS presence of aggression is statistically different from zero. Conduct of the analysis utilised PASW Statistics syntax and calculation spreadsheets made available by Nathaniel Herr at the following website: <http://www.nrpsych.com/mediation/logmed.html>

**PREDICTORS OF AGGRESSION IN PSYCHIATRIC HOSPITALS:  
INTERPERSONAL AND PERSONALITY, GENERAL  
AGGRESSION MODEL-SPECIFIED, AND CLINICAL FACTORS**

## **Preamble**

Research elucidating the nature of psychiatric inpatient aggression frequently neglects relevant theory. For instance, one of the most comprehensive and contemporary models of aggressive behaviour, the General Aggression Model (GAM), has not been drawn upon to elucidate the causes of psychiatric inpatient aggression. Furthermore, although the interpersonal nature of psychiatric inpatient aggression has been highlighted, with interpersonal hostile-dominance (HD) showing particular relevance, such distal causes of aggressive behaviour are often overlooked in favour of clinical symptoms, and in particular symptoms of psychiatric illness. Given this, conceptualisations of aggressive behaviour in psychiatric settings may be enhanced through the integration of the GAM and Interpersonal Theory; both will provide a strong theoretical framework for the explication of a range of factors relevant to aggression.

Against this background, Chapter Four presents data to address the first research aim: to assess the influence of interpersonal and personality factors, GAM-specified cognitions and related affective states, and clinical factors on psychiatric inpatient aggression. This chapter provides the foundation for the three other empirical chapters presented in this thesis, as results suggest HD is an important correlate of psychiatric inpatient aggression and a variable in need of further investigation.

This paper has been submitted to a peer-reviewed journal.

## Monash University

### Declaration for Thesis Chapter Four

#### Declaration by Candidate

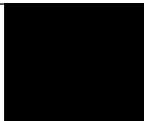
In the case of Chapter Four, the nature and extent of my contribution to the work was the following:

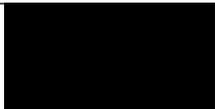
Nature of contribution	Extent of contribution
Reviewed literature; study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper	75%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Professor Michael Daffern	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Stuart Lee	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Yitzchak Hollander	Study design; review and editing of drafts	-

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work\*.

<b>Candidate's Signature</b>		Date: 15 Aug 2014
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<b>Main Supervisor's Signature</b>		Date: 15 Aug 2014
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\*Note: Where the responsible author is not the candidate's main supervisor, the main supervisor should consult with the responsible author to agree on the respective contributions of the authors.

Predictors of Aggression in Psychiatric Hospitals: Interpersonal and Personality,  
General Aggression Model-Specified, and Clinical Factors

Tegan Podubinski, Stuart Lee, Yitzchak Hollander, and Michael Daffern

# PREDICTORS OF PSYCHIATRIC INPATIENT AGGRESSION

## Abstract

*Background:* Aggressive behaviour is common in many psychiatric hospitals; extant research examining aggression in this context typically neglects theoretical perspectives and distal causes.

*Aims:* To assess the influence of interpersonal (hostile-dominance [HD]) and personality (psychopathy), General Aggression Model-specified (aggressive script rehearsal, attitudes towards violence, and trait anger), and clinical (psychiatric symptoms) factors on inpatient aggression.

*Method:* HD, psychopathy, aggressive script rehearsal, attitudes towards violence, trait anger, and psychiatric symptoms were assessed in 200 inpatients (132 men and 68 women; 19-64 years,  $M=38.32$  years,  $SD=11.13$  years) within five days of admission.

*Results:* Higher levels of HD and psychopathy, aggressive script rehearsal, positive attitudes towards violence, trait anger, and disorganised and excited type psychiatric symptoms all predicted aggression in univariate analyses. In the final multivariable logistic regression model, only HD remained as a significant predictor of aggression risk.

*Conclusions:* Interpersonal HD should be considered in violence risk assessments and aggression prevention strategies.

*Declaration of interest:* None.

*Key words:* Interpersonal, personality, general aggression model, psychiatric inpatient aggression

## PREDICTORS OF PSYCHIATRIC INPATIENT AGGRESSION

### Predictors of Aggression in Psychiatric Hospitals: Interpersonal and Personality, General Aggression Model-Specified, and Clinical Factors

Aggression is common in many psychiatric hospitals, and is linked with a number of adverse outcomes that ultimately reduce the quality of care that can be offered.<sup>1</sup> As a result, the prevention and management of aggression is a major organisational concern. Researchers have explored many avenues in an attempt to understand why psychiatric patients become aggressive.<sup>1-3</sup> However, extant research frequently neglects theoretical perspectives and distal causes in favour of psychiatric symptoms. This research attempts to rectify this omission by examining the relevance of interpersonal (hostile-dominance [HD]) and personality (psychopathy), General Aggression Model- (GAM)<sup>4</sup> specified (aggressive script rehearsal, attitudes towards violence, and trait anger), and clinical (psychiatric symptoms) factors to inpatient aggression.

#### **Interpersonal and Personality Factors**

Interpersonal HD<sup>5-9</sup> and psychopathy<sup>10,11</sup> have frequently been associated with aggressive behaviour. Where psychopathy is thought to comprise persistent behavioural deviancy accompanied by emotional-interpersonal detachment,<sup>12</sup> HD describes a characteristic pattern of relating to others, encoding new interpersonal information, and making mental representations of oneself and others that is antagonistic and domineering. Individuals high in HD rigidly approach interpersonal interactions with an intense hostile attitude and need for dominance; they fail to adapt their behaviour to situational demands. While clinical factors are often the focus of extant research and risk assessments regarding aggression in psychiatric settings, HD has been found to be more important than psychiatric symptoms in predicting inpatient aggression.<sup>6</sup>

## PREDICTORS OF PSYCHIATRIC INPATIENT AGGRESSION

Furthermore, while tools measuring psychopathy, and in particular the Psychopathy Check List-Revised,<sup>11</sup> are often used by forensic psychologists to aid risk-assessment to inform legal decisions regarding future violence,<sup>13</sup> they may be less relevant for assessing risk in civil psychiatric inpatient settings.

### **General Aggression Model-Specified Factors**

The GAM considers aggression to be the product of multiple interacting factors; accordingly, distal (i.e. personality characteristics) and situational factors (i.e. provocation) create an internal state (i.e. cognitions, affect, and arousal), which affects decision-making processes that determine aggressive action.<sup>4</sup> Habitual aggression results from an innate predisposition toward aggression combined with life experiences that result in the acquisition of aggression-related cognitions, referred to as *knowledge structures*.<sup>4</sup> The knowledge structures highlighted by the GAM include aggression-related behavioural scripts (i.e. scripts denoting how a person should interact with their environment), attitudes (i.e. a person's beliefs about the acceptability of aggressive acts), and their related affective states (i.e. anger).<sup>4</sup> Anger is thought to influence aggressive behaviour by activating aggressive scripts and aggression-supportive beliefs, maintaining aggressive intentions over time, increasing overall arousal, and reducing the ability to appraise a situation in a way that may discourage aggressive behaviour.<sup>4</sup> Aggressive individuals are believed to be more likely to hold and rehearse scripts that emphasise aggression as an appropriate response, have attitudes that are more positive towards aggressive behaviour, and have a tendency to frequently experience the affective state of anger.<sup>4,14</sup>

### **Clinical Factors**

There is a small but significant association between some symptoms of mental illness and aggressive behaviour,<sup>1,15</sup> with psychotic disorders having the strongest association with aggression.<sup>15</sup> Active positive symptoms including delusions, conceptual disorganisation, hallucinations, and paranoia have been shown to be particularly relevant.<sup>16,17</sup>

### **Aims and Hypotheses**

This study sought to assess the relationship between aggression in psychiatric patients and interpersonal (HD) and personality (psychopathy), GAM-specified (aggressive script rehearsal, attitudes towards violence, and trait anger), and clinical (psychiatric symptoms) factors. It was hypothesised that the interpersonal and personality, GAM-specified, and clinical factors would all significantly contribute to the prediction of inpatient aggressive behaviour, and that the addition of interpersonal and personality variables would improve the prediction of aggression beyond GAM-specified and clinical factors alone.

## **Method**

### **Participants**

Participants were 200 patients admitted to two acute units at the Alfred Hospital Inpatient Psychiatry Department, Melbourne, Australia, between 12th of January 2012 and 10th of October 2012. The sample included 132 men (M=38.12 years, SD=11.14 years) and 68 women (M=38.69 years, SD=11.20 years) with an age range of 19-64 years (M=38.32 years, SD=11.13 years). The average length of hospital stay for participants was approximately two weeks (M=14.59 days, SD=15.96 days).

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The most common primary diagnosis (recorded on the day of the interview from the most recent case notes entered by the treating psychiatrist) was schizophrenia or another psychotic illness (55.5%), followed by unipolar depressive episode/disorder (11.5%), bipolar disorder or a manic episode (8.5%), borderline personality disorder (7.0%), alcohol or other substance induced disorders/related issues (6.5%), and acute stress reaction (4.5%). At the time of the interview, 4.0% of participants had no diagnoses, and 2.5% had other diagnoses (e.g. cluster “personality traits”).

### **Setting**

Alfred Psychiatry is the main provider of public mental health services to people living in the inner southeast suburbs of Melbourne, Australia. A hospital-based acute psychiatric response is provided to adult patients via two 28-bed units. Each unit offers care in low-dependency (requiring less intensive observation) and high dependency (for patients at higher risk of harm to self or others) environments.

### **Materials**

The *Impact Message Inventory-Circumplex* (IMI-C)<sup>18</sup> was used to assess participants’ interpersonal style. The 56 IMI-C items contain a number of words, phrases, and statements, which people use to describe how they are emotionally engaged or impacted when interacting with another person. A four-point Likert scale is used to indicate how accurately each item describes the raters’ reaction to the person under consideration, with a score of 1 indicating the item describes the reaction not at all, a score of 2 indicating the item describes the reaction somewhat, a score of 3 indicating the item describes the reaction moderately so, and a score of 4 indicating the item describes the reaction very much so. IMI-C items are grouped into one of eight interpersonal style scales (Dominant, Hostile-Dominant, Hostile, Hostile-Submissive,

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Submissive, Friendly-Submissive, Friendly, and Friendly-Dominant), with the total score for each of the scales being the sum of the seven items on each scale. Internal consistency for the HD scale ranges from 0.69-0.96, with a median Cronbach alpha coefficient of 0.81.<sup>19</sup>

The *Psychopathy Checklist: Screening Version* (PCL:SV)<sup>20</sup> was used to assess the presence of psychopathic traits. The PCL:SV is a clinical rating scale of 12 items (Superficial, Grandiose, Deceitful, Lacks Remorse, Lacks Empathy, Doesn't Accept Responsibility, Impulsive, Poor Behavioral Controls, Lacks Goals, Irresponsible, Adolescent Antisocial Behavior, and Adult Antisocial Behavior). Each of the items on the PCL:SV are rated on a three-point Likert scale, according to the degree to which the personality and behaviour of the individual being assessed matches the specified item description. A score of 0 suggests the item does not apply to the individual, a score of 1 indicates that the item applies to a certain extent but does not warrant a full match, and a score of 2 suggests that the item represents a good match. Items are then summed to produce a total score. The PCL:SV demonstrates good internal consistency, with a weighted mean Cronbach's alpha across 11 studies of 0.84 for the total scale (0.81 for F1 and 0.75 for F2).<sup>20</sup>

The *Schedule of Imagined Violence* (SIV)<sup>21</sup> was used to assess the tendency to rehearse aggressive behavioural scripts. The SIV is a semi-structured interview that screens for aggressive scripts through participants' self-reported responses to eight criteria (presence, recency, frequency, chronicity, similarity/diversity in type of harm, target, change in seriousness of harm, and proximity to target). Information provided by respondents is assigned to fixed response options within each category. In the current research the nature and extent of participants' aggressive scripts were of interest, and as

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such the SIV was modified so that the initial question, “Do you ever have daydreams or thoughts about physically hurting or injuring other people?” was removed, and replaced with the ‘frequency’ item, “How often do you have thoughts about hurting or injuring other people?” The two month time period specifier was also removed from this item, resulting in eight possible response options: 0 = never, 1 = once every few years, 2 = several times a year, 3 = several times a month, 4 = once a week, 5 = several times a week, 6 = once a day, and 7 = several times a day. Participants who responded “never” to this item were not administered any further items.

The *Measures of Criminal Attitudes and Associates* (MCAA)<sup>22</sup> is a two-part self-report measure of criminal attitudes and associates. Part A is a quantified self-report measure of criminal associations and Part B is a 46-item assessment of attitudes consisting of four subscales: Attitudes Towards Violence, Sense of Entitlement, Criminal Intent, and Attitudes Towards Criminal Associates. For the purposes of the current research, only the Attitudes Towards Violence scale (MCAA:ATV) was used, due to its association with aggressive behaviour<sup>14</sup> and the importance of beliefs regarding aggression to the GAM.<sup>4</sup> The MCAA:ATV scale contains 12 items measuring normative beliefs supportive of aggression (e.g., “It’s all right to fight someone if they stole from you” and “It’s understandable to hit someone who insults you”), and respondents indicate whether they ‘agree’ or ‘disagree’ with each item. These responses are then summed to produce a total MCAA:ATV scale score. The MCAA:ATV scale demonstrates good internal consistency with a Cronbach’s alpha coefficient of 0.80 in samples of incarcerated offenders.<sup>23</sup>

The *State-Trait Anger Expression Inventory-2* (STAXI-2)<sup>24</sup> is a 57-item inventory used to measure the experience, expression, and control of anger. The STAXI-2 consists

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of three scales: State Anger, Trait Anger, and Anger Expression and Control. As previous studies have shown that trait anger is associated with a history of aggression,<sup>14</sup> only the Trait Anger scale of the STAXI-2 (STAXI-2:TA) was used. Trait anger, as measured by the STAXI-2:TA, is defined as the disposition to perceive a wide range of situations as annoying or frustrating, and the tendency to respond to these situations with anger.<sup>24</sup> When completing the STAXI-2:TA, participants rate their responses to ten statements using a four-point Likert scale ranging from 1 (*not at all*) to 4 (*very much so*). Responses are summed to yield a total score, with higher scores representing higher levels of trait anger. Good internal consistency for the STAXI-2:TA is reported in both non-clinical adults (Cronbach's alpha coefficient of 0.84 to 0.86) and psychiatric patients (Cronbach's alpha coefficient of 0.87).<sup>24</sup>

The *Positive and Negative Syndrome Scale* (PANSS)<sup>25</sup> was used to assess current psychiatric symptomatology. The PANSS is a psychometrically sound 30-item rating instrument that evaluates the presence or absence and severity of positive and negative symptoms of schizophrenia, as well as general psychopathology. Symptoms are assessed in relation to an item descriptor, with severity ratings ranging from 1 (*absent*) to 7 (*extreme*). For the purpose of the current research, PANSS items were grouped into five subscales (Negative, Positive, Disorganized, Excited, and Emotional Distress), in accordance with Kelly, White, Compton, and Harvey.<sup>26</sup> Only the PANSS Positive, Disorganised, and Excited subscales were used, as aggressive behaviour is most often associated with the symptoms incorporated in these subscales.<sup>1,15</sup>

The *Overt Aggression Scale* (OAS)<sup>27</sup> was used to measure aggressive behaviour during the period of each participant's admission to hospital. The OAS classifies aggressive behaviour according to type (physical aggression towards others, verbal

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aggression towards others, physical aggression against objects, and aggression towards the self). In the current research, aggression towards the self was not studied, and records were kept as to whether the verbal and physical aggression towards others was directed at staff or other patients. While each category is scored from 0 (*absent*) to 4 (*serious aggression or violence*), the current research utilised a dichotomous OAS score; aggressive behaviour during admission was scored as 1 (*present*) or 0 (*absent*), with a score in any category of the OAS giving an overall score of 1. The OAS was scored using two data sources: (1) review of case files for the period of hospital stay; and, (2) an interview with each patient's primary nurse following the patient's discharge from hospital. This ensured that any incidents of aggressive behaviour that were not recorded in the patients' case notes were captured.

### **Procedure**

This research received ethical approval from the Monash University Human Research Ethics Committee (Project Number: CF11/2658–2011001547) and the Alfred Human Research Ethics committee (Project Number: 303/11). One researcher with experience and training in the administration of all measures recruited all participants and administered all measures.

Patients in the Alfred Inpatient Psychiatry Low Dependency Unit (LDU) and High Dependency Unit (HDU) deemed well enough to give informed consent by their treating doctor were approached within five days of their admission to LDU. The purpose and nature of the study was explained and patients who expressed an interest in the study were given an information sheet and, if willing to participate, they signed a consent form.

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Consenting patients participated in a semi-structured interview incorporating the PANSS, STAXI-2:TA, MCAA:ATV, and SIV. At the end of the interview, participants were offered AUD \$20 as compensation for their time and effort. Following the interview, demographic data (sex, age, date of birth, diagnosis, and date of admission) was collected; the PCL:SV and IMI-C were completed. The PCL:SV was completed based on a review of each patients' medical file and on the information collected during the semi-structured interview, while the IMI-C was completed based on the researcher's impressions during the semi-structured interview. The date of discharge was noted and the OAS completed following each participant's discharge.

### **Data Analysis**

All analyses were undertaken using the statistical package PASW Statistics, Version 18.0. Raw data consisted of total scores for IMI-C HD and PCL:SV, answers to the 'frequency' item on the SIV, total scores for the MCAA:ATV, STAXI-2:TA, and three PANSS subscales (Positive, Disorganised, and Excited), and the dichotomous OAS score (aggression present or absent). The hypotheses were addressed using descriptive statistics, and univariate and multivariate parametric tests. Univariate logistic regression was used to assess the unadjusted relationship between the dichotomous OAS score and IMI-C HD, PCL:SV, SIV, MCAA:ATV, STAXI-2:TA, and PANSS Positive, Disorganised, and Excited. Hierarchical multivariable logistic regression was then conducted to assess the ability of IMI-C HD and PCL:SV to predict the dichotomous OAS score, after controlling for the influence of PANSS Positive, Disorganised, and Excited, SIV, MCAA:ATV, and STAXI-2:TA. The significance threshold was set at  $\alpha=.05$ .

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### Results

All data was examined for accuracy, missing values, and outliers. A random check of 50 participants' entered data showed data entry to be accurate. There were no missing values. Four participants were identified as having univariate outlier responses, as indicated by *z*-scores greater than 3.29. One participant was an outlier on the STAXI-2:TA and three participants were outliers on the PCL:SV. Given the large sample size, the decision was made to retain these participants in the analysis.

The frequencies and percentages of participants who engaged in aggressive behaviour during their admission (e.g. any aggressive incident, any physical aggressive incident, any verbal aggressive incident, and any physical aggression against objects) are displayed in Table 1. A total of 70 (35%) patients engaged in any aggression during their admission, however, for most patients this consisted of verbal aggression or physical aggression against objects. Nineteen (9.5%) patients engaged in physical aggression targeting staff and/or co-patients.

Insert Table 1 about here

Prior to assessing whether interpersonal and personality, GAM-specified, and clinical factors predicted any aggressive incident, aggressive (*n*=70) and non-aggressive participants (*n*=130) were compared with regard to demographic variables and length of hospital stay. Neither age (Aggressive group mean [*SD*] = 37.51 [11.30], Non-Aggressive group mean [*SD*] = 38.75 [11.06], *p* = .46), days assessed after LDU admission (Aggressive group mean [*SD*] = 2.90 [1.42], Non-Aggressive group mean [*SD*] = 2.64 [1.40], *p* = .21) or sex (Aggressive group % males = 68.6%, Non-

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Aggressive group % males = 64.6%,  $p = .57$ ) differed between groups. Patients displaying aggression experienced significantly longer hospital lengths of stay (Aggressive group mean [ $SD$ ] = 18.77 [21.17], Non-Aggressive group mean [ $SD$ ] = 12.33 [11.77],  $p = .006$ ).

Mean ( $SD$ ) IMI-C HD, PCL:SV, SIV, MCAA:ATV, STAXI-2:TA, and PANSS Positive, Disorganised, and Excited scores for the total sample and patients who engaged in or did not engage in any aggressive behaviour are displayed in Table 2.

Insert Table 2 about here

To provide an overall measure of the relationship between the risk of any aggression occurring and each interpersonal and personality, GAM-specified, and clinical variable, results of the univariate logistic regression analyses are presented in Table 3. Increased levels of IMI-C HD, PCL:SV, SIV, MCAA:ATV, STAXI-2:TA, and PANSS Disorganised and Excited were all significant univariate predictors of any aggression occurring during hospitalisation.

Insert Table 3 about here

Prior to conducting hierarchical multivariable logistic regression, the standardised residuals were examined so as to isolate points for which the model fitted poorly. Ninety-five percent of cases had values within  $\pm 1.96$ , 99.5 percent of cases had values within  $\pm 2.58$ , and no cases had values greater than  $\pm 3$ . To assess the influence of individual cases the values of Cook's Distance, DFBeta for the constant, and Leverage

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were examined. All values were less than 1, suggesting no influential cases. No Tolerance value was less than .1 and no VIF value was greater than 10, indicating no multicollinearity issues. Assumptions for the conduct of logistic regression were therefore met.

Results of the hierarchical multivariable logistic regression analyses are presented in Table 4.

Insert Table 4 about here

At Step 1, the clinical and GAM-specified variables (PANSS Positive, Disorganised, and Excited, SIV, MCAA:ATV, and STAXI-2:TA) significantly predicted aggression risk, ( $p = .003$ ), explaining between 9.5% (Cox and Snell  $R^2$ ) and 13.1% (Nagelkerke  $R^2$ ) of the variance in aggression and correctly classifying 65.5% of cases. At Step 1 only PANSS Disorganised made a unique statistically significant contribution to the prediction of aggression, with an odds ratio of 1.09,  $p = .02$ . The addition of the interpersonal (IMI-C HD) and personality (PCL:SV) variables to the clinical and GAM-specified variables significantly improved the prediction of any aggression, ( $p < .001$ ). The model as a whole explained between 17.0% (Cox and Snell  $R^2$ ) and 23.4% (Nagelkerke  $R^2$ ) of the variance in aggression, and correctly classified 72.5% of cases. For the whole model, only IMI-C HD made a significant unique contribution to the prediction of aggression, with an odds ratio of 1.34,  $p = .001$ .

### **Discussion**

This study examined the relationship between inpatient aggressive behaviour and interpersonal (HD) and personality (psychopathy), GAM-specified (aggressive

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script rehearsal, attitudes towards violence, and trait anger), and clinical (psychiatric symptoms) factors. It was hypothesised that interpersonal and personality, GAM-specified, and clinical factors would all significantly contribute to the prediction of aggression, and that the addition of interpersonal and personality variables would improve the prediction of aggression beyond GAM-specified and clinical factors alone. In summary, at the univariate level, HD, psychopathy, aggressive script rehearsal, attitudes towards violence, trait anger, and PANSS Disorganised and Excited symptoms all predicted aggressive behaviour. Positive symptoms did not independently predict aggression. Multivariable analysis showed that interpersonal HD predicted aggressive behaviour independent of clinical and GAM-specified factors. Furthermore, the addition of personality variables significantly improved the prediction of inpatient aggressive behaviour, although only HD remained as a significant unique predictor of aggression risk. This result highlights the importance of interpersonal HD for understanding inpatient aggressive behaviour.

Consistent with past research examining associations between psychiatric illness and inpatient aggression,<sup>6</sup> results of the present study indicate that acute psychiatric symptoms are associated with inpatient aggressive behaviour. Consistent with past research using community forensic populations,<sup>14</sup> GAM-specified variables (aggressive script rehearsal, attitudes towards violence, and trait anger) also predicted aggression. This suggests that a persons' presenting state, which includes the extent of psychotic symptomatology, aggression-related cognitions, and anger affect, contributes to aggressive behaviour. Interpersonal HD and psychopathy also impacted aggression, with similar findings being shown in past research.<sup>6,10,11</sup> However, interpersonal HD

accounted for greater variability in aggressive behaviour than all other variables, including psychopathy, adding to past research findings.<sup>5,6</sup>

### **Clinical Implications**

According to the GAM, aggression is largely a product of cognitive processes. However, these results highlight the importance of relational functioning in predicting psychiatric inpatient aggression; HD is an important violence risk factor, and likely contributes to the development of aggression-related cognitions and a tendency towards negative affect. Given this, HD should be a focus of initial violence risk assessments on admission to hospital. Reviewing items pertinent to the HD scale on the IMI-C may provide a parsimonious method for the assessment of interpersonal HD. By evaluating HD, interactions with others are emphasised, an important consideration given the intensely interpersonal nature of inpatient treatment, and the interpersonal nature of many precipitants to inpatient aggression (e.g. demands for activity and denials of patient requests).<sup>28</sup> In contrast, a focus on risk assessments that utilise psychopathy will likely ignore important nuances of interpersonal functioning that are relevant to inpatient psychiatry; although psychopathy is often considered in violence risk assessment measures, it is a broader conceptualisation of personality pathology encompassing affective, interpersonal, lifestyle, and antisocial components.

In addition to initial violence risk assessments, treatment targeted at reducing elevated levels of HD may prove beneficial in the prevention and management of aggressive behaviour both in hospital and in the community post-discharge. Daffern et al.<sup>29</sup> found that in a sample of offenders with personality disorder, completion of an intensive treatment program was associated with reductions in HD, which was in turn associated with reductions in re-offending following discharge. Furthermore, since HD

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has been implicated in impaired therapeutic alliance and treatment adherence,<sup>30</sup> adjusting treatment to the interpersonal style of patients, may help reduce aggressiveness as well as enhance therapeutic alliance.<sup>31</sup>

Increasing staff awareness of Interpersonal Theory, particularly with regard to how staff interactions with patients high in HD may unintentionally frustrate patient motives and escalate conflict, may also assist in averting aggressive incidents. According to Interpersonal Theory, a person's interpersonal style can be conjectured as the balance between the dimensions of *Communion* and *Agency*.<sup>32</sup> *Communion*, which ranges from friendliness to hostility, refers to connection with others, while *Agency*, ranging from submission to dominance, emphasises influence, control, or mastery over the self, other people and the environment.<sup>33,34</sup>

Balanced and productive interpersonal interactions occur when the agentic and communal needs of both persons are met during the interaction. For this to occur corresponding responses are invited on the *Communion* dimension (i.e. friendliness invites friendliness) and reciprocal responses are invited on the *Agency* dimension (i.e. dominance invites submission).<sup>35</sup> This is described as the principle of *Complementarity*; deviations are likely to disrupt interpersonal relations and may be indicative of maladaptive interpersonal functioning.<sup>35</sup> During inpatient psychiatric treatment, interpersonal interactions are often *Acomplementarity*, that is, correspondence occurs on the *Communion* dimension or reciprocity occurs on the *Agency* dimension but never both at once, or *Anticomplementarity*, that is, neither correspondence on *Communion* or reciprocity on *Agency* is exhibited. For example, a patient who has a persistent need for dominance may respond to staff requests with behaviour that attempts to control the situation. Rather than submit to this behaviour, staff will typically respond in a non-

reciprocal manner (i.e. assertiveness) in an attempt to regain control. This may lead to a disruption in the interpersonal relationship, where the patient is increasingly motivated to command the situation and does so through an aggressive act.<sup>6</sup>

Patients with elevated levels of HD often approach interpersonal situations with a hostile attitude, and the view that the world is an unreceptive and unfriendly place; domineering behaviour may be used to protect self-interests. Over time, interpersonal interactions that affirm these expectations may strengthen the motivation to act in a hostile and dominant manner, leading to interpersonal behaviour that is maladjusted. Psychiatric patients with high levels of HD may engage in intense and rigid hostile and dominant behaviours; they may lack the flexibility to adapt their behaviour to the particular demands of the inpatient routine. When demands are made of these patients (e.g. adhere with prescribed medication), they may feel as though they are being forced into submission, which may in turn be viewed as threatening. As the individual is unsettled by the frustrating interaction, aggression may be used to restore dominance and protect oneself. Thus, it is important for staff to acknowledge and consider the impact their interpersonal behaviour has on patients, as well as the patient's particular interpersonal priorities and sensitivities, and how these may influence their reactions, particularly in situations that are deemed directive and controlling by patients.

### **Limitations and Future Research**

The interpretation of these findings should be considered in light of the fact that aggressive behaviour was measured as a combination of verbal aggression against staff, verbal aggression against patients, physical aggression against staff, physical aggression against patients, and physical aggression against objects. Attempts were made to conduct separate analyses with the different types of aggressive behaviour, and in

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particular physical aggression. However, although almost 10% of patients engaged in physical aggression targeting staff and/or co-patients, this low base rate made statistical analysis untenable. Future research with larger samples may assist in the delineation of the unique relationships between the variables studied here and the conduct of physical aggression towards patients or staff. Secondly, consideration of the findings in light of the low rate of psychopathy in the patient sample studied is also important. The mean total score on the PCL:SV was only 1.74 ( $SD = 2.27$ ) out of a possible 24. Even the maximum score (15) was below the suggested diagnostic cutoff ( $>18$ ).<sup>20</sup> Thus, these results may not generalise to patients higher in psychopathy. Additionally, although the final model explained between 17.0% and 23.4% of the variance in aggression, there is still considerable unexplained additional variance. Future research should endeavour to elucidate this additional variance using other variables related to inpatient aggression; as described by the GAM, situational factors are likely to be important. For example the structure/layout of the unit, behaviour of other patients, degree of privacy, ward rules and regulations, and staff demands/communication levels all impact on the rates of aggressive behaviour.<sup>2,3</sup> Finally, the development of cut scores and normative data for high versus low levels of HD may be useful clinically to assist clinicians in determining which patients require different or additional interventions due to their level of HD.

### **Conclusion**

This study found that interpersonal HD, psychopathy, aggressive script rehearsal, positive attitudes towards violence, trait anger, and PANSS Disorganised and Excited psychiatric symptoms all predicted aggressive behaviour in psychiatric inpatients. Only interpersonal HD predicted aggression at the multivariable level, highlighting the critical role of HD in inpatient aggression. Accordingly, the assessment

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of HD should be a focus of initial violence risk assessments on admission to hospital; more effective treatment outcomes, and reductions in aggressive behaviour may be achieved by developing interventions targeting reductions in HD and modifying interactional styles when treating patients with elevated levels of HD.

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**Contributions**

TP, SL, and MD conceived and designed the study; YH designed the study. TP collected, coded, and analysed the data. SL and MD provided analysis support. All authors interpreted the data. TP conducted the literature search and drafted the report and all authors revised drafts and approved the final version. TP had full access to all the data in the study and takes responsibility for the integrity of the data. TP and SL take responsibility for the accuracy of the data analysis.

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Table 1

Proportion of participants engaging in aggressive behaviour during their hospital stay ( $n=200$ ).

	Frequency (%)
Any Aggressive Incident	70 (35.0%)
Any Physical Aggressive Incident Against Staff or Patients	19 (9.5%)
Any Physical Aggressive Incident Against Staff	13 (6.5%)
Any Physical Aggressive Incident Against Patients	12 (6.0%)
Any Verbal Aggressive Incident Against Staff or Patients	67 (33.5%)
Any Verbal Aggressive Incident Against Staff	59 (29.5%)
Any Verbal Aggressive Incident Against Patients	48 (24.0%)
Any Physical Aggressive Incident Against Objects	32 (16.0%)

## PREDICTORS OF PSYCHIATRIC INPATIENT AGGRESSION

Table 2

Mean (SD) participant scores for total sample, patients who engaged in aggressive behaviour, and patients who did not engage in aggressive behaviour for IMI-C HD, PCL:SV, SIV, MCAA:ATV, STAXI-2:TA, and PANSS Positive, Disorganised, and Excited.

	Total Sample ( <i>n</i> =200)	Aggressive ( <i>n</i> =70)	Non-Aggressive ( <i>n</i> =130)
IMI-C HD	10.09 (3.37)	11.86 (4.21)	9.13 (2.32)
PCL:SV	1.74 (2.27)	2.66 (2.85)	1.24 (1.71)
SIV	1.66 (2.17)	2.24 (2.50)	1.34 (1.91)
MCAA:ATV	2.75 (2.84)	3.49 (3.18)	2.35 (2.56)
STAXI-2:TA	18.15 (6.28)	19.79 (6.67)	17.27 (5.89)
PANSS Positive	12.58 (5.77)	13.64 (5.65)	12.01 (5.77)
PANSS Disorganised	14.92 (4.81)	16.27 (4.94)	14.19 (4.59)
PANSS Excited	5.65 (2.35)	6.26 (2.89)	5.32 (1.94)

## PREDICTORS OF PSYCHIATRIC INPATIENT AGGRESSION

Table 3

Univariate logistic regression relationships between interpersonal and personality, GAM-specified, and clinical variables and the occurrence of any aggressive incident ( $n=200$ ).

	B (SE)	p-value	Odds Ratio	95% CI for Odds Ratio
IMI-C HD	0.26 (0.05)	< .001	1.29	1.17 – 1.43
PCL:SV	0.30 (0.08)	< .001	1.35	1.16 – 1.58
SIV	0.19 (0.07)	.006	1.21	1.06 – 1.38
MCAA:ATV	0.14 (0.05)	.008	1.15	1.04 – 1.27
STAXI-2:TA	0.06 (0.02)	.008	1.07	1.02 – 1.12
PANSS Positive	0.05 (0.03)	.06	1.05	1.00 – 1.10
PANSS Disorganised	0.09 (0.03)	.004	1.09	1.03 – 1.16
PANSS Excited	0.17 (0.06)	.008	1.18	1.04 – 1.34

B = unstandardized regression coefficient

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Table 4

Hierarchical logistic regression analysis assessing the contribution of interpersonal and personality factors over and above clinical and GAM-specified factors to the occurrence of any aggressive incidents ( $n=200$ ).

	B (SE)	p-value	Odds Ratio	95% CI for Odds Ratio
<b>Step 1<sup>a</sup></b>				
PANSS Positive	-0.01 (0.03)	.71	.99	.93 – 1.05
PANSS Disorganised	0.09 (0.04)	.02	1.09	1.01 – 1.17
PANSS Excited	0.09 (0.07)	.20	1.09	.95 – 1.25
SIV1	0.12 (0.09)	.19	1.12	.94 – 1.34
MCAA:ATV	0.03 (0.07)	.64	1.03	.90 – 1.18
STAXI-2:TA	0.03 (0.03)	.38	1.03	.97 – 1.10
Constant	-3.07 (0.79)	< .001	.05	
<b>Step 2<sup>b</sup></b>				
PANSS Positive	-0.04 (0.04)	.25	.96	.90 – 1.03
PANSS Disorganised	0.05 (0.04)	.24	1.05	.97 – 1.13
PANSS Excited	-0.17 (0.10)	.08	.84	.69 – 1.02
SIV1	0.05 (0.10)	.59	1.05	.87 – 1.27
MCAA:ATV	0.04 (0.07)	.56	1.04	.90 – 1.21
STAXI-2:TA	0.02 (0.03)	.58	1.02	.95 – 1.09
IMI-C HD	0.29 (0.09)	.001	1.34	1.13 – 1.59
PCL:SV	0.06 (0.11)	.59	1.06	.86 – 1.31
Constant	-3.52 (0.91)	< .001	.03	

<sup>a</sup> Step 1:  $\chi^2$  change (6) = 20.05,  $p = .003$

<sup>b</sup> Step 2:  $\chi^2$  change (2) = 17.27,  $p < .001$

**CHARACTERISTICS OF INTERPERSONAL HOSTILE-  
DOMINANCE IN PSYCHIATRIC INPATIENTS**

## Preamble

Interpersonal hostile-dominance (HD) has been consistently associated with aggression in secure psychiatric settings; the previous chapter confirmed the importance of HD for the prediction of psychiatric inpatient aggression. However, little is known about the factors that might contribute to a HD interpersonal style. Given the potential clinical consequences of HD, its delineation is important and will facilitate increased specificity of treatment targeting HD and aggressive behaviour.

Interpersonal HD has been associated with other aggression-related personality (i.e. psychopathy) and clinical (i.e. psychiatric symptoms) factors. However, according to the General Aggression Model (GAM), aggressive behaviour is largely a cognitive process related to the development of aggression-related cognitions (i.e. violent scripts and attitudes towards violence) and associated affective states (i.e. anger); the extent to which HD is related to these GAM-specified cognitions and affective states is unclear. Against this background, Chapter Five presents data to address the second research aim: to investigate the contribution of aggression-related personality symptoms, cognitive and affective characteristics, and psychiatric symptoms to HD in psychiatric inpatients.

This paper has been accepted for publication in a peer-reviewed journal:

**Podubinski, T.**, Lee, S., Hollander, Y., & Daffern, M. (in press). Characteristics of interpersonal hostile-dominance in psychiatric inpatients. *Psychiatry: Interpersonal and Biological Processes*.

**Monash University**

**Declaration for Thesis Chapter Five**

**Declaration by Candidate**

In the case of Chapter Five, the nature and extent of my contribution to the work was the following:

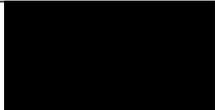
<b>Nature of contribution</b>	<b>Extent of contribution</b>
Reviewed literature; study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper	75%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

<b>Name</b>	<b>Nature of contribution</b>	<b>Extent of contribution (%) for student co-authors only</b>
Professor Michael Daffern	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Stuart Lee	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Yitzchak Hollander	Study design; review and editing of drafts	-

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work\*.

<b>Candidate's Signature</b>		Date: 15 Aug 2014
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<b>Main Supervisor's Signature</b>		Date: 15 Aug 2014
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\*Note: Where the responsible author is not the candidate's main supervisor, the main supervisor should consult with the responsible author to agree on the respective contributions of the authors.

Characteristics of Interpersonal Hostile-Dominance in Psychiatric Inpatients

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## CHARACTERISTICS OF INTERPERSONAL HOSTILE-DOMINANCE

### Abstract

*Objective:* This study assessed the extent to which psychiatric symptoms and aggression-related personality as well as cognitive and affective variables predicted interpersonal hostile-dominance (HD) in psychiatric inpatients.

*Method:* Two hundred patients admitted to hospital for psychiatric treatment were recruited, including 132 men and 68 women, with an age range of 19-64 years ( $M=38.32$  years,  $SD=11.13$  years). Each participant was assessed within five days of admission using the Impact Message Inventory-Circumplex (IMI-C), the Psychopathy Checklist: Screening Version (PCL:SV), the State-Trait Anger Expression Inventory-2 (STAXI-2), the Schedule of Imagined Violence (SIV), the Measures of Criminal Attitudes and Associates (MCAA), and the Positive and Negative Syndrome Scale (PANSS). Hierarchical multiple regression was used to assess the ability of psychiatric symptoms to predict HD, after controlling for the influence of psychopathy (Factor 1 [F1] and Factor 2 [F2]), trait anger, aggressive script rehearsal, and normative beliefs supporting aggression.

*Results:* Psychopathy (F1 and F2), the tendency to rehearse aggressive scripts, and psychiatric symptomatology (PANSS Positive, Negative, Disorganized, and Excited) all predicted HD, with the final model explaining 71.30% of the variance in HD. Trait anger, positive attitudes towards violence, and PANSS Emotional Distress did not predict HD.

*Conclusions:* HD reflects a characteristic tendency towards interpersonal, affective, and behavioral problems marked by hostility and dominance, combined with a tendency toward frequent aggressive script rehearsal and more severe psychiatric symptomatology.

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*Key words:* Interpersonal style, psychiatric symptoms, psychopathy, General Aggression Model

### Characteristics of Interpersonal Hostile-Dominance in Psychiatric Inpatients

Interpersonal functioning is an important dimension of psychopathology. Assessments of interpersonal style, which describes how individuals typically communicate with, and perceive themselves in relation to others, are proving useful in the assessment, management, and treatment of psychiatric inpatients. In particular, interpersonal hostile-dominance (HD) has been receiving increased scholarly attention due to its association with aggressive behavior (Daffern, Duggan, Huband, & Thomas, 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006), problematic therapeutic relationships (Cookson, Daffern, & Foley, 2012), and treatment non-completion (Daffern et al., 2008) in psychiatric inpatient settings. Given the potential clinical consequences of HD, it is important for staff to be aware of a patient's level of HD, and the variables that might contribute to HD. These variables should be elucidated in line with contemporary research and models of aggression (e.g., The General Aggression Model [GAM; Anderson & Bushman, 2002]) to facilitate increased specificity of treatment targeting HD and aggressive behavior.

#### **The General Aggression Model**

The GAM considers aggression to be the product of multiple factors, each explaining no more than a small proportion of individual differences in aggressiveness (Anderson & Bushman, 2002); these include distal (i.e. personality characteristics) and situational factors (i.e. provocation), as well as a person's present internal state (i.e. their cognitions, affect, and arousal; Anderson & Bushman, 2002; Gilbert, Daffern, Talevski, & Ogloff, 2013). Accordingly, aggressive behavior results from an innate predisposition toward aggression combined with life experiences that prepare an individual to behave aggressively in different situations. This interaction leads to the acquisition of

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aggression-related cognitions that become established over time. These cognitions (referred to by the GAM as *knowledge structures*) represent prior learning about aggression, its attributes, and relations to other concepts (Gilbert & Daffern, 2010; Gilbert et al., 2013; Huesmann, 1998). A person's worldview and personality are influenced, and their responses to situations guided by, these structures. Cognitive processing factors, such as a tendency towards negative affect, may also influence the activation of the knowledge structures by reducing inhibitions towards aggressive behavior (Anderson & Bushman, 2002; Gilbert & Daffern, 2010). Other factors, such as psychiatric symptoms, may work in the same way.

### **Interpersonal style**

The Interpersonal Circle (IPC) is an empirically derived model that allows for the conceptualization, organization, and assessment of interpersonal behavior (Kiesler, 1996). The IPC structure is based on two underlying dimensions of human interaction: *Communion* and *Agency*. *Communion*, which ranges from friendliness to hostility, refers to connection with others, while *Agency*, ranging from submission to dominance, emphasises influence, control, or mastery over the self, other people and the environment (Horowitz et al., 2006; Kiesler, 1996). These dimensions are organized respectively on the horizontal and vertical axes of the IPC. In general, a person's interpersonal style can be conjectured as the balance between the dimensions of *Communion* and *Agency* (Edens, 2009).

To discriminate adaptive from maladaptive interpersonal functioning, interpersonal behavior can be quantified in four ways: moderation versus intensity (i.e. enacting behaviors in intense forms), flexibility versus rigidity (i.e. displaying a limited repertoire of interpersonal behaviors), stability versus oscillation (i.e. inconsistency in

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interpersonal behavior), and accuracy versus inaccuracy (i.e. the fit or match of behavior to a given situation; Pincus & Wright, 2011). Psychiatric inpatients with a HD interpersonal style rigidly approach interpersonal interactions with an intense hostile attitude and a need for dominance; they fail to adapt their behavior to the particular demands of the inpatient routine. When patients high in HD feel as though they are being forced into submission by staff members or other patients, they may respond with aggression as a means of restoring dominance (Daffern, Thomas et al., 2010). In line with the GAM, it is likely that HD is derived from a combination of aggression-related characteristics; including personality symptoms, cognitive and affective characteristics, and psychiatric symptoms. Reductions in HD, and therefore aggressive behavior, may be achieved by targeting these factors.

### **Hostile-Dominance and Psychopathy**

Influenced by a number of prominent theorists, including Cleckley (1941), Hare (1991) and McCord & McCord (1964), psychopathy is thought to comprise persistent behavioral deviancy accompanied by emotional-interpersonal detachment (Patrick, Fowles, & Krueger, 2009). Although the optimal factor structure of psychopathy is the subject of ongoing debate (e.g. Cooke, Michie, Hart, & Clark, 2004; Hare & Neumann, 2005; Patrick et al., 2009), two factors, Factor 1 (F1) and Factor 2 (F2), have traditionally been identified. F1 reflects the interpersonal and affective components of psychopathy, while F2 is related to traits and behaviors indicative of a socially deviant lifestyle (Blackburn, Logan, Donnelly, & Renwick, 2008). These factors comprise the Psychopathy Checklist-Revised (PCL-R; Hare, 1991), one of the most highly researched and recognised tools used to measure psychopathic traits.

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Research supports the association of F1 and F2 with HD (Blackburn, 2005; Harpur, Hart, & Hare, 2002), and also the relationship between psychopathy and aggressive behavior (for review see Hare, 1991). However, the construct of psychopathy is increasingly being thought of as encompassing distinct subtypes, including primary psychopathy, conceptualized as being underpinned by an inherited affective deficit, and secondary psychopathy, conceptualized as reflecting an acquired affective disturbance (Skeem, Johansson, Andershed, Kerr, & Louden, 2007; for review see Blackburn, 2009). A fourfold typology of psychopathy (Primary, Secondary, Controlled and Inhibited) has been developed, with each type distinguished on the basis of their interpersonal patterns (Skeem et al., 2007; Blackburn, 2009). HD is most prominently associated with primary psychopathy, which is characterized by both high hostility and impulsiveness and low social withdrawal (i.e. high social extraversion), while the other subtypes vary in their interpersonal composition. Examination of the relationship between HD and psychopathy in acutely unwell inpatients has not been undertaken. Given the interpersonal nature of psychopathy, it is important to determine whether symptoms of psychopathy are associated with HD in psychiatric inpatients, and whether such symptoms are associated with HD when other aggression-related characteristics are considered.

### **Hostile-Dominance and Cognitive and Affective Characteristics**

Several knowledge structures are highlighted by the GAM, including violent script rehearsal and attitudes towards violence (Anderson & Bushman, 2002; Gilbert et al., 2013). Violent scripts are established through observational learning and conditioning, and they represent how a person should interact with their environment. Once learned, they can be retrieved and used to guide behavior. Attitudes towards

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violence refer to a person's beliefs about the acceptability of aggressive acts, with more positive attitudes towards violence preparing individuals for aggressive behavior (Anderson & Bushman, 2002; Gilbert et al., 2013). Like HD, these GAM knowledge structures have been found to be associated with aggressive behavior in clinical samples (Gilbert et al., 2013).

Research has also identified a close relationship between high levels of anger and aggressive behavior in forensic (Cornell, Peterson, & Richards, 1999; Gilbert et al., 2013) and clinical (McNeil, Eisner, & Binder, 2003; Posternak & Zimmerman, 2002) populations. Anger is thought to influence aggressive behavior in several ways: anger (1) reduces inhibitions against acting aggressively, by providing justification and interfering with problem-solving; (2) maintains aggressive intentions over time; (3) informs a person about causes, culpability and possible ways of responding; and (4) activates aggression-supportive violent scripts and beliefs (Anderson & Bushman, 2002; Gilbert & Daffern, 2010).

There has been no research specifically examining how HD relates to the GAM knowledge structures or anger. Given the relationship between aggressive behavior and HD, it is likely that due to their hostile worldview and desire for interpersonal dominance, highly HD individuals adopt knowledge structures that prepare them to behave aggressively. Furthermore, HD individuals may be prone to perceiving a wide range of interactions as unwelcoming, threatening and intimidating, and to habitually interpreting this negative affect as anger. As such, HD may be comprised of cognitions and feelings that could be used as targets for cognitive-behavioral interventions aimed at reducing HD.

### **Hostile-Dominance and Mental Disorder and Illness**

Personality disorders and psychiatric symptoms are embedded within the context of interpersonal functioning (for review see Pincus & Wright, 2011). Research has found that personality disorders associated with aggression (i.e. antisocial, narcissistic and paranoid) have an interpersonal style that typically falls within the HD quadrant of the IPC (Blackburn, 1998; Pincus & Wiggins, 1990). Furthermore, extant research has typically found that higher levels of HD are associated with higher levels of psychiatric symptomatology, including paranoia (Daffern, Thomas et al., 2010; Podubinski, Daffern, & Lee, 2012). Given HD has been found to be relatively stable over time, while psychiatric symptoms abate, and higher levels of HD are associated with higher levels of psychiatric symptoms over time (Podubinski et al., 2012), it is possible that high HD increases the severity of psychiatric symptoms. The extent to which HD is associated with acute psychiatric symptoms, over personality symptoms and cognitive and affective characteristics, will help to determine the importance of symptom management in aggression management strategies that target HD.

### **Study Aim**

This study is part of a program of research investigating interpersonal HD and aggressive behavior. It aims to examine the extent to which aggression-related personality symptoms, cognitive and affective characteristics, and psychiatric symptoms are associated with HD. This study also aims to assess the ability of psychiatric symptoms to predict HD, after controlling for the influence of psychopathy (F1 and F2), and then trait anger, aggressive script rehearsal, and normative beliefs supporting aggression. It is hypothesized that HD will be positively associated with psychopathy (F1 and F2), trait anger, aggressive script rehearsal, normative beliefs supporting

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aggression, and psychiatric symptoms. Furthermore, it is hypothesized that psychiatric symptoms will account for a significant amount of variance in HD, over and above that accounted for by psychopathy (F1 and F2), and also trait anger, aggressive script rehearsal, and normative beliefs supporting aggression.

### **Method**

#### **Participants**

Participants were 200 patients admitted to two acute units at the Alfred Hospital Inpatient Psychiatry Department between the 12th of January 2012 and the 10th of October 2012. The sample included 132 men ( $M=38.12$  years,  $SD=11.14$  years) and 68 women ( $M=38.69$  years,  $SD=11.20$  years) with an age range of 19-64 years ( $M=38.32$  years,  $SD=11.13$  years). The average length of hospital stay for participants was approximately two weeks ( $M=14.59$  days,  $SD=15.96$  days).

The most common primary diagnosis (recorded on the day of the interview from the most recent case notes entered by the treating psychiatrist) was schizophrenia or another psychotic illness (55.5%), followed by unipolar depressive episode/disorder (11.5%), bipolar disorder or a manic episode (8.5%), borderline personality disorder (7.0%), alcohol or other substance induced disorders/related issues (6.5%), and acute stress reaction (4.5%). At the time of the interview, 4.0% participants had no diagnoses, and 2.5% had other diagnoses (e.g. anxiety, obsessive compulsive disorder, somatoform disorder, cluster “personality traits”). An audit of all patients admitted to the Alfred Psychiatry Inpatient Units was conducted in 2010 (see Lee et al., 2013 for details); the current sample can reasonably be considered representative of the Alfred Psychiatry inpatient population.

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### Setting

Alfred Psychiatry is the main provider of public mental health services to people living in the inner southeast suburbs of Melbourne, Australia. A hospital-based acute psychiatric response is provided to adult patients via two 28-bed wards. Each ward offers care in low-dependency (requiring less intensive observation) and high dependency (for patients at higher risk of harm to self or others) environments.

### Materials

The *Impact Message Inventory-Circumplex* (IMI-C; Kiesler & Schmidt, 2006) was used to assess participants' interpersonal style. The IMI-C is a 56-item observer rated inventory that works on the assumption that the interpersonal style of one person can be measured by assessing the covert response of another person after interactions with, or observations of, the person being rated. Four-point Likert scales are used to rate the extent to which each of the items accurately describes the impact that an individual produces in another during an interaction. IMI-C items are grouped into one of eight interpersonal style scales (Dominant, Hostile-Dominant, Hostile, Hostile-Submissive, Submissive, Friendly-Submissive, Friendly, and Friendly-Dominant), with the total score for each of the scales being the sum of the seven items on each scale. Internal consistency for the HD scale ranges from 0.69-0.96, with a median Cronbach alpha coefficient of 0.81 (Kiesler & Auerbach, 2004).

The *Psychopathy Checklist: Screening Version* (PCL:SV; Hart, Cox, & Hare, 1995) was used to assess symptoms of psychopathy. The PCL:SV is a 12-item rating scale based on, and highly correlated with, the Psychopathy Checklist- Revised (PCL-R; Hare, 1991). The PCL:SV is divided into two parts reflecting psychopathy F1 and F2 respectively. F1 comprises six items (Superficial, Grandiose, Deceitful, Lack of

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Remorse, Lack of Empathy, and Doesn't Accept Responsibility), with scores reflecting the interpersonal and affective symptoms of psychopathy. F2 also comprises six items (Impulsive, Poor Behavioral Controls, Lacks Goals, Irresponsible, Adolescent Antisocial Behavior, and Adult Antisocial Behavior), with scores revealing symptoms of social deviance related to psychopathy. Each of the items on the PCL:SV are rated on a three point Likert scale, according to the degree to which the personality and behavior of the individual being assessed matches the specified item description. Research presented in the PCL:SV manual suggests that it is a reliable and valid measure of psychopathy.

The *State-Trait Anger Expression Inventory-2* (STAXI-2; Spielberger, 1999) is a 57-item inventory used to measure the experience, expression, and control of anger. The STAXI-2 consists of three scales: State Anger, Trait Anger, and Anger Expression and Control. Previous studies have shown that trait anger is associated with a history of aggression (Gilbert et al., 2013). As such, in this study only the Trait Anger scale of the STAXI-2 (STAXI-2:TA) was used. The STAXI-2:TA assesses the extent to which individuals hold a disposition towards perceiving a wide range of situations as annoying or frustrating, and their tendency to respond with anger. The scale contains ten items that are rated on a four point Likert scale, where higher scores represent higher levels of trait anger. Good internal consistency for the scale is reported in both normal adults ( $\alpha = .84$  to  $.86$ ) and psychiatric patients ( $\alpha = .87$ ) (Spielberger, 1999).

The *Schedule of Imagined Violence* (SIV; Grisso, Davis, Vesselinov, Appelbaum, & Monahan, 2000) was used to assess the tendency to rehearse aggressive scripts. The SIV is a semi-structured interview that screens for aggressive scripts through participants' self-reported responses to eight criteria (presence, recency, frequency,

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chronicity, similarity/diversity in type of harm, target, change in seriousness of harm, and proximity to target). For this study the initial question, “Do you ever have daydreams or thoughts about physically hurting or injuring other people?” was removed, and replaced with the ‘frequency’ item, “How often do you have thoughts about hurting or injuring other people?” Participants who responded “never” to this item were not administered any further items.

The *Measures of Criminal Attitudes and Associates* (MCAA; Mills & Kroner, 2001) is a two-part self-report measure of criminal attitudes and associates. Part A is a quantified self-report measure of criminal associations and Part B is a 46-item assessment of attitudes consisting of four subscales: Attitudes Towards Violence, Sense of Entitlement, Criminal Intent, and Attitudes Towards Criminal Associates. For the purposes of this study, only the Attitudes Towards Violence scale (MCAA:ATV) was used. The MCAA:ATV contains 12 items measuring normative beliefs supportive of aggression (e.g., “It’s all right to fight someone if they stole from you” and “It’s understandable to hit someone who insults you”), and respondents indicate whether they ‘agree’ or ‘disagree’ with each item. The MCAA:ATV demonstrates good internal consistency ( $\alpha = .80$ ) and test-retest reliability (intraclass correlation =  $.73$ ) (Mills, Kroner, & Forth, 2002), and is associated with a lifetime history of violence (Gilbert et al., 2013).

The *Positive and Negative Syndrome Scale* (PANSS; Kay, Fiszbein, & Opler, 1987) was used to assess current psychiatric symptomatology. The PANSS is a psychometrically sound 30-item rating instrument evaluating the presence or absence, and severity, of symptoms of schizophrenia. Normally, PANSS items are grouped into three subscales (Positive Symptoms, Negative Symptoms, and General

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Psychopathology), however recent literature suggests there are five subscales (Kelly, White, Compton, & Harvey, 2013). Accordingly, for the purpose of this study, PANSS items were grouped into five subscales (Positive, Negative Disorganized, Excited, and Emotional Distress).

### **Procedure**

This research received ethical approval from the Monash University and Alfred Hospital Human Research Ethics Committees.

Patients in the Alfred Inpatient Psychiatry Low Dependency Unit (LDU) and High Dependency Unit (HDU) deemed well enough to give informed consent by their treating doctor were approached within five days of their admission to LDU. The purpose and nature of the study was explained and patients who expressed an interest in the study were given an information sheet and, if willing to participate, they signed a consent form. One researcher with experience and training in the administration of all measures recruited all participants and administered all measures.

Consenting patients participated in a semi-structured interview incorporating the PANSS, STAXI-2:TA, MCAA:ATV, and SIV. At the end of the interview, participants were offered AUD \$20 as compensation for their time and effort. Following the interview, basic demographic data (sex, age, date of birth, diagnosis, and date of admission) was collected; the PCL:SV and IMI-C were completed. The PCL:SV was completed based on a review of each patients' medical file and on the information collected during the semi-structured interview.

### **Data Analysis**

Raw data consisted of total scores for the HD subscale of the IMI-C, PCL:SV F1 and F2 scores, total scores for the STAXI-2:TA, answers to the 'frequency' item on the

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SIV, total scores for the MCAA:ATV, and the total scores for the five PANSS subscales (Positive, Negative, Disorganized, Excited, and Emotional Distress). The SIV frequency items were treated as an ordinal scale with 0=Never and 7=Several Times a Day.

The hypotheses were addressed using descriptive statistics, and univariate and multivariate parametric tests. Pearson's correlations were conducted to determine if a relationship existed between IMI-C HD scores and PCL:SV F1 and F2 scores, STAXI-2:TA total scores, SIV ordinal score, MCAA:ATV total scores, and the total scores for PANSS Positive, Negative, Disorganized, Excited, and Emotional Distress. Hierarchical multiple regression was then conducted to examine the extent to which PANSS Positive, Negative, Disorganized, Excited, and Emotional Distress predicted IMI-C HD, after first controlling for PCL:SV F1 and F2 scores, and then STAXI-2:TA total scores, SIV ordinal score, and MCAA:ATV total scores.

### Results

Prior to analysis, all data was examined for accuracy, missing values, and outliers. A random check of 50 participants' entered data showed data entry to be accurate. There were no missing values. Six univariate outliers were identified, as indicated by z-scores greater than 3.29. Two outliers were identified on the PCL:SV F1, two on the PCL:SV F2, one on the STAXI-2:TA, and one on the PANSS Negative subscale. Given the large sample size, the decision was made to retain these participants in the analysis.

Means and standard deviations for IMI-C HD, PCL:SV F1 and F2, STAXI-2:TA, MCAA:ATV, and PANSS Positive, Negative, Disorganized, Excited, and Emotional Distress are displayed in Table 1, along with the relevant total possible scores for each scale.

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Insert Table 1 about here

With regard to the SIV frequency item, “How often do you have thoughts about hurting or injuring other people?”, 90 (45.0%) participants responded “never”, 39 (19.5%) “once every few years”, 22 (11.0%) “several times a year”, 10 (5.0%) “several times a month (less than once a week)”, 8 (4.0%) “once a week”, 12 (6.0%) “several times a week”, 7 (3.5%) “once a day”, and 12 (6%) “several times a day”.

Results of the Two-tailed Pearson correlation analyses are presented in Table 2. All scales were significantly correlated with IMI-C HD except for the PANSS Negative and PANSS Emotional Distress subscales.

Insert Table 2 about here

Prior to conducting the hierarchical multiple regression, six cases were identified as multivariate outliers, as indicated by Mahalanobis distance values greater than 29.59. Examination of the standardized residuals showed that 95% of cases had values within  $\pm 1.96$ , 98.5% of cases had values within  $\pm 2.58$ , 99.5% of cases had values within  $\pm 3.29$ . All values for Cook’s distance and DFBeta for the constant were less than 1, suggesting no influential cases. To further check whether any cases were having an undue influence on the hierarchical multiple regression, the analysis was first conducted with the full sample ( $n=200$ ), and then conducted again with three cases with standardized residuals greater than 3 and 6 cases with Mahalanobis distance values greater than 29.59 removed ( $n=191$ ). The removal of these cases had a negligible effect

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on  $R^2$  and the coefficients. As such, it was decided to retain the full sample for the analysis.

Preliminary analyses were conducted to ensure no violation of the assumptions of multicollinearity, linearity, normally distributed residuals, and homoscedasticity. No Tolerance value was less than .1 and no VIF value was greater than 10, indicating no multicollinearity issues. Examination of residual plots and partial regression plots indicated that the assumptions of linearity, normally distributed residuals, and homoscedasticity were all satisfied.

The unstandardised Beta coefficients, standard errors, and Beta values are displayed in Table 3.

Insert Table 3 about here

PCL:SV F1 and F2 scores were entered at Step 1, explaining 50.70% of the variance in IMI-C HD,  $F(2,197) = 101.29, p < .001$ . The addition of STAXI-2:TA total scores, SIV ordinal score, and MCAA:ATV total scores in Step 2 significantly increased the explanation of variance in IMI-C HD,  $R^2$  change = .05,  $F$  change (3,194) = 7.18,  $p < .001$ , with total variance explained 55.6%. The further addition in Step 3 of the PANSS Positive, Negative, Disorganized, Excited, and Emotional Distress subscales again significantly increased the explanation of variance in IMI-C HD,  $R^2$  change = .16,  $F$  Change (5,189) = 20.70,  $p < .001$ . The final model explained 71.30% (adjusted  $R^2 = .70$ ) of the variance in IMI-C HD,  $F(10,189) = 47.01, p < .001$ .

In the final model, PCL:SV F1 and F2, SIV, and PANSS Positive, Negative, Disorganized, and Excited were statistically significant, with PANSS Excited recording

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the highest Beta value (beta = 0.41,  $p < .001$ ), followed by PCL:SV F1 (beta = 0.30,  $p < .001$ ). All of the significant multivariate predictors were positively associated with IMI-C HD.

### Discussion

This study hypothesized that HD would be positively associated with psychopathy (F1 and F2), trait anger, aggressive script rehearsal, normative beliefs supporting aggression, and psychiatric symptoms. Further, it was hypothesized that psychiatric symptoms would account for a significant amount of variance in HD, over and above that accounted for by other personality, cognitive, and affective variables. The results partially supported the hypotheses; psychopathy (F1 and F2), the tendency to rehearse aggressive scripts, and psychiatric symptomatology (PANSS Positive, Negative, Disorganized, and Excited subscales) all predicted HD. Trait anger, positive attitudes towards violence, and PANSS Emotional Distress were not predictive of HD. PANSS Excited was most strongly associated with HD, followed by psychopathy (F1). Overall, the final model explained 71.30% of the variance in HD, suggesting that HD is highly explained by the combination of psychopathy (F1 and F2), the tendency to rehearse aggressive scripts, and acute psychiatric symptomatology.

These results suggest that HD is characterized by psychopathic personality features (particularly interpersonal and affective features), more frequent rehearsal of aggressive scripts, and positive (e.g. delusions, hallucinations, and suspiciousness/persecution), negative (e.g. blunted affect, emotional withdrawal, and disturbance of volition), disorganized (e.g. conceptual disorganization, stereotyped thinking, and poor attention), and excited (e.g. excitement, hostility, and poor impulse control) psychiatric symptoms. This extends extant literature that has revealed

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relationships between HD and psychiatric symptoms (Daffern, Thomas et al., 2010) and psychopathy (Blackburn, 2005; Harpur et al., 2002). Given the relationship between HD and primary psychopathy (characterized by high hostility, impulsiveness, and extraversion) (Skeem et al., 2007; Blackburn, 2009), it is not surprising that the strongest predictor of HD was PANSS Excited, as patients who presented as hostile, impulsive, and extraverted would have scored high on this PANSS subscale. Further research is needed to determine the stability of PANSS Excited scale scores over time; this is important for the study of HD since the PANSS Excited scale items are rated on observed behavior and individuals high in HD may score highly on PANSS Excited irrespective of mental illness.

It is noteworthy that anger and positive attitudes towards violence were not predictive of HD. Although individuals high in HD may show verbal and nonverbal expressions of anger and resentment (as measured through the PANSS Excited item, hostility), they do not appear to be high in trait anger. Further, holding beliefs that are supportive of aggression does not appear to be a distinguishing feature of HD. These results suggest that individuals who are high in interpersonal HD may not generally view aggression as reasonable and they may not be characteristically angry; however, when their social dominance is threatened they may view others as hostile, and they may become angry and prepared to use aggression.

### **Clinical Implications**

These findings suggest that HD reflects characteristic interpersonal and affective difficulties that are common to psychopathy, combined with a tendency to rehearse aggressive scripts. High HD is also associated with increased psychiatric symptoms. With regard to aggressive behavior, these characteristic interpersonal and affective

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difficulties might prime a person to evaluate the demands of inpatient treatment as hostile. In turn, this may result in a drive to seek dominance to prevent harm. In this context, aggressive behavior may be guided by the tendency to rehearse behavioral scripts that emphasize aggression. Furthermore, acute psychiatric symptomatology may influence aggression by reducing inhibitions towards aggressive acts.

Given the above, reductions in HD, and therefore inpatient aggression, may be achieved by targeting a range of factors. Interpersonal Therapy may be appropriate for targeting the interpersonal and affective characteristics of HD. The use of Cognitive Behavioral Therapy may be useful for developing emotional and behavioral regulation (particularly with regard to excitement, hostility, uncooperativeness and impulse control), targeting aggressive scripts, and reinforcing more appropriate scripts and pro-social attitudes. The results also highlight that symptom management should continue to form part of any aggression reduction strategy, since a reduction in psychiatric symptoms may result in reduced HD.

### **Limitations and Future Research**

The results and interpretation of the findings presented here should be considered in light of the low rate of psychopathy in the patient sample studied. The mean total score on the PCL:SV was only 1.74 (SD = 2.27) out of a possible 24. Even the maximum score (15) was below the suggested diagnostic cutoff (>18; Hart et al., 1995). Thus, these results may not generalize to patients higher in psychopathy. In addition, although the final model explained 71.30% of the variance in HD, there is still additional variance that needs to be explained. As HD is critical to a good understanding of psychiatric inpatient aggression, it is essential that future research elucidate additional variance, so as to increase the specificity of HD as a target for aggression

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reduction strategies. Future research might also explore relationships between subtypes of psychopathy to determine how HD relates to Primary, Secondary, Controlled, and Inhibited types, and how the rehearsal of aggressive scripts and psychiatric symptoms contribute to explanations of HD in these psychopathy subsamples. Finally, future research will need to examine the relative contribution of all of the variables studied here to inpatient aggression. This is the subject of the authors' ongoing work.

### **Conclusion**

This study showed that psychopathy (F1 and F2), the tendency to rehearse aggressive scripts, and psychiatric symptomatology (PANSS Positive, Negative, Disorganized, and Excited) predicted HD. This suggests that HD reflects a predisposition towards interpersonal and affective difficulties, combined with a tendency towards more frequent rehearsal of aggressive scripts. High HD is also related to more severe psychiatric symptoms; the inter-relationship between psychiatric symptoms and HD requires elaboration. It is proposed that HD is related to inpatient aggressive behavior due to a predisposition towards evaluating the demands of inpatient treatment as hostile. Patients with high HD seek dominance to protect against perceived threats. In this context the frequent rehearsal of aggressive scripts, along with acute symptomatology, may heighten the risk of aggression. Given these findings, it is likely that reductions in HD may be achieved through a broad intervention targeting interpersonal and affective problems, emotional and behavioral dysregulation, aggressive scripts, and psychiatric symptoms.

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Table 1

Mean (*SD*) participant scores, and total possible scores, for IMI-C HD, PCL:SV F1 and F2, STAXI-2:TA, MCAA:ATV, and PANSS Positive, Negative, Disorganized, Excited, and Emotional Distress.

	Mean ( <i>SD</i> ) ( <i>n</i> =200)	Total Possible Score
IMI-C Hostile-Dominant	10.09 (3.37)	28
PCL:SV F1	0.61 (1.05)	12
PCL:SV F2	1.13 (1.53)	12
STAXI-2:TA Total Score	18.15 (6.28)	40
MCAA:ATV Total Score	2.75 (2.84)	12
PANSS Positive	12.58 (5.77)	35
PANSS Negative	14.24 (5.59)	56
PANSS Disorganized	14.92 (4.81)	56
PANSS Excited	5.65 (2.35)	28
PANSS Emotional Distress	14.96 (5.08)	35

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Table 2

Pearson correlation coefficients between IMI-C HD, PCL:SV F1 and F2, STAXI-2:TA, SIV, MCAA:ATV, and PANSS Positive, Negative, Disorganized, Excited, and Emotional Distress ( $n=200$ ).

	1	2	3	4	5	6	7	8	9	10	11
1. IMI-C HD	-	.65**	.59**	.31**	.37**	.30**	.41**	.06	.39**	.69**	-.11
2. PCL:SV F1		-	.53**	.09	.08	.17*	.19**	.06	.32**	.52**	-.23**
3. PCL:SV F2			-	.42**	.42**	.44**	.32**	.02	.26**	.43**	-.10
4. STAXI-2:TA				-	.53**	.53**	.16*	-.08	.01	.29**	.20**
5. SIV					-	.45**	.36**	-.03	.04	.23**	.21**
6. MCAA:ATV						-	.33**	.11	.20**	.25**	.03
7. PANSS Positive							-	-.09	.42**	.22**	-.04
8. PANSS Negative								-	.12	-.13	.10
9. PANSS Disorganized									-	.21**	-.36**
10. PANSS Excited										-	-.10
11. PANSS Emotional Distress											-

Correlation significant at:

\*  $p < .05$

\*\*  $p < .01$

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Table 3

Unstandardised Coefficient (B), Standard Error of B (SE B), and Standardised Coefficient Values ( $\beta$ ).

	B	SE B	$\beta$
Step 1			
Constant	8.32	.21	
PCL:SV F1	1.50	.19	.47*
PCL:SV F2	.76	.13	.34*
Step 2			
Constant	7.35	.53	
PCL:SV F1	1.67	.19	.52*
PCL:SV F2	.44	.15	.20*
STAXI-2:TA Total Score	.04	.03	.07
SIV Ordinal Score	.33	.09	.21*
MCAA:ATV Total Score	-.01	.07	-.01
Step 3			
Constant	1.81	.92	
PCL:SV F1	.95	.17	.30*
PCL:SV F2	.28	.12	.13*
STAXI-2:TA Total Score	.04	.03	.07
SIV Ordinal Score	.24	.08	.15*
MCAA:ATV Total Score	-.11	.06	-.10
PANSS Positive	.08	.03	.14*
PANSS Negative	.07	.03	.11*
PANSS Disorganized	.09	.03	.12*
PANSS Excited	.59	.07	.41*
PANSS Emotional Distress	.004	.03	.01

\* p < .05

**AN EXAMINATION OF THE STABILITY OF INTERPERSONAL  
HOSTILE-DOMINANCE AND ITS RELATIONSHIP WITH  
PSYCHIATRIC SYMPTOMATOLOGY AND POST-DISCHARGE  
AGGRESSION**

## **Preamble**

Research shows that interpersonal hostile-dominance (HD) in psychiatric patients is a relatively stable characteristic that does not fluctuate with changes in psychiatric symptomatology. Thus, given HD has repeatedly been shown to be associated with aggressive behaviour in secure psychiatric settings, it is likely that HD is implicated in aggression occurring in the community post-discharge. However, no research has explored this proposition. An understanding of this relationship will be important for initial treatment and discharge planning; inpatient and post-discharge interventions specifically tailored for highly HD individuals may lead to improvements in pro-social behaviour following discharge. Reductions in HD may also lead to improvements in psychopathology, as symptom severity may be associated with extent of interpersonal HD.

Against this background, Chapter Six presents data to address the third research aim: to examine the stability of HD and its relationship with psychiatric symptoms and aggression over time.

This paper has been submitted to a peer-reviewed journal.

## Monash University

### Declaration for Thesis Chapter Six

#### Declaration by Candidate

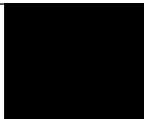
In the case of Chapter Six, the nature and extent of my contribution to the work was the following:

<b>Nature of contribution</b>	<b>Extent of contribution</b>
Reviewed literature; study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper	75%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

<b>Name</b>	<b>Nature of contribution</b>	<b>Extent of contribution (%) for student co-authors only</b>
Professor Michael Daffern	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Stuart Lee	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Yitzchak Hollander	Study design; review and editing of drafts	-

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work\*.

<b>Candidate's Signature</b>		Date: 15 Aug 2014
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<b>Main Supervisor's Signature</b>		Date: 15 Aug 2014
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\*Note: Where the responsible author is not the candidate's main supervisor, the main supervisor should consult with the responsible author to agree on the respective contributions of the authors.

An Examination of the Stability of Interpersonal Hostile-Dominance and its  
Relationship with Psychiatric Symptomatology and Post-Discharge Aggression

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### Abstract

*Objective:* The relevance of interpersonal hostile-dominance (HD) to post-discharge aggression is unclear. This study assessed whether: (1) HD is stable over time despite changes in psychiatric symptomatology, (2) the relationship between HD and psychiatric symptomatology is consistent over time, and (3) HD is related to aggression post-discharge.

*Method:* Two hundred psychiatric inpatients were recruited; 41 were available for follow-up at six months post-hospital discharge, including 29 men and 12 women, with an age range of 19-63 (M=39.63 years, SD=12.69 years). At recruitment and follow-up the psychiatric symptomatology and interpersonal style of each patient was assessed using the Positive and Negative Syndrome Scale and the Impact Message Inventory-Circumplex. Aggression in the community post-discharge was measured at follow-up using the Life History of Aggression (Aggression subscale).

*Results:* Results showed that: (1) HD was stable over time despite an overall reduction in psychiatric symptoms, (2) at both time points, HD was positively correlated with symptom severity, and (3) higher HD, excited symptoms, and positive symptoms in the community, and more severe positive symptoms in the hospital, were associated with aggressive behaviour post-discharge.

*Conclusions:* The results suggest that HD is a risk factor for more severe psychopathology. Furthermore, HD, positive symptoms, and excited symptoms in the community act as risk factors for aggressive behaviour post-discharge. As such, treatment planning and risk assessment should consider HD.

*Key words:* Aggression, psychiatric symptoms, interpersonal style

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### An Examination of the Stability of Interpersonal Hostile-Dominance and its Relationship with Psychiatric Symptomatology and Post-Discharge Aggression

Assessing the potential for aggressive behaviour is a critical component of discharge planning in psychiatric hospitals (Amore et al., 2013). Post-discharge aggression is associated with a range of factors (Steadman et al., 1998) including active positive psychotic symptomatology (Swanson et al., 2006), personality disorder (Doyle et al., 2012), substance abuse (Swanson et al., 2006; Witt et al., 2013), anger (Doyle et al., 2012), and treatment non-adherence (Witt et al., 2013). Interpersonal style, which describes how individuals typically communicate with, and perceive themselves in relation to others, has received increased attention in studies of psychiatric inpatient aggressive behaviour. This is due to repeated demonstrations that interpersonal hostile-dominance (HD) is associated with aggressive behaviour in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). However, the relevance of HD to aggression post-discharge is unclear.

#### **Interpersonal Hostile-Dominance and Aggression**

The Interpersonal Circle (IPC) is a model that has been used to organise interpersonal behaviour along two orthogonal dimensions relating to two basic human motives: *Communion* and *Agency*. Communion, which ranges from friendliness to hostility, refers to connection with others, while Agency, ranging from submission to dominance, emphasises influence, control, or mastery over the self, other people and the environment (Horowitz et al., 2006; Kiesler, 1996). These dimensions are organised respectively on the horizontal and vertical axes of the IPC. In general, a person's interpersonal style can be considered as the balance between the dimensions of

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*Communion* and *Agency* (Edens, 2009). Highly HD individuals are low on *Communion* and high on *Agency*; they rigidly approach interpersonal interactions in a domineering manner with a hostile attitude, failing to adapt their behaviour to situational demands.

The demanding nature of psychiatric hospitals may be implicated in the association between HD and aggression. Patients with elevated levels of HD likely approach multiple interpersonal situations with the view that the world is an unreceptive and unfriendly place, and try to dominate interpersonal situations to protect self-interests. Their rigid and intense enactment of hostile and dominant interpersonal behaviours may render them unable to adapt their behaviour to the particular demands of the inpatient routine (i.e. adhere with routine or prescribed treatment). When demands are made of patients with a hostile and dominant interpersonal style they may feel as though they are being forced into submission, which may in turn be viewed as threatening. In patients whose need for dominance is persistent, aggression may be enacted to restore control and protect oneself (Daffern, Thomas et al., 2010).

For aggression occurring in the community post-discharge, HD may also be relevant; although the environments differ, demands on patients continue. The inpatient environment is characterised by rules, treatment regimens, and restrictive practices (Alexander & Bowers, 2004). Community settings are less restrictive, however, patients may still be subject to coercive treatment (e.g. adherence with medication, having to attend meetings with mental health professionals). Interpersonal and social demands (e.g. family and employment) may also be pronounced.

### **Interpersonal Style and Mental Disorder**

Research has found that the personality disorders associated with aggression (i.e. antisocial, narcissistic and paranoid) have an interpersonal style that typically falls

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within the HD quadrant of the IPC (Blackburn, 1998; Pincus & Wiggins, 1990). With regard to mental illness, extant research has typically found that higher levels of HD are associated with higher levels of psychiatric symptomatology, including paranoia (Daffern, Thomas et al., 2010; Podubinski et al., 2012).

### **The Stability of Hostile-Dominance and Psychiatric Symptoms**

In a recent study of the stability of HD in psychiatric patients, Podubinski et al. (2012) found that HD was relatively stable over time, despite abating symptoms of paranoia; higher HD was associated with increased paranoia at both admission to a mental health unit and at 12-month follow-up. However, the study of Podubinski et al. (2012) was limited in two ways: (1) no measure of aggression in the community was used so the role of HD in aggression following discharge could not be determined, and (2) the instruments used to measure paranoia and interpersonal style (the Brief Psychiatric Rating Scale-18 [BPRS-18; Overall & Gorham, 1962] and the Impact Message Inventory-Circumplex [IMI-C; Kiesler & Schmidt, 2006]) suffer conceptual overlap. The BPRS-18 Paranoid Disturbance scale includes the item 'hostility', which is rated on the basis of observed hostile behaviour. This may reflect a personality characteristic rather than a symptom of mental illness. Thus, this field may be advanced by including a measure of aggression in the community, and by using an alternate measure of psychiatric symptoms.

### **Study Aims and Hypotheses**

This paper extends Podubinski et al. (2012) by assessing whether (1) HD is stable over time despite changes in psychiatric symptomatology; (2) the relationship between HD and positive, negative, disorganised, and excited symptoms is consistent over time; and (3) HD is related to aggression post-discharge. It is hypothesised that (1)

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HD will remain stable over time despite changes in symptomatology; (2) higher levels of HD will be associated with higher levels of positive, negative, disorganised, and excited symptoms over time; and (3) HD in the community will be associated with post-discharge aggression.

### Method

#### Participants

Participants were drawn from a pool of 200 inpatients recruited following admission to the two acute units at the Alfred Hospital Inpatient Psychiatry Department, Melbourne, Australia, between the 12th of January 2012 and the 10th of October 2012. Forty-one participants (20.5%) were available to take part in a 6-month follow-up study, with 126 not able to be followed-up due to not having current contact information or not answering phone calls, nine not consenting to follow-up contact when initially interviewed, three being too unwell to participate, and 21 refusing consent. Participants therefore included 29 men and 12 women, with an age range of 19-63 years ( $M=39.63$  years,  $SD=12.69$  years). For the 41 participants the average length of initial hospital stay was 14.44 days ( $SD=17.50$  days); the mean length of time between baseline interview and follow-up was 192.44 days ( $SD=64.30$ ). Thirty-one participants were living in the community at the time of follow-up, while 10 were inpatients at the Alfred Hospital Inpatient Psychiatry Department.

For the 41 participants who completed follow-up assessments, the most common primary diagnosis at the time of the initial interview was schizophrenia or another psychotic illness (61%), followed by unipolar depressive episode/disorder (9.8%), bipolar disorder or a manic episode (7.3%), borderline personality disorder (7.3%), and

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alcohol or other substance induced disorders/related issues (4.9%); 7.3% had no diagnosis, and 2.4% had other diagnoses.

### **Setting**

Alfred Psychiatry is the main provider of public mental health services to people living in the inner southeast suburbs of Melbourne. A hospital-based acute psychiatric response is provided to adult patients via two 28-bed units. Each unit offers care in low-dependency (requiring less intensive observation) and high dependency (for patients at higher risk of harm to self or others) environments.

### **Materials**

The *Impact Message Inventory-Circumplex* (IMI-C; Kiesler & Schmidt, 2006) was used to assess participants' interpersonal style. The IMI-C is a 56-item observer rated inventory that works on the assumption that the interpersonal style of one person can be measured by assessing the covert response of another person after interactions with, or observations of, the person being rated. Four-point Likert scales are used to rate the extent to which each of the items accurately describes the impact that an individual produces in another during an interaction. IMI-C items are grouped into one of eight interpersonal style scales (Dominant, Hostile-Dominant, Hostile, Hostile-Submissive, Submissive, Friendly-Submissive, Friendly, Friendly-Dominant) with the total score for each of the scales being the sum of the seven items on each scale. As HD is reliably associated with aggression it was the only scale used for this study. Internal consistency for the HD scale ranges from 0.69-0.96, with a median Cronbach alpha coefficient of 0.81 (Kiesler & Auerbach, 2004).

The *Positive and Negative Syndrome Scale* (PANSS; Kay et al., 1987) was used to assess current psychiatric symptomatology. The PANSS is a psychometrically sound

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30-item rating instrument that evaluates the presence or absence and severity of positive and negative symptoms of schizophrenia, as well as general psychopathology. The PANSS total, as well as its subscales serve as measurement of a patient's current symptom status. Symptoms are assessed in relation to an item descriptor, with severity ratings ranging from 1 (*absent*) to 7 (*extreme*). For the purpose of the current research, PANSS items were grouped into five subscales (Negative, Positive, Disorganised, Excited, and Emotional Distress), in accordance with Kelley et al. (2013). The Emotional Distress subscale was not used as research has found that this subscale is not associated with HD (Podubinski et al., in press).

The *Life History of Aggression Questionnaire* (LHA; Coccaro et al., 1997) was used to measure post-discharge aggression. The LHA is a semi-structured interview that assesses the total number of aggressive, anti-social, and self-aggressive acts engaged in since adolescence. The LHA consists of three subscales (Aggression, Consequences/Anti-Social Behaviour, and Self-Directed Aggression). For the purpose of this study, only the Aggression (LHA:A) subscale was used. Furthermore, only aggression in the six months prior to follow-up and only aggression occurring in the community was considered. The aggression subscale quantifies overt aggressive behaviour and is made up of five questions measuring verbal aggression, indirect aggression, non-specific fighting, physical assault, and temper tantrums. Answers to each question are scored on a six point Likert scale, with 0 = zero events, 1 = one event, 2 = two or three events, 3 = four to nine events, 4 = ten or more events and 5 = more events than can be counted. For the purpose of this study, 50 events or more was also scored as a 5. The LHA:A has demonstrated internal consistency with a Cronbach's alpha coefficient of 0.87 (Coccaro et al., 1997).

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### **Procedure**

This research received ethical approval from the Monash University Human Research Ethics Committee and the Alfred Human Research Ethics committee. One researcher with experience and training in the administration of all measures recruited all participants and administered all measures.

This study was conducted in two phases, initial assessment and follow-up. During the initial assessment phase, patients in the Alfred Inpatient Psychiatry, Low Dependency Unit (LDU) and High Dependency Unit (HDU) deemed well enough to give informed consent by their treating doctor were approached within five days of their admission to LDU. The purpose and nature of the study was explained and patients who expressed an interest in the study were given an information sheet and, if willing to participate, they signed a consent form. Participants were also informed regarding the follow-up assessment and asked whether they would be amenable to being contacted about the follow-up in the future. Participants who expressed an interest in this were asked to provide contact details.

Consenting patients completed a semi-structured interview incorporating the PANSS. At the end of the interview, participants were offered AUD \$20 as compensation for their time and effort. Following the interview, basic demographic data (sex, age, date of birth, diagnosis and date of admission) was collected from participants' case files and the IMI-C was completed based on the researcher's impressions during the semi-structured interview.

The follow-up assessments were conducted approximately six months after the initial assessment. All individuals who expressed an interest in taking part attended the Alfred Hospital in order to be given a detailed explanation of the purpose and nature of

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the follow-up interview; if willing to participate, they signed a consent form.

Consenting individuals participated in a semi-structured interview incorporating the PANSS and the LHA:A. At the end of the interview participants were offered AUD \$20 as compensation for their time and effort. Following the interview, the IMI-C was completed based on the researcher's impressions during the semi-structured interview.

### **Data Analysis**

Raw data consisted of total scores for IMI-C HD and PANSS Positive, Negative, Disorganised, and Excited at initial assessment and follow-up, and total scores for LHA:A at follow-up. The hypotheses were addressed using descriptive statistics, and univariate parametric tests. Bivariate Pearson correlation analysis were used to determine the relationships between IMI-C HD and PANSS Positive, Negative, Disorganised, and Excited subscales at both initial assessment and follow-up, and the relationships between IMI-C HD at initial assessment and follow-up and LHA:A at follow-up. At the six-month follow-up 10 participants had been re-admitted to one of the hospital's acute units. As such, Two-Way Mixed-Model Analysis of Variance (ANOVA; Time [initial assessment vs. follow-up] x Location of Follow-Up [community or hospital]) were used to determine the stability of IMI-C HD and PANSS Positive, Negative, Disorganised, and Excited, and to explore whether the location of follow-up had an impact on the assessment of the stability of HD over time and psychiatric symptomatology. The significance threshold was set at  $\alpha = .05$ .

### **Results**

All data was examined for accuracy, missing values, and outliers. A random check of 10 participants' entered data showed data entry to be accurate. There were no missing values. One participant was identified as having a univariate outlier response on

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the PANSS Excited subscale at follow-up, as suggested by a z-score  $>3.29$ . No participants were identified as having multivariate outlier responses, as suggested by no Mahalanobis distance values of  $>31.26$ . No Cook's distance exceeded 1.0, suggesting no influential cases. As such, the decision was made to retain the one identified outlier.

Means and standard deviations for IMI-C HD at initial assessment and follow-up, PANSS Positive, Negative, Disorganised, and Excited at initial assessment and follow-up, and LHA:A score at follow-up are displayed in Table 1.

Insert Table 1 about here

Prior to conducting the primary analyses, patients who completed the follow-up interview ( $n=41$ ) and patients who did not complete the follow-up interview ( $n=159$ ) were compared with regard to demographic variables and HD at initial assessment. Neither sex (followed up group % males = 70.7%, not followed up group % males = 64.8%,  $p = .48$ ), age (followed up group mean [ $SD$ ] = 39.63 [12.69], not followed up group mean [ $SD$ ] = 37.97 [10.71],  $p = .45$ ), length of stay (followed up group mean [ $SD$ ] = 14.44 [17.50], not followed up group mean [ $SD$ ] = 14.62 [15.60],  $p = .95$ ), days assessed after LDU admission (followed up group mean [ $SD$ ] = 2.49 [1.34], not followed up group mean [ $SD$ ] = 2.79 [1.42],  $p = .22$ ), or HD at initial assessment (followed up group mean [ $SD$ ] = 10.32 [3.31], not followed up group mean [ $SD$ ] = 10.03 [3.39],  $p = .62$ ) differed between groups.

A Shapiro-Wilk test showed that the data was normally distributed for the PANSS Positive subscale at initial assessment. IMI-C HD at initial assessment and follow-up, PANSS Positive at follow-up, PANSS Negative, Disorganised, and Excited at initial

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assessment and follow-up, and LHA:A score at follow-up were all positively skewed, as suggested by the Shapiro-Wilk test and the Normal Q-Q Plots. However, due to the robustness of Analysis of Variance (ANOVA) to violations of normality, this was deemed acceptable. Levene's test showed that the error variances for IMI-C HD at initial assessment, and PANSS Positive, Negative, Disorganised, and Excited at initial assessment and follow-up, were equal, however, the error variances for IMI-C HD at follow-up were not,  $F(1,39) = 10.12, p = .003$ . As a result, the assumption of homogeneity of variance was violated for IMI-C HD at follow-up and caution should be used when interpreting the results due to the possibility of an increased Type 1 error rate. Box's M test for equality of covariance matrices indicated that for each of the levels of the between-subjects variable, the pattern of inter-correlations among the levels of the within-subjects variable were the same.

For IMI-C HD, the two-way ANOVA found that there was no Time Point x Location of Follow-Up interaction,  $F(1,39) = .02, p = .89, \text{partial } \eta^2 = .001$ . There was also no main effect for time,  $F(1,39) = 1.91, p = .18, \text{partial } \eta^2 = .05$ , or main effect of location of follow-up,  $F(1,39) = 2.56, p = .12, \text{partial } \eta^2 = .06$ .

For PANSS Positive, the two-way ANOVA found that there was no Time Point x Location of Follow-Up interaction,  $F(1,39) = 0.40, p = .53, \text{partial } \eta^2 = .01$ , and no significant main effect for location of follow-up,  $F(1,39) = 3.13, p = .09, \text{partial } \eta^2 = .07$ . In contrast there was a large main effect for time,  $F(1,39) = 15.69, p < .001, \text{partial } \eta^2 = .29$ , with both groups showing a reduction in PANSS Positive score from initial assessment to follow-up.

For PANSS Negative, the two-way ANOVA found that there was no Time Point x Location of Follow-Up interaction,  $F(1,39) = 0.40, p = .53, \text{partial } \eta^2 = .01$ . There was a

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moderate significant main effect for time  $F(1, 39) = 5.31, p = .03$ , partial  $\eta^2 = .12$ , with both groups showing a reduction in PANSS Negative score from initial assessment to follow-up. There was also a moderate significant main effect for location of follow-up,  $F(1, 39) = 4.26, p = .046$ , partial  $\eta^2 = .10$ , with fewer symptoms at both time points for participants in the community at follow-up.

For PANSS Disorganised, the two-way ANOVA found that there was a moderate and significant interaction effect,  $F(1,39) = 4.21, p = .047$ , partial  $\eta^2 = .10$ , with only the patients followed-up in the community showing a reduction in disorganised symptoms. Therefore while there was a moderate and significant main effect for time,  $F(1,39) = 4.82, p = .03$ , partial  $\eta^2 = .11$ , this was primarily influenced by the community follow-up group. There was no main effect for location of follow-up,  $F(1,39) = 1.02, p = .32$ , partial  $\eta^2 = .03$ .

For PANSS Excited, the two-way ANOVA found that there was no Time Point x Location of Follow-Up interaction,  $F(1,39) = 0.18, p = .68$ , partial  $\eta^2 = .01$  and no main effect for location of follow-up,  $F(1, 39) = 0.002, p = .97$ , partial  $\eta^2 < .001$ . There was a moderate and significant main effect for time,  $F(1,39) = 5.88, p = .02$ , partial  $\eta^2 = .13$ , with both groups showing a reduction in PANSS Excited score from initial assessment to follow-up.

Since location of follow-up did not affect the rate of change over time in HD, the raw data from participants followed up in hospital and in the community was combined for the following analysis. Bivariate Pearson correlation analysis was used to determine whether higher levels of HD were associated with higher levels of psychiatric symptomatology at both initial assessment and follow-up, and to explore the

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relationship between IMI-C HD at follow-up and LHA:A score at follow-up. The results are shown in Table 2.

Insert Table 2 about here

Providing further indication of the stability of HD over time, there was a strong and positive relationship between IMI-C HD at initial assessment and follow-up. There was also a strong and positive correlation between PANSS Positive at initial assessment and follow-up, a strong and positive correlation between PANSS Disorganised at initial assessment and follow-up, a moderate and positive correlation between PANSS Negative at initial assessment and follow-up, and a moderate and positive correlation between PANSS Excited at initial assessment and follow-up. This suggests that despite the overall reduction in symptoms at follow-up, patients who had higher levels of psychopathology at initial assessment continued to have higher symptoms at follow-up.

IMI-C HD at initial assessment was strongly and positively correlated with PANSS Positive and PANSS Disorganised at initial assessment and follow-up, and with PANSS Excited at initial assessment. IMI-C HD at follow-up was strongly and positively correlated with PANSS Positive and PANSS Excited at initial assessment and follow-up, and moderately and positively correlated with PANSS Disorganised at initial assessment and follow-up. These correlations serve to demonstrate the consistency of the relationship between HD and psychopathology. However, there was no correlation between IMI-C HD and PANSS Negative at either time point.

LHA:A score was not significantly associated with IMI-C HD at initial assessment, but was moderately and positively correlated with IMI-C HD at follow-up.

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LHA: A score was also strongly and positively correlated with PANSS Positive at initial assessment, and moderately and positively correlated with PANSS Positive at follow-up and PANSS Excited at follow-up.

### **Discussion**

This study tested whether (1) HD is stable over time despite changes in psychiatric symptomatology, (2) the relationship between HD and positive, negative, disorganised, and excited symptoms is consistent over time, and (3) HD is related to community-based aggressive behaviour. Results supported the hypothesis that HD would remain stable over time, despite changes in positive, negative, disorganised, and excited symptoms. An additional finding relating to this hypothesis was that the stability of HD was unaffected by location of follow-up (i.e. hospital vs. community follow-up). In partial support of hypothesis two, higher levels of HD at initial assessment were associated with higher levels of positive and disorganised symptomatology at both initial and follow-up assessment, and with higher levels of excited symptomatology at initial assessment. Higher HD at follow-up was associated with higher levels of positive, disorganised, and excited symptomatology at both initial and follow-up assessments. In contrast, there was no relationship between HD and negative symptomatology at either time point. Finally, HD at initial assessment was not associated with community-based aggressive behaviour. However, higher HD at follow-up was associated with greater levels of aggressive behaviour post-discharge. Additionally, post-discharge aggression was associated with greater positive symptoms at both time points, as well as higher levels of excited symptoms at follow-up.

### **Hostile-Dominance and Psychiatric Symptomatology Over Time**

Results from the Two-Way Mixed Model ANOVA's showed that HD remained unchanged over time despite an overall reduction in positive, negative, disorganised, and excited symptoms. The level of HD at initial and follow-up assessment was also strongly and positively correlated ( $r = .69$ ), providing a further indication of stability. This replicates Podubinski et al. (2012) and provides further evidence for the suggestion that HD is a relatively stable characteristic that is unaffected by changes in psychiatric symptomatology.

The overall reduction in symptom severity was found to occur relative to initial symptom severity, i.e. if the participant was high relative to the sample in a psychosis symptom cluster they were still high relative to the sample in that same cluster at the follow-up assessment. Furthermore, HD was associated with positive, disorganised, and excited symptom severity over time, but not with negative symptoms. When considered with the finding that HD is stable over time, these results suggest that acute symptomatology does not exacerbate HD; rather, HD acts as a risk factor for more severe symptomatology, and in particular positive, disorganised, and excited symptoms. Given that individuals with higher HD have difficulties with treatment adherence and therapeutic alliance (Cookson et al., 2012), it may be that individuals with higher HD are more difficult to engage in treatment, which in turn leads to poorer treatment adherence and worse outcomes over time.

Although the stability of HD was unaffected by location of follow-up, there was a trend for higher levels of HD at both initial assessment and follow-up for individuals who were in hospital at follow-up. Although it could be that higher HD is a risk factor for more severe symptomatology and illness relapse, it may also be that the hospital

setting is more demanding and coercive, and that these conditions exacerbate HD.

Alternatively, it is possible that elevated levels of HD shape the presentation of psychiatric symptoms in a manner that increases the probability that symptoms manifest as, or lead to, aggressive behaviour, and thus hospitalisation. Further research is needed to explore these hypotheses.

### **Factors Associated with Community Aggressive Behaviour**

Higher HD at follow-up was found to be moderately and positively associated with aggression occurring in the community post-discharge ( $r = .36$ ). In contrast, although the relationship was positive ( $r = .14$ ), HD at initial assessment was not significantly related to aggression in the community following discharge. A potential explanation for the weaker relationship between initial HD assessment and post-discharge aggression was that for the majority of participants, the follow-up occurred while they were sufficiently well to be living in the community. As suggested above, it is possible that the inpatient setting intensifies HD due to the increased scope for confrontation with staff members and other patients, and the rules and regulations of the setting. Risk of community-based aggressive behaviour may therefore be more accurately predicted by assessing HD after patients have returned to community living.

Highlighting the importance of assessing for the severity of positive symptoms, post-discharge aggressive behaviour was strongly and positively correlated with the severity of initial positive symptoms ( $r = .51$ ), and moderately and positively correlated with the severity of positive symptoms at follow-up ( $r = .36$ ). This is consistent with those previous studies that show the presence of active psychotic symptomatology is associated with aggression in the community (e.g. Swanson et al., 2006). Post-discharge aggression was also moderately and positively associated with the severity of excited

symptoms at follow-up ( $r = .43$ ). As such, HD and positive and excited symptoms assessed in the community may be indicative of an increased risk of aggression in the community.

### **Clinical Implications**

These results give rise to a number of clinical implications. Firstly, the findings indicate that an assessment of HD once a person is discharged into the community may be relevant to violence risk assessment and the prevention of violence. For patients with elevated HD, treatment targeted at a reduction in HD may be beneficial. For example, Daffern et al. (2013) illustrated the benefits of intensive inpatient treatment on interpersonal HD, with their research finding that in a sample of offenders with personality disorder, completion of an intensive treatment program was associated with reductions in HD at the end of treatment, which was in turn associated with reductions in the risk of re-offending. Further, given that higher HD was associated with greater symptom severity, it may be important for HD to be considered in patients' treatment planning more generally. This is particularly pertinent given that HD has been implicated in treatment adherence and therapeutic alliance (Cookson et al., 2012). Patients displaying HD interpersonal styles may be at risk of poor engagement with care and symptom persistence. As a result, treatment approaches that encourage collaboration, minimise the potential for confrontation, and increase the perceived benefit for patients of adhering to treatment (e.g. motivational interviewing) may be beneficial. This is a timely implication given the current international focus on reducing restrictiveness of care and increasing patient input into, and influence over, their treatment. For example, refer to the Department of Health, Victoria, Australia's, (2013), overview of literature in relation to the practice of restrictive interventions in healthcare

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settings, and the *Mental Health Act 2014* (Vic), which promotes recovery-oriented practices and least-restrictive assessment and treatment.

### **Limitations and Future Research**

The findings from this study should be considered in light of the small sample at follow-up, which may impede generalisability. However, the findings regarding the stability of HD are consistent with the findings presented in Podubinski et al. (2012); this supports their validity. Secondly, given the self-report nature of the LHA:A, participants may have minimised or exaggerated their history of aggressiveness. Future studies might verify self-report via collateral information. Thirdly, suggestions made regarding the importance of HD in the treatment of psychiatric symptoms are speculative. Future research may benefit from assessing the impact of treatment aimed at reducing HD on psychiatric symptoms and aggressive behaviour. Fourth, the association between HD and excited symptomatology should be considered in light of the fact that, like the BPRS-18, the Excited subscale of the PANSS also includes the items ‘hostility’ and ‘uncooperativeness’, both of which may be affected by character. The other subscales do not appear to suffer from this conceptual overlap. Finally, the development of cut scores and normative data for high versus low levels of HD is important, as this will aid clinicians in using measures of HD to inform decisions regarding a persons’ risk of aggression and treatment needs.

### **Conclusion**

This study found that HD was stable over time, despite an overall reduction in psychiatric symptoms. HD was also positively related to the severity of symptoms over time, while the overall reduction in symptoms occurred relative to initial symptom severity. With regard to post-discharge aggressive behaviour, it was found that an

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increased level of HD in the community was associated with a greater number of post-discharge aggressive incidents. Additionally, post-discharge aggression was associated with more severe positive symptoms in hospital and in the community, as well as higher levels of excited symptoms in the community. These findings suggest that HD acts as a risk factor for more severe psychopathology, and that HD, and positive and excited symptoms in the community act as a risk factor for post-discharge aggressive behaviour. Given these findings, interpersonal HD should be considered in treatment planning and violence risk assessment and management.

### **Acknowledgements**

None.

### **Funding**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### **Declaration of Conflicting Interests**

The Authors declare that there is no conflict of interest.

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### Legislation

*Mental Health Act 2014 (Vic)*

## THE STABILITY OF HOSTILE-DOMINANCE

Table 1

Mean (SD) participant scores for IMI-C hostile-dominance initial assessment and follow-up, PANSS Positive, Negative, Disorganised, and Excited at initial assessment and follow-up, and LHA:A at follow-up.

	Total Sample ( <i>n</i> =41)		Re-admitted at Follow-up ( <i>n</i> =10)		Community at Follow-up ( <i>n</i> =31)	
	Initial Assessment	Follow-up	Initial Assessment	Follow-up	Initial Assessment	Follow-up
IMI-C Hostile-Dominance	1.47 (0.47)	1.37 (0.49)	1.66 (0.45)	1.57 (0.72)	1.41 (0.47)	1.31 (0.38)
PANSS Positive	14.39 (6.37)	11.05 (6.11)	16.80 (8.00)	14.20 (6.00)	13.61 (5.69)	10.03 (5.88)
PANSS Negative	12.71 (4.17)	10.66 (3.88)	14.20 (5.03)	12.90 (4.65)	12.23 (3.82)	9.94 (3.38)
PANSS Disorganised	15.20 (4.20)	12.93 (4.60)	15.20 (2.97)	15.10 (4.12)	15.19 (4.56)	12.23 (4.59)
PANSS Excitement	5.66 (2.20)	4.80 (1.44)	5.80 (2.20)	4.70 (1.64)	5.61 (2.23)	4.84 (1.39)
LHA:A	-	3.37 (3.58)	-	4.60 (3.84)	-	2.97 (3.46)

## THE STABILITY OF HOSTILE-DOMINANCE

Table 2

Bivariate Pearson's correlation coefficients between IMI-C hostile-dominance at initial assessment and follow-up, PANSS Positive, Negative, Disorganised, and Excited at initial assessment and follow-up, and LHA:A score at follow-up.

	2	3	4	5	6	7	8	9	10	11
1. IMI-C Hostile-Dominance Initial Assessment	.69**	.56**	.63**	-.11	.08	.56**	.52**	.66**	.29	.14
2. IMI-C Hostile-Dominance Follow-Up	-	.54**	.65**	-.30	-.03	.34*	.45**	.53**	.58**	.36*
3. PANSS Positive Initial Assessment		-	.77**	-.24	.04	.36*	.42**	.35*	.22	.51**
4. PANSS Positive Follow-Up			-	-.14	.15	.44**	.57**	.39*	.34*	.36*
5. PANSS Negative Initial Assessment				-	.44**	-.01	.13	-.40**	-.43**	-.02
6. PANSS Negative Follow-Up					-	.10	.32*	-.22	-.25	.05
7. PANSS Disorganised Initial Assessment						-	.59**	.27	.27	.10
8. PANSS Disorganised Follow-Up							-	.23	.31*	.16
9. PANSS Excited Initial Assessment								-	.39*	.05
10. PANSS Excited Follow-Up									-	.43**
11. LHA:A Score Follow-Up										-

Correlation significant at:

\*  $p < .05$

\*\*  $p < .01$

**EVALUATING THE RELATIONSHIP BETWEEN CHILDHOOD  
ABUSE AND NEGLECT, INTERPERSONAL HOSTILE-  
DOMINANCE, AND AGGRESSION IN PSYCHIATRIC  
HOSPITALS**

## **Preamble**

Interpersonal hostile-dominance (HD) has been consistently associated with aggression in secure psychiatric settings; Chapter Four confirmed the importance of HD for the prediction of psychiatric inpatient aggression while Chapter Six showed HD to be associated with aggressive behaviour occurring in the community post hospital discharge. Additionally, a link exists between childhood trauma and hostility in adulthood and childhood trauma and higher levels of aggression in psychiatric inpatients.

Interpersonal Theory suggests that early childhood experiences impact the development of adaptive interpersonal functioning. Thus, HD may develop through exposure to childhood abuse and neglect, and the aggressive behaviour associated with HD may be a maladaptive way of avoiding feelings of vulnerability associated with the trauma, maintaining dominance, and preventing further victimisation. However, this hypothesis has not been empirically tested. Addressing this gap will help to conceptualise the developmental impact of childhood abuse and neglect experiences from an interpersonal perspective, which will in turn lead to theoretically informed interventions aimed at reducing aggression risk.

Against this background, Chapter Seven presents data to address the fourth research aim: to explore whether HD mediates the relationship between childhood abuse and neglect and aggressive behaviour in psychiatric inpatients.

This paper has been submitted to a peer-reviewed journal.

## Monash University

### Declaration for Thesis Chapter Seven

#### Declaration by Candidate

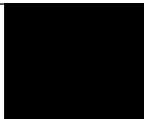
In the case of Chapter Seven, the nature and extent of my contribution to the work was the following:

<b>Nature of contribution</b>	<b>Extent of contribution</b>
Reviewed literature; study conceptualisation and design; collected, coded, and statistically analysed data; prepared paper	75%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

<b>Name</b>	<b>Nature of contribution</b>	<b>Extent of contribution (%) for student co-authors only</b>
Professor Michael Daffern	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Stuart Lee	General supervisory input; study conceptualisation and design; analysis support; review and editing of drafts	-
Dr Yitzchak Hollander	Study design; review and editing of drafts	-

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work\*.

<b>Candidate's Signature</b>		Date: 15 Aug 2014
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<b>Main Supervisor's Signature</b>		Date: 15 Aug 2014
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\*Note: Where the responsible author is not the candidate's main supervisor, the main supervisor should consult with the responsible author to agree on the respective contributions of the authors.



## CHILDHOOD TRAUMA, HOSTILE-DOMINANCE, AND AGGRESSION

### Summary

**Background:** Interpersonal hostile-dominance (HD) reflects a tendency to approach interpersonal situations in a hostile and dominant manner; it is associated with aggression in psychiatric hospitals. Although little is known about the developmental origins of HD, exposure to childhood trauma can adversely impact adaptive interpersonal functioning. This study assessed whether childhood trauma was related to aggression during psychiatric hospitalisation and whether HD mediated this relationship.

**Methods:** Two hundred adult psychiatric inpatients (mean age=38.32 years, 66% male) were recruited. Childhood trauma history, interpersonal HD, and aggression occurring during hospitalisation were assessed.

**Findings:** Childhood emotional (50.5%), physical (42%), and sexual (42%) abuse, and emotional (46.5%), and physical (41%) neglect of moderate to extreme severity was reported. Seventy (35.0%) patients were aggressive. More severe emotional, physical, and sexual abuse, and physical neglect in childhood were associated with higher HD in adulthood. Higher levels of HD and all forms of childhood abuse and neglect were associated with aggression; HD mediated the relationship between childhood abuse and neglect and aggression.

**Interpretation:** Findings highlight the high prevalence of childhood abuse and neglect experiences in adult psychiatric inpatients, and suggest childhood trauma contributes to HD, which increases the risk of aggression. Interventions designed to prevent

## CHILDHOOD TRAUMA, HOSTILE-DOMINANCE, AND AGGRESSION

aggression should target the assessment and treatment of HD and modify interactions and interventions that are likely to be perceived as a threat to patients' personal control.

**Funding:** This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

**Key words:** Childhood trauma, interpersonal style, hostile-dominance, aggression, trauma-informed care

### Evaluating the Relationship Between Childhood Abuse and Neglect, Interpersonal Hostile-Dominance, and Aggression in Psychiatric Hospitals

Interpersonal style describes how individuals characteristically communicate with and perceive themselves in relation to others. Interpersonal hostile-dominance (HD) is associated with aggression in secure psychiatric settings.<sup>1-3</sup> Interpersonal behaviour can be described according to two basic human motives: *Communion* and *Agency*. Communion ranges from friendliness to hostility, and refers to a motivation to connect and participate with others. Agency ranges from submission to dominance, and emphasises a motivation for influence, control, or mastery over the self, other people and the environment.<sup>4,5</sup> In general, a person's interpersonal style stems from the balance between the dimensions of Communion and Agency,<sup>6</sup> as well as the extent to which they are able to adapt their interpersonal behaviour to different social situations.<sup>7</sup> Highly HD individuals are low on Communion and high on Agency; they rigidly approach interpersonal interactions in a domineering manner with a hostile attitude, failing to adapt their behaviour to situational demands.

When admitted to hospital patients high in HD inevitably encounter situations in which they cannot achieve interpersonal dominance. In a sample of 142 psychiatric inpatients, 54% reported being confronted by frightening or violent patients, most had experienced coercion, and many had experienced medications used as a threat or punishment.<sup>8</sup> For patients with a history of childhood sexual abuse or physical assault, an increase in reports of distressing experiences was found. Such encounters likely lead to HD patients

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acting aggressively to reassert personal control; previous trauma experiences may result in a person adopting a HD interpersonal approach to protect themselves.

Communal and agentic motivations manifest early in infancy.<sup>4,7</sup> Securely attached infants demonstrate a balance between staying close and connected to their caretaker, an early manifestation of a communal motive, and exploring their environment, an early manifestation of an agentic motive.<sup>4,9</sup> Traumatic experiences in childhood can compromise the development of communal and agentic motives, impact attachment relationships, and change an individual's perception of themselves, the world, and others.<sup>7,9</sup> Childhood trauma can also impair the acquisition of adaptive emotion regulation and opportunities to practice and acquire a broad range of interpersonal skills. Individuals who experience childhood maltreatment may learn that social interactions are threatening and adjust their approach to interpersonal encounters accordingly.<sup>10</sup> Adopting a HD interpersonal style may be regarded as protective in threatening situations (i.e. dominating interpersonal encounters and regarding other people as potentially threatening may prevent future victimisation); HD may, however, be counterproductive in an array of therapeutic and interpersonal interactions.

Demonstrating the relationship between interpersonal style and childhood trauma, a study of 595 healthy individuals found higher interpersonal hostility among participants reporting childhood trauma.<sup>11</sup> A second study with a sample of 294 inpatients being treated for substance dependence also found more severe hostility in patients with childhood abuse or neglect experiences.<sup>12</sup> A number of studies in psychiatric and general population samples have also found relationships between child maltreatment

and specific personality disorders, which are in general characterised by persistent problems with interpersonal functioning.<sup>13,14</sup>

Exposure to childhood maltreatment has consistently been shown to increase the risk of aggressive and antisocial behaviour,<sup>15-17</sup> however, few studies have explored this relationship in psychiatric inpatient populations. In one study, aggression and abuse history were assessed in 136 depressed adult inpatients.<sup>18</sup> Patients with an abuse history reported higher levels of aggression. However, the way in which maltreatment increases aggression propensity is unclear. One of the few studies to explore relationships among childhood maltreatment, interpersonal hostility, and aggression found higher levels of interpersonal hostility and aggression among participants who experienced childhood trauma.<sup>11</sup> However, this study utilised a community sample.

Despite evidence of high levels of trauma history and aggression in psychiatric inpatients,<sup>8</sup> no previous research has explored whether HD mediates the relationship between childhood abuse or neglect and aggression. The current study addresses this gap. It was hypothesised that HD would mediate the relationship between aggression and childhood emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect.

### **Method**

#### **Participants**

Participants were 200 patients admitted to two psychiatric units in Melbourne, Australia, between 12 January 2012 and 10 October 2012. The sample included 132

## CHILDHOOD TRAUMA, HOSTILE-DOMINANCE, AND AGGRESSION

men and 68 women with an age range of 19-64 years ( $M=38.32$ ,  $SD=11.13$  years). The average length of hospital stay for participants was two weeks ( $M=14.59$ ,  $SD=15.96$  days).

The most common primary diagnosis (recorded on the day of the interview from the most recent case notes entered by the treating psychiatrist) was schizophrenia or another psychotic illness (55.5%), followed by unipolar depressive episode/disorder (11.5%), bipolar disorder or a manic episode (8.5%), borderline personality disorder (7.0%), alcohol or other substance induced disorders/related issues (6.5%), and acute stress reaction (4.5%). At the time of the interview, 4.0% of participants had no diagnoses, and 2.5% had other diagnoses.

### **Setting**

Patients were recruited from the Alfred hospital, which provides public mental health services to people living in the inner southeast suburbs of Melbourne. A hospital-based acute psychiatric response is provided to adult patients via two 28-bed units. Each unit offers care in low-dependency (requiring less intensive observation) and high dependency (for patients at higher risk of harm to self or others) environments.

### **Materials**

The *Childhood Trauma Questionnaire* (CTQ)<sup>19</sup> is a retrospective, 28-item, self-report inventory. It is comprised of five five-item subscales assessing Emotional, Physical, and Sexual abuse, and Emotional and Physical neglect. A three-item Minimization-Denial subscale is also completed to assess for respondents minimising their childhood abuse

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experiences. Items are rated using a five-point Likert-type scale (1 = “Never True” to 5 = “Very Often True”). For this study, participants were classified as having experienced each form of abuse or neglect if scoring in the ‘moderate to severe’ or ‘severe to extreme’ range. The CTQ has demonstrated internal consistency across a range of samples, with a median Cronbach’s alpha coefficient of 0.66 for the Physical Neglect scale to a median Cronbach’s alpha coefficient of .92 for the Sexual Abuse subscale.<sup>19</sup>

The *Impact Message Inventory-Circumplex* (IMI-C)<sup>20</sup> is a 56-item observer-rated inventory designed to assess interpersonal style. The IMI-C uses a four-point Likert scale (1 = “Not at all” to 4 = “Very much so”) to rate the extent to which each item accurately describes the impact that an individual produces in another during an interaction. IMI-C items are grouped into eight interpersonal style scales (Dominant, Hostile-Dominant, Hostile, Hostile-Submissive, Submissive, Friendly-Submissive, Friendly, Friendly-Dominant) with the sum of the seven items for each scale calculated. HD was the only scale reported on for this study. Internal consistency for the HD scale ranges from 0.69-0.96, with a median Cronbach alpha coefficient of 0.81.<sup>21</sup>

The *Overt Aggression Scale* (OAS)<sup>22</sup> was used to assess the presence of aggression during the admission. The current study utilised a dichotomous OAS score; any aggression (verbal or physical aggression towards others or physical aggression towards objects) during admission was scored as 1 (*present*) or 0 (*absent*). The OAS was scored using two data sources: (1) review of case files for the period of hospital stay; and, (2) an interview with each patient’s primary nurse following the patient’s discharge from

hospital. This ensured that any incidents of aggression that were not recorded in the patients' case notes were captured.

### **Procedure**

This research received ethical approval from the Monash University Human Research Ethics Committee and the Alfred Human Research Ethics committee. One researcher with experience and training in the administration of all measures recruited all participants and administered all measures.

Admitted patients deemed well enough to provide informed consent by their treating doctor were approached within five days of their admission to the low-dependence environment. A verbal and written explanation about the study was given and patients willing to participate gave written consent. Consenting patients participated in a semi-structured interview incorporating the CTQ. At the end of the interview, participants were offered AUD\$20 (approx. US\$20) as compensation for their time and effort. Following the interview, basic demographic data was collected and the IMI-C was completed based on the researcher's impressions during the semi-structured interview. The date of discharge was noted and the OAS completed following each participant's discharge.

### **Data Analysis**

Analysis was performed using IBM SPSS versions 20.0. In testing the primary hypothesis, an initial assessment was performed of the relationship between the five CTQ subscales (independent variables; IV) and IMI-C HD (dependent variable; DV)

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using univariate linear regression. A subsequent analysis was performed using univariate logistic regression to test for a relationship between the five subscales of the CTQ and IMI-C HD (IV), and OAS presence of aggression. A final analysis was performed to test whether IMI-C HD mediated the relationship between childhood trauma and the presence of aggression, using the four criterion proposed by Baron and Kenny<sup>23</sup> that are required for mediation: (1) that the IV is related to the DV, (2) that the IV is related to the Mediator, (3) that the Mediator is related to the DV, and (4) that after controlling for the effect of the Mediator, the IV is no longer related to the DV. Given the tested variables include a dichotomous DV and continuous Mediator and IVs, composite measures of the slope coefficients and standard errors adjusting for the different analysis methods and covariance between variables were calculated based on the equations presented in Mackinnon and Dwyer.<sup>24</sup> The Aroian version of the Sobel test was used to test for mediation significance.<sup>25</sup> Conduct of the analysis utilised SPSS syntax and calculation spreadsheets made available by Nathaniel Herr at the following website: <http://www.nrpsych.com/mediation/logmed.html>

### **Role of the Funding Source**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. TP had full access to all the data in the study and final responsibility for the decision to submit for publication.

### **Results**

All data was examined for accuracy, missing values, and outliers. A random check of 50 participants' entered data showed data entry to be accurate. No values were missing.

### **Prevalence of Childhood Abuse and Neglect**

Means (standard deviations) for CTQ Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, and Physical Neglect are shown in Table 1. Across trauma subtypes, between 41 and 50.5% of participants reported experiencing trauma of at least moderate severity. The mean score for the CTQ Minimization/Denial subscale was 0.47, suggesting that participants did not minimise or deny their childhood trauma experiences.

Insert Table 1 about here

### **The Relationship between Childhood Abuse and Neglect and Hostile-Dominance**

Prior to assessing the relationships between the five CTQ subscales and IMI-C HD, examination of the standardised residuals showed that for each test at least 98.5% of cases had values within  $\pm 3.29$ . All values for Cook's distance were less than 1, suggesting no influential cases. The relationships were also found to be linear and homoscedastic. As shown in Table 1, of the five CTQ subscales, only CTQ Emotional Neglect did not significantly predict IMI-C HD.

### **Associations between Childhood Trauma, Hostile-Dominance, and Aggression**

Table 2 describes the mean CTQ Emotional Abuse, Physical Abuse, Sexual Abuse, Emotional Neglect, and Physical Neglect, and IMI-C HD scores for aggressive and non-aggressive patients. Seventy (35.0%) patients engaged in some form of aggression (e.g. physical aggression, verbal aggression, or physical aggression against an object) during their hospital admission.

Insert Table 2 about here

Prior to testing the relationships among the variables of interest, examination of the standardised residuals showed that for each test, 100% of cases had values within  $\pm 3 \cdot 29$ . All values for Cook's distance were less than 1, suggesting no influential cases. Analysis assumptions were therefore met. Table 2 shows the univariate linear regression analyses predicting aggression from the five CTQ subscales and IMI-C HD. All five CTQ subscales and IMI-C HD significantly predicted aggression.

### **Testing Whether Hostile-Dominance Mediates the Association Between Childhood Trauma and Aggression**

As CTQ Emotional Neglect and IMI-C HD were not related, no assessment was performed of whether IMI-C HD mediated the relationship between CTQ Emotional Neglect and OAS presence of aggression. Figure 1 displays the composite unstandardised slope coefficients (adjusting for measurement with either logistic or linear regression) testing whether HD mediates the relationship between the remaining four CTQ subscales (Emotional Abuse, Physical Abuse, Sexual Abuse, and Physical Neglect) and OAS presence of aggression. IMI-C HD was found to significantly mediate the relationship between CTQ Emotional Abuse, Sexual Abuse, and Physical Neglect, and OAS presence of aggression; IMI-C HD did not mediate the relationship between CTQ Physical Abuse and OAS presence of aggression.

Insert Figure 1 about here

### Discussion

This study assessed the relationship between childhood abuse and neglect, HD, and aggression in psychiatric inpatients. The results partially supported the hypothesis; HD mediated the relationship between childhood emotional abuse, sexual abuse, and physical neglect, and aggression. HD did not mediate the relationship between childhood physical abuse and aggression, and childhood emotional neglect was not related to HD.

These results add to past research that found increased hostility in adults being treated for substance dependence with history of abuse in childhood,<sup>12</sup> and increased aggression in adults with major depression and a history of abuse in childhood.<sup>18</sup> They suggest that HD in psychiatric inpatients may be an adverse outcome of childhood maltreatment, and that HD in turn increases the risk of aggression. Consideration of these findings in relation to Interpersonal Theory suggests that the experience of childhood abuse or neglect distorts early communal and agentic motives, leading to problematic interpersonal functioning in adulthood. Through repeated experiences, individuals may develop the view that the world is a hostile environment; interpersonal dominance may be pursued to prevent further victimisation. Interpersonal interactions that affirm this world-view may influence the development HD, which, while maladaptive, is likely regarded as self-protective and helpful for coping with feelings of vulnerability arising from trauma.<sup>7</sup> Within psychiatric wards, vulnerable feelings may be heightened; psychiatric inpatients may have modest influence over their treatment, the day-to-day ward routine, and the frequency, intensity, and nature of interpersonal interactions. As

such, for interpersonally HD patients, aggression may be seen as a useful strategy to regain dominance and avoid feelings of vulnerability.

An additional finding of note was that between 41 and 50.5% of participants reported at least moderate severity childhood maltreatment in the form of emotional abuse, physical abuse, sexual abuse, emotional neglect, or physical neglect. Previous Australian studies have estimated the prevalence of different forms of childhood maltreatment in community samples; prevalence estimates for childhood physical abuse range between 5-18%, childhood neglect between 2-12%, childhood emotional neglect between 6-17%, and childhood sexual abuse between 1-42%.<sup>26</sup> Similarly, the Adverse Childhood Experiences research conducted in the United States estimated the prevalence of childhood emotional abuse, physical abuse, and sexual abuse to be 10.6%, 28.3%, and 20.7% respectively.<sup>15</sup> The prevalence estimates found in this study are higher than those found in community samples, highlighting the high prevalence of childhood maltreatment in psychiatric inpatients. This is to be anticipated given that childhood maltreatment is often implicated in the development of psychopathology.<sup>13,14,27</sup>

### **Clinical Implications**

The high prevalence of childhood abuse and neglect experiences suggest inquiring about childhood trauma would be prudent, particularly given the association between childhood maltreatment and personality pathology,<sup>13,14</sup> other psychopathology<sup>27</sup> and antisocial or aggressive behaviour.<sup>15-18</sup> Understanding the role of childhood trauma in the development of psychopathology may inform treatment pathways.<sup>28</sup> Interpersonal Theory may prove useful in conceptualising the effect of childhood maltreatment on a

patient's schema and interpersonal interactions. Accordingly, this may assist staff and patients to create a narrative regarding the acquisition of problematic interpersonal behaviour; this may facilitate greater staff and patient understanding and direct future therapeutic approaches.

As HD mediated the relationship between childhood maltreatment and inpatient aggression, implementing interventions aimed at reducing HD, or adjusting interventions for HD patients, may contribute to a reduction in aggression propensity. For example, reduced HD has been found in patients with personality disorder following completion of an intensive inpatient treatment program; in turn, reduced HD was associated with decreased criminal behaviour following discharge.<sup>29</sup> In light of the current findings, treatments focused on HD may need to consider the role of childhood maltreatment in the development and maintenance of HD, including whether HD is perceived as functional for the patient. Interventions that are mindful of the origins of HD, and that reduce confrontation and challenges to patient's sense of personal control, may reduce conflict and aggression. Accordingly, this may result in reductions in the use of seclusion and restraint, which may be experienced by patients with trauma histories as retraumatising.<sup>30</sup>

### **Limitations and Future Research**

These findings may be limited by the self-report nature of the CTQ; participants may have exaggerated their childhood trauma histories. Despite potential problems it is difficult to consider a more appropriate method for examining past trauma experiences. It is also likely that the relationship between childhood maltreatment, HD, and

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aggression is influenced by other factors such as situational factors present in the inpatient environment or patients' mental state. Consideration of such factors alongside trauma history and interpersonal style may provide a richer explanation of the causes of aggression. Additionally, the reason for the absence of a mediated relationship between childhood physical abuse, HD, and aggression is unclear. As it is not uncommon in studies of childhood maltreatment to find inconsistency in the types of trauma associated with outcome variables (e.g. Afifi et al.<sup>13</sup> and Cohen et al.<sup>14</sup>) repetition of this study may assist further elucidation of these relationships. Finally, given the relationship between HD and aggression, the development of evidenced-based interpersonal treatment or management approaches attentive to issues pertaining to HD is an important avenue for future research.

### **Conclusion**

Between 41 and 50.5% of participants reported at least moderate severity childhood maltreatment. HD mediated the relationship between childhood abuse and neglect and aggression, suggesting that HD may be an adverse outcome for some people who have experienced childhood mistreatment. When placed in environments that heighten feelings of vulnerability, such as psychiatric inpatient wards, patients with a HD interpersonal style may use aggression as a means of avoiding submission, which is likely associated with feelings of vulnerability. Screening for childhood maltreatment and understanding the role of childhood trauma in the development of HD may aid aggression prevention strategies and the treatment of interpersonal HD.

**Contributors**

TP, SL, and MD conceived and designed the study; YH designed the study. TP collected, coded, and analysed the data. SL and MD provided analysis support. All authors interpreted the data. TP conducted the literature search and drafted the report and all authors revised drafts and approved the final version.

**Declaration of Interests**

We declare no competing interests.

**Acknowledgments**

None.

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Table 1

CTQ descriptive information and unstandardised coefficient (B), standard error of B (SE B), and significance value (*p*) for each univariate linear regression predicting HD (*n*=200).

	Severity		Univariate linear regression predicting HD	
	Mean ( <i>SD</i> )	n (%) moderate to extreme	B (SE B)	<i>p</i>
CTQ Emotional Abuse	13.45 (6.66)	101 (50.5%)	0.12 (0.04)	.001
CTQ Physical Abuse	10.47 (6.09)	84 (42%)	0.08 (.04)	.03
CTQ Sexual Abuse	9.74 (6.57)	84 (42%)	0.10 (0.04)	.004
CTQ Emotional Neglect	13.04 (6.47)	93 (46.5%)	0.07 (0.04)	.06
CTQ Physical Neglect	9.65 (4.79)	82 (41%)	0.19 (0.05)	<.001

Note: CTQ Minimization/Denial Mean (*SD*) = 0.47 (0.88)

IMI-C HD Mean (*SD*) = 10.09 (3.37)

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Table 2

CTQ and IMI-C HD descriptive information for aggressive and non-aggressive patients, and unstandardised coefficient (B), standard error of B (SE B), and significance value (*p*) for each univariate logistic regression predicting the presence of aggression (*n*=200).

	Aggressive ( <i>n</i> =70)	Not Aggressive ( <i>n</i> =130)	Univariate logistic regression predicting aggression risk	
	Mean ( <i>SD</i> )	Mean ( <i>SD</i> )	B (SE B)	<i>p</i>
CTQ Emotional Abuse	15.30 (6.82)	12.45 (6.38)	0.07 (0.02)	.004
CTQ Physical Abuse	11.96 (6.89)	9.67 (5.47)	0.06 (0.02)	.01
CTQ Sexual Abuse	11.09 (7.02)	9.02 (6.23)	0.05 (0.02)	.04
CTQ Emotional Neglect	14.47 (6.42)	12.26 (6.39)	0.05 (0.02)	.02
CTQ Physical neglect	10.67 (4.88)	9.02 (4.46)	0.08 (0.03)	.02
IMI-C HD	11.86 (4.21)	9.13 (2.32)	0.26 (0.05)	<.001

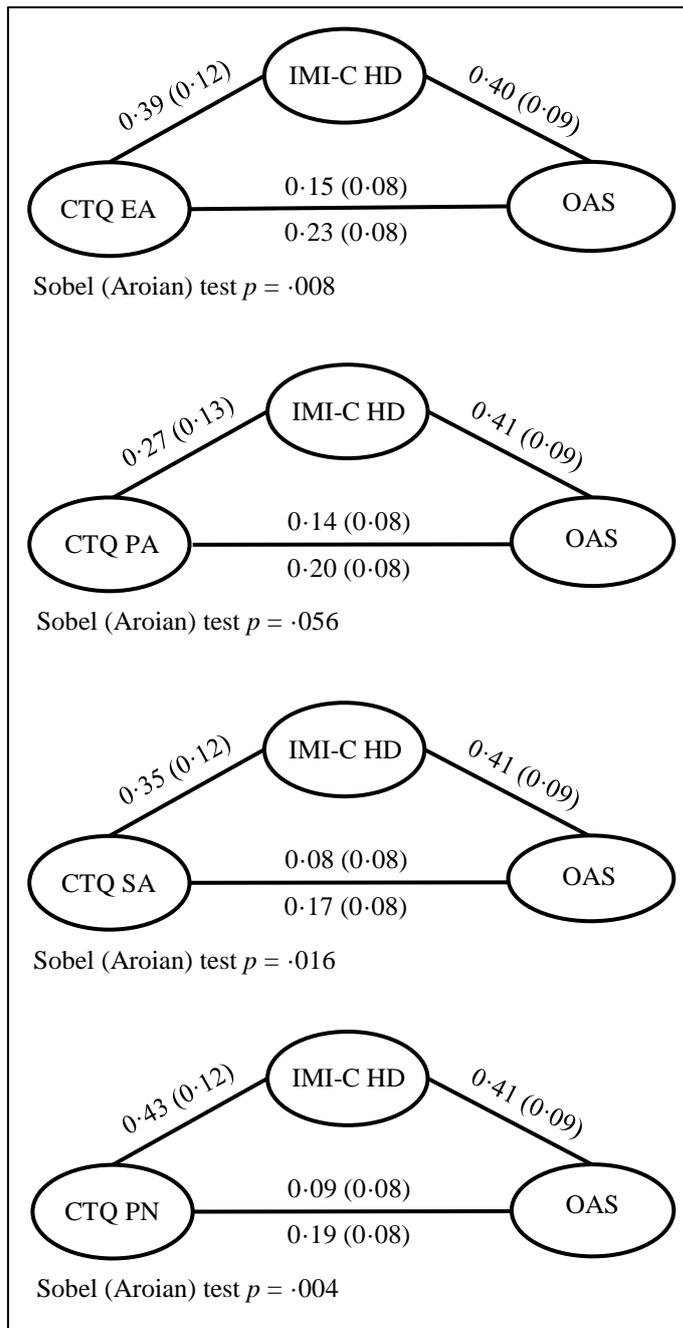


Figure 1

Composite (adjusting for use of logistic and linear regression) unstandardised coefficients (SE) with CTQ emotional, physical, and sexual abuse, and physical neglect as IVs, HD as mediator, and Any Aggression as DV.

EA = Emotional Abuse, PA = Physical Abuse, SA = Sexual Abuse, PN = Physical Neglect

**GENERAL DISCUSSION**

## **Overview of Research Aims**

The main focus of the research presented in this thesis was on understanding interpersonal hostile-dominance (HD) and its relationship with aggression in hospital psychiatry services through the integration of two complementary theoretical models: the General Aggression Model (GAM; Anderson & Bushman, 2002) and Interpersonal Theory. This was underpinned by four broad and interrelated aims: (1) to assess the influence of interpersonal and personality factors, GAM-specified cognitions and related affective states, and clinical factors on psychiatric inpatient aggression, (2) to investigate the contribution of aggression-related personality symptoms, cognitive and affective characteristics, and psychiatric symptoms to Hostile-Dominance (HD) in psychiatric inpatients, (3) to examine the stability of HD and its relationship with psychiatric symptoms and aggression over time, and (4) to explore whether HD mediates the relationship between childhood abuse and neglect and aggressive behaviour in psychiatric inpatients. These aims were addressed in Chapters Four, Five, Six, and Seven respectively.

To test these aims, 200 psychiatric inpatients were recruited, of whom 41 were available for a follow-up assessment at approximately six months post-hospital discharge. Interpersonal, personality, GAM-specified, clinical, and developmental factors were initially assessed; interpersonal and clinical factors were assessed at follow-up. Inpatient aggressive behaviour and aggressive behaviour occurring in the community following hospital discharge were also measured.

## Summary of Key Findings

In the following sections, the key findings are considered with respect to the aims of the thesis.

### **Research Aim One: The Influence of Interpersonal and Personality Factors, GAM-Specified Cognitions and Related Affective States, and Clinical Factors on Psychiatric Inpatient Aggression**

In Chapter Two it was argued that research attempting to elucidate the nature of psychiatric inpatient aggression has frequently focused on clinical factors, such as psychiatric symptoms, often without reference to relevant psychological theory. It was suggested that future research should draw upon the GAM and Interpersonal Theory to enhance conceptualisations of aggressive behaviour in psychiatric settings and provide a strong theoretical framework for the explication of a range of factors relevant to aggression. Against this background, Chapter Four presented data to assess the influence of interpersonal (HD) and personality (psychopathy), GAM-specified (violent scripts, attitudes towards violence, and anger), and clinical (psychiatric symptoms) factors on psychiatric inpatient aggression.

At the univariate level, higher interpersonal HD, psychopathy, aggressive script rehearsal, attitudes towards violence, trait anger, and disorganised and excited type psychiatric symptoms all predicted inpatient aggression. These results are consistent with past research examining associations between interpersonal HD and aggression (Daffern, Thomas et al., 2010) and psychopathy and aggression (Hare 1991, 2003). They are also consistent with research evaluating the relationship between psychiatric illness and inpatient aggression (Daffern, Thomas et al., 2010) and GAM-specified variables and aggressive behaviour in forensic populations (Gilbert, Daffern, Talevski,

& Ogloff, 2013; Hosie, Gilbert, Simpson, & Daffern, 2014). With regard to theory, these findings are consistent with the GAM, which proposes that aggression is the product of multiple interacting factors; distal factors that manifest in personality (i.e. HD and psychopathy) facilitate proximal factors (i.e. aggression-related cognitions and related affective states, and mental state) that directly increase aggression or decrease normal inhibitions against aggression (Anderson & Bushman, 2002; Anderson & Carnagey, 2004; Anderson, Gentile, & Buckley, 2007; DeWall, Anderson, & Bushman, 2011).

A hierarchical logistic regression was conducted in which the proximal variables (psychopathology and GAM-specified violent scripts, attitudes towards violence, and anger) were first entered in Step 1. This found that only disorganised symptom severity remained as a unique predictor of aggression risk. The addition of distal interpersonal (HD) and personality (psychopathy) variables in Step 2 significantly improved the prediction of inpatient aggressive behaviour, with the model as a whole explaining between 17.0% (Cox and Snell  $R^2$ ) and 23.4% (Nagelkerke  $R^2$ ) of the variance in aggression. In the final model, only HD remained as a significant unique predictor of aggression. That interpersonal HD accounted for greater variability in aggressive behaviour than all other variables, including psychopathy, adds to past research findings (Daffern, Duggan, Huband, & Thomas, 2008; Daffern, Thomas et al., 2010), and highlights HD as the most important factor for understanding inpatient aggressive behaviour in this sample.

Overall, these results provide convincing empirical support for the application of Interpersonal Theory to psychiatric inpatient aggression, and further reinforce the importance of considering distal interpersonal factors when developing aggression

prevention and treatment strategies for adult psychiatric inpatients. Additionally, these results support the incorporation of Interpersonal Theory and interpersonal style into models of aggressive behaviour, such as the GAM; theories of relational functioning are essential for understanding aggression in this population.

**Research Aim Two: The Contribution of Aggression-Related Personality Symptoms, Cognitive and Affective Characteristics, and Psychiatric Symptoms to Hostile-Dominance in Psychiatric Inpatients**

In Chapter Two, past research was reviewed that indicated that HD has been consistently associated with aggression in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). Consistent with this, data from the current study was presented in Chapter Four that confirmed the importance of HD in explaining variance in the risk of psychiatric inpatient aggression. However, despite the potential clinical consequences of HD, it was suggested that little is known about the factors that might contribute to a HD interpersonal style, and that delineation of HD would be important for facilitating increased specificity of treatment targeting HD and aggressive behaviour. While psychopathy (for review see Blackburn, 2005) and psychiatric symptoms such as paranoia (e.g. Podubinski, Daffern, & Lee, 2012) have been shown to be associated with HD, the extent to which HD is related to GAM-specified cognitions and affective states is unclear. Against this background, Chapter Five presented data to investigate the contribution of aggression-related personality symptoms (psychopathy), GAM-specified cognitive and affective characteristics, (violent scripts, attitudes towards violence, and anger) and psychiatric symptoms to HD in psychiatric inpatients.

The primary analysis reported in Chapter Five was a hierarchical linear regression. The interpersonal and affective features of psychopathy (Psychopathy Checklist: Screening Version [PCL:SV; Hart, Cox, & Hare, 1995], Factor 1 [F1]) and social deviance and lifestyle features (PCL:SV, Factor 2 [F2]) were entered in Step 1. The GAM-specified cognitive and affective characteristics (violent scripts, attitudes towards violence, and anger) were entered in Step 2 and psychiatric symptom severity was entered in Step 3. The addition of each step significantly improved the explanation of HD. The final model explained 71.30% of the variance in HD, with psychopathy F1 and F2, the tendency to rehearse aggressive scripts, and positive, negative, disorganised, and excited type psychiatric symptoms acting as unique predictors of HD. Furthermore, in the final model, excited psychiatric symptoms and the interpersonal and affective features of psychopathy were most strongly associated with HD. These results extend extant literature revealing relationships between HD and psychiatric symptoms (Daffern, Thomas et al., 2010) and psychopathy (for review see Blackburn, 2005). They suggest that HD reflects a predisposition towards interpersonal and affective difficulties, combined with a tendency towards more frequent rehearsal of aggressive scripts. HD is also related to more severe psychiatric symptoms.

### **Research Aim Three: The Stability of Hostile-Dominance and its Relationship with Psychiatric Symptoms and Aggression over time**

The literature presented in Chapter Two illustrated that HD in psychiatric patients is a relatively stable characteristic that does not fluctuate with changes in psychiatric symptomatology (see Podubinski et al., 2012). Given the association between HD and aggressive behaviour in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn,

2006; Doyle & Dolan, 2006), it was suggested that HD would likely be implicated in aggression occurring in the community post-discharge. Initial treatment and discharge planning would benefit from elucidation of this relationship; inpatient and post-discharge interventions specifically tailored for highly HD individuals might lead to improvements in pro-social behaviour following discharge. Reductions in HD may also lead to improvements in psychopathology, as HD likely impacts symptom severity. Against this background, Chapter Six presented data to examine the stability of HD and its relationship with psychiatric symptoms and aggression over time.

To test this, change over time was compared in a sub-sample of participants ( $n=41$ ) that had a repeat assessment of HD and psychopathology at approximately six months after the initial inpatient assessment. At the repeat assessment 31 participants were living in the community and 10 participants had been re-admitted to the acute units at the Alfred Hospital Inpatient Psychiatry Department. Results from the Two-Way Mixed-Model Analysis of Variance (ANOVA; Time [initial assessment vs. follow-up] x Location of Follow-Up [community or hospital]) showed no significant change in HD over time, despite significant reductions at follow-up for positive, negative, disorganised, and excited type symptoms. Bivariate Pearson correlation analysis demonstrated that at both initial assessment and six-month follow-up, HD was significantly and positively correlated with positive, disorganised, and excited type symptomatology. Thus, the overall reduction in severity occurred relative to initial symptom severity; patients with higher HD displayed more severe symptoms at both time points. These findings were consistent with one of the few previous studies that also conducted a longitudinal assessment of HD and psychiatric severity (Podubinski et al., 2012).

One further novel finding presented in Chapter Six was that higher HD, excited symptoms, and positive symptoms in the community, and more severe positive symptoms in the hospital, were associated with post-discharge aggression. Previous research exploring the relationship between HD and aggression has primarily focused on aggressive behaviour in secure psychiatric settings (Daffern et al., 2008; Daffern, Thomas et al., 2010; Daffern, Tonkin et al., 2010; Dolan & Blackburn, 2006; Doyle & Dolan, 2006). This data was among the first to demonstrate a potential link to aggression occurring in the community.

Overall, these results give further weight to the suggestion that HD is a relatively stable characteristic that is unaffected by changes in psychiatric symptomatology. However, higher levels of HD are associated with greater symptom severity over time. When considered together, this suggests that acute symptomatology does not exacerbate HD; rather, HD acts as a risk factor for more severe symptomatology, and in particular positive, disorganised, and excited symptoms. In addition to this, these results suggest that impaired relational functioning, as indicated by a characteristic HD interpersonal style, is relevant to aggression occurring in the community post-discharge.

#### **Research Aim Four: Exploration of Whether Hostile-Dominance Mediates the Relationship Between Childhood Abuse and Neglect and Aggressive Behaviour in Psychiatric Inpatients**

The research presented in Chapter Four confirmed the importance of HD to the prediction of psychiatric inpatient aggression, while the research presented in Chapter Six showed HD to be associated with aggressive behaviour occurring in the community post-hospital discharge. Additionally, the literature presented in Chapter Two

highlighted the link between childhood trauma and hostility in adulthood (Dragioti, Damigos, Mavreas, & Gouva, 2012; Roy, 2001) and childhood trauma and higher levels of aggression in psychiatric inpatients (Brodsky et al., 2001). Thus, it was suggested that the interrelationships between childhood trauma, HD, and psychiatric inpatient aggression should be investigated. It was also suggested that Interpersonal Theory could be used as a framework to conceptualise the developmental impact of childhood abuse and neglect experiences from an interpersonal perspective, which would in turn lead to theoretically informed interventions aimed at reducing aggression risk. Against this background, Chapter Seven presented data to explore whether HD mediates the relationship between childhood abuse and neglect and aggressive behaviour in psychiatric inpatients.

A high prevalence of childhood abuse and neglect experiences in adult psychiatric inpatients was demonstrated; Childhood emotional (50.5%), physical (42%), and sexual (42%) abuse, and emotional (46.5%), and physical (41%) neglect of moderate to extreme severity was commonly reported. These prevalence estimates are higher than those found in community samples (see Anda et al., 2006 and Australian Institute of Family Studies, 2013), although this is to be anticipated given that childhood maltreatment is often implicated in the development of psychopathology (Afifi et al., 2011; Bebbington et al., 2011; Cohen et al., 2014). Additionally, seventy (35.0%) patients were aggressive (verbal or physical aggression towards others or physical aggression towards objects) during their hospital admission, with more severe childhood abuse or neglect experiences predictive of aggression. Interpersonal HD was found to mediate the relationship between aggression and childhood emotional abuse, sexual abuse, and physical neglect; HD did not mediate the relationship between childhood

physical abuse and aggression, and childhood emotional neglect was not related to HD. These results add to the findings of past research examining associations between childhood abuse and neglect and hostility in adulthood (Roy, 2001) and relationships between childhood abuse and neglect and aggression (Brodsky et al., 2001).

Overall, these results suggest that the relationship between childhood maltreatment and aggressive behaviour in psychiatric inpatients is unlikely to be direct; rather, childhood maltreatment likely contributes to the development of a HD interpersonal style, which then influences aggressive behaviour. Furthermore, although not the focus on this research, the high prevalence rate does suggest a relationship between childhood abuse and neglect and psychopathology in adulthood, although further research is necessary to properly explicate this relationship.

## **Implications**

### **Theoretical Implications**

**The development of interpersonal hostile-dominance.** Consideration of these findings in relation to Interpersonal Theory suggests that early communal and agentic motives can become distorted as a result of childhood maltreatment. Over time, individuals may develop the view that the world is a hostile environment; dominance may be sought to prevent further victimisation and protect self-interests. Over time, interpersonal interactions that affirm these expectations may strengthen the motivation to act in a hostile and dominant manner, leading to maladaptive interpersonal functioning and the development of a HD interpersonal style. HD is likely regarded as self-protective and helpful for coping with feelings of vulnerability arising from the trauma (Pincus & Ansell, 2013). As interpersonal HD becomes more established,

individuals may rigidly and intensely enact hostile and dominant interpersonal behaviours, and they may be unable to adapt their behaviour to particular situational demands.

**Characterisation of interpersonal hostile-dominance.** For psychiatric patients, the adoption of a HD interpersonal style appears to reflect a predisposition towards interpersonal and affective difficulties, combined with a tendency towards more frequent rehearsal of aggressive scripts. These scripts are likely entrenched and easily accessed to provide a guide for future aggressive action. Regarding clinical factors, high HD patients are not likely to be highly anxious or depressed. Rather, HD is likely to be associated with positive, negative, disorganised, and excited type psychiatric symptoms; severity of excited symptoms was strongly predictive of HD. However, given HD has been found to be stable over time while psychiatric symptoms abate (Podubinski et al., 2012), it is not clear that these symptoms are characteristic of HD over the lifespan. Rather, HD may exacerbate particular symptoms or increase the probability an individual will develop certain symptoms. This proposition requires further empirical evaluation.

That the strongest predictor of HD was excited psychiatric symptoms is unsurprising, as HD has been associated with a subtype of psychopathy, primary psychopathy. Primary psychopathy is characterised by high hostility, impulsiveness, and extraversion (Skeem, Johansson, Andershed, Kerr, & Loudon, 2007; Blackburn, 2009), and patients in the current study who presented with these characteristics would have scored high on the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987) subscale measuring excited psychopathology (i.e. through high scores on hostility and poor impulse control items). The strong relationship between HD and

the interpersonal and affective features of psychopathy also makes sense, as the PCL:SV items that assess these features can be conceptualised as being relevant to low communal and high agentic motivations. For example, someone who is being deceitful may not be motivated to connect with others, but rather wishes to control the interaction in a way that benefits their agency.

Although HD was more strongly associated with the interpersonal and affective features of psychopathy, an association between HD and the antisocial and lifestyle aspects of psychopathy remained. In relation to this, antisocial personality disorder typically falls within the HD quadrant of the Interpersonal Circle (IPC; Blackburn, 1998b; Pincus & Wiggins, 1990). Antisocial personality disorder is typified by behaviours similar to those assessed by F2 on the PCL:SV, such as impulsivity, irresponsibility, and antisocial behaviour (e.g. behaviours that are grounds for an arrest). Both psychopathy (Hare, 1991, 2003) and antisocial personality disorder (Gilbert & Daffern, 2011) have established relationships with aggressive behaviour, yet it has been debated whether these behavioural features are central to the disorders, or mere correlates (e.g. Cooke, Michie, Hart, & Clark, 2004; Hare & Neumann, 2005).

Given the association between HD and the interpersonal and affective domains of psychopathy, highly HD patients may have impaired capacity to feel remorse for real or imagined actions, or to feel empathy. Additionally, although individuals with elevated levels of HD may show verbal and nonverbal expressions of anger and resentment, for example, hostility, high trait anger is not necessarily associated with high HD. Moreover, higher HD is not necessarily associated with beliefs that are supportive of aggressive behaviour, suggesting that aggressive individuals with a HD interpersonal style do not generally view aggression as reasonable.

**The relevance of interpersonal hostile-dominance to aggression.** According to the GAM, aggression is primarily a cognitive process. While a number of distal factors (e.g. personality traits or interpersonal style) are relevant to aggressive behaviour, these are rarely elaborated as the GAM's main focus is on the knowledge structures as they are established within personality. From the GAM's perspective aggression is principally the result of the operation of aggression-related knowledge structures, with more aggressive individuals holding knowledge structures that are more enduring, elaborate, and readily accessible (Anderson & Bushman, 2002; Gilbert & Daffern, 2010). However, these results suggest that aggression in psychiatric hospitals is based to a greater extent on maladaptive relational functioning, and in particular HD. Given that Interpersonal Theory considers relational functioning to be an important aspect of personality (Pincus & Ansell, 2013), HD could be viewed within the context of the GAM as a critical distal personality factor that guides selection of aggressive behaviour as a response to situational factors or perceived threat.

HD individuals might more readily interpret their environment as hostile and may be more likely to hold hostile expectations of others. When individuals with elevated levels of HD are placed in situations that threaten their dominance, they may be primed to act aggressively to avoid feelings of vulnerability and to regain control of the interaction. Whether or not an individual engages in an aggressive act is guided by their behavioural scripts; over time, HD individuals may have developed readily accessible, and entrenched, behavioural scripts emphasising aggressive behaviour, making them more likely to aggress. For psychiatric patients, the more severe psychiatric symptoms experienced by patients with higher HD may further impact upon the ability to appraise the threat associated with an encountered situation. Furthermore,

the increased arousal and impulsivity (i.e. excited symptomatology) associated with elevated HD would further reduce inhibitions towards aggressive behaviour, increasing the likelihood of the patient acting aggressively.

According to Interpersonal Theory, balanced and productive interpersonal interactions occur when the agentic and communal needs of both persons are met during the interaction. For this to occur corresponding responses are invited on the Communion dimension (i.e. friendliness invites friendliness) and reciprocal responses are invited on the agency dimension (i.e. dominance invites submission). This is described as the principle of *Complementarity*; deviations are likely to disrupt interpersonal relations and may be indicative of maladaptive interpersonal functioning (Pincus & Ansell, 2013). During psychiatric treatment, interpersonal interactions are often *Acomplementarity*, that is, correspondence occurs on the Communion dimension or reciprocity occurs on the Agency dimension but never both at once, or *Anticomplementarity*, that is, neither correspondence on Communion or reciprocity on Agency is exhibited (Pincus & Ansell, 2013). A patient who has a persistent need for dominance may respond to staff requests with behaviour that attempts to control the situation. Rather than submit to this behaviour, staff will typically respond in a non-reciprocal manner (i.e. assertiveness) in an attempt to regain control. This may lead to a disruption in the interpersonal relationship, where the patient is increasingly motivated to command the situation and does so through aggressive action (Daffern, Thomas et al., 2010).

Given the rigid and intense interactional style characteristic of HD, patients high in HD may be unable to adapt their behaviour to the particular demands of the inpatient routine. The inpatient setting may heighten vulnerable feelings; many situations may be deemed as directive and controlling as psychiatric inpatients often have little control

over their treatment, day-to-day routine, and interpersonal interactions. Such interactions likely lead to an increased risk of aggression for highly HD patients. For example, when demands are made of highly HD patients (e.g. take medication), they may feel as though they are being forced into submission, which may in turn be viewed as threatening. Aggression may be seen as an appropriate response, to restore dominance and protect oneself (Daffern, Thomas et al., 2010).

For aggression occurring in the community post-discharge, HD also appears to be relevant; although the environments differ, demands on patients continue. While community settings may be less restrictive than inpatient settings, patients may still be subject to coercive treatment (e.g., adherence with medication, having to attend meetings with mental health professionals). Interpersonal and social demands (e.g. family and employment) may also be pronounced. Again, such interactions may lead to an increased risk of aggression for highly HD patients if encountering situations in which they perceive that they are losing autonomy/control or are interpersonally vulnerable.

It is worth noting that there was a trend for higher levels of HD at both initial assessment and follow-up for individuals who were in hospital at follow-up. Furthermore, only HD in the community was associated with increased community aggression. Thus, although HD was found to be a relatively stable characteristic, the setting (i.e. hospital vs. community) may intensify HD due to the increased scope for confrontation with staff members and other patients, and the increase in rules and regulations of the setting. The average two-week hospital stay may not be enough time to solidify this slight increase and so when they are discharged the level of HD returns to a more moderate level. Alternatively, it is possible that elevated levels of HD shape

the presentation of psychiatric symptoms in a manner that increases the probability that symptoms manifest as, or lead to, aggressive behaviour, and thus hospitalisation.

However, this is speculative and further research is needed to explore these hypotheses.

### **Clinical Implications**

**The assessment and management of aggressive behaviour.** These results highlight the importance of considering relational functioning in predicting psychiatric inpatient, and post-discharge aggression. However, it should be noted that the relationship between HD and aggression in the community still requires further assessment to demonstrate whether it is a robust finding. Patterns of maladaptive interpersonal functioning as characterised by HD are particularly important. Given this, interpersonal functioning should be a focus of initial risk assessments on admission to hospital. A follow-up assessment of HD should be completed after discharge; assessing HD after patients have returned to community living may more accurately predict community-based aggressive behaviour. Reviewing items pertinent to the HD scale on the Impact Message Inventory-Circumplex (IMI-C; Kiesler & Schmidt, 2006) may provide a parsimonious method for the assessment of interpersonal HD.

While tools measuring psychopathy are often used to assess risk for violence (Skeem, Polaschek, Patrick, & Lilienfeld, 2011), they may be less relevant for assessing violence risk in civil psychiatric inpatient settings as they likely neglect important nuances of interpersonal functioning. Psychopathy is a much broader conceptualisation of personality pathology encompassing affective, interpersonal, lifestyle, and antisocial components. In contrast, by evaluating interpersonal style, interactions with others are emphasised; staff can acknowledge and consider the impact their interpersonal behaviour has on patients, as well as patients' particular interpersonal priorities and

sensitivities, and how these may influence a patients' reactions, particularly in situations that are deemed directive and controlling by patients. As such, knowledge of Interpersonal Theory may assist mental health practitioners to adjust their interactions according to the interpersonal style of patients (Birtchnell, 2002), which may in turn help to avert aggressive incidents. This is an important consideration given the intensely interpersonal nature of inpatient psychiatric treatment, and the interpersonal nature of many precipitants to inpatient aggression (Daffern, Howells, & Ogloff, 2007).

Second to this, by assessing interpersonal style on admission and post-discharge, patients with elevated levels of HD can be identified and offered additional or different treatment. For patients with elevated HD, treatment targeted at a reduction in HD may be beneficial. Daffern et al. (2013) illustrated the benefits of treating high HD, with their research showing that in a sample of offenders with personality disorder, completion of an intensive treatment program was associated with reductions in HD at the end of treatment, which was in turn associated with reductions in the risk of re-offending. Within the psychiatric inpatient context, reductions in HD, and therefore aggressive behaviour, may be achieved by using multiple strategies targeting a range of factors. For instance, Interpersonal Therapy may be drawn upon to target the interpersonal and affective characteristics of HD. The use of Cognitive Behavioral Therapy may be useful for developing emotional and behavioural regulation strategies (particularly with regard to addressing the causes of excitement, hostility, uncooperativeness, and poor impulse control), and reinforcing more appropriate behavioural scripts and pro-social attitudes. Psychiatric symptom management should also continue to form part of any aggression prevention strategy. This is because improvements in psychiatric symptoms may result in reduced arousal, disorganised

thinking, and impulsivity, which may in turn reduce the likelihood of encountered social situations being perceived and responded to as a threat.

As HD mediated the relationship between childhood maltreatment and inpatient aggression, treatments focused on HD may need to consider the role of childhood maltreatment in the development and maintenance of HD, including whether HD is perceived to be functional for the patient. Interventions that are mindful of the origins of HD, and that reduce confrontation and challenges to patient's sense of personal control, may reduce conflict and aggression. Accordingly, this may result in reductions in the use of seclusion and restraint, which may be experienced by patients with trauma histories as retraumatising (Muskett, 2014).

**General psychiatric treatment.** Further to the prevention and management of aggressive behaviour, HD may also be important for understanding problems in the therapeutic alliance and responses to psychiatric treatment. Given that individuals with higher HD have difficulties with treatment adherence and therapeutic alliance (Cookson, Daffern, & Foley, 2012), it may be that individuals with higher HD are more difficult to engage in treatment, which in turn leads to poorer treatment adherence, greater symptom persistence, and worse outcomes over time. As such, treatment approaches that encourage collaboration, minimise the potential for confrontation, and increase the perceived benefit for patients of adhering to treatment (e.g. through motivational interviewing) may be beneficial. This is a timely implication given the current international focus on reducing restrictiveness of care and increasing patient input into, and influence over, their treatment. For example, refer to the *Mental Health Act 2014* (Vic).

### **Interpersonal functioning and trauma informed care in psychiatric**

**patients.** The high prevalence of childhood abuse and neglect experiences found in this sample of adult psychiatric inpatients suggests that inquiring about childhood abuse and neglect histories in this population would be prudent. This is particularly important given the association between childhood maltreatment and personality symptomatology (Afifi et al., 2011; Cohen et al., 2014), other psychopathology (Bebbington et al., 2011), and antisocial or aggressive behaviour (Anda et al., 2006; Brodsky et al., 2001; McGrath, Nilsen, & Kerley, 2011; Sarchiapone, Carli, Cuomo, Marchetti, & Roy, 2009). Understanding the role of childhood trauma in the development of psychopathology may inform treatment pathways (Baird, 2008). Interpersonal Theory may prove useful in conceptualising the effect of childhood maltreatment on a patient's schema and interpersonal difficulties. Accordingly, this may assist staff and patients to create a narrative regarding the acquisition of problematic interpersonal behaviour; this may facilitate greater staff and patient understanding and direct future therapeutic approaches.

Further, the most clearly articulated policy emerging from the trauma-informed care movement in Australia has been to focus on reducing and eliminating restrictive practices (Muskett, 2014). Psychiatric inpatients with a history of childhood sexual abuse or physical assault report a greater number of distressing experiences during hospitalisation (e.g. verbal bullying by staff, the use of medication as a threat or punishment; Frueh et al., 2005). Such restrictive interventions may be experienced by patients as emotionally unsafe and disempowering, and they may have the potential to re-traumatise (for review see Muskett, 2014). Despite this, staff may view such interventions as playing an important therapeutic role and essential to managing

aggressive behaviour and maintaining safety for other patients and staff (Happell & Harrow, 2010; Happell & Koehn, 2010; Van der Merwe, Muir-Cochrane, Jones, Tziggili, & Bowers, 2013). This may be due to a lack of alternative approaches (Gaskin, Elsom, & Happell, 2007; Happell & Koehn, 2010). Reducing HD in psychiatric inpatients, or better managing the consequences of high HD in inpatients, may have the additional effect of reducing the occurrence of aggressive behaviour and the need for seclusion and restraint. Thus, a focus on HD and interpersonal dysfunction more generally may assist trauma-informed care approaches.

### **Limitations and Future Research**

The main limitation of the current study was the self-report nature of several measures including the Schedule of Imagined Violence (SIV; Grisso, Davis, Vesselinov, Appelbaum, & Monahan, 2000), Measures of Criminal Attitudes and Associates: Attitudes Towards Violence scale (MCAA:ATV; Mills & Kroner, 2001), State-Trait Anger Expression Inventory-2: Trait Anger scale (STAXI-2:TA; Spielberger, 1999), Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998), and the Life History of Aggression Questionnaire: Aggression subscale (LHA:A; Coccaro, Berman, & Kavoussi, 1997). Participant answers to items on these measures may have been affected by their ability to recall certain events (e.g. early childhood abuse and neglect experiences, the frequency of their aggressive behaviours occurring in the community post-discharge). Some participants may also have provided socially desirable responses (e.g. denying beliefs supportive of aggressive behaviour, minimising or exaggerating childhood abuse and neglect histories). Although some of the measures incorporate subscales designed to assess the potential for biased

responding (e.g. Minimization-Denial subscale for the CTQ), collateral information collected from carers or treatment providers may enhance the reliability of measurement for these constructs. Second to this, while every effort was made to ensure that the scoring of the IMI-C, PCL:SV, and PANSS was both reliable and valid, inter-rater reliability was not formally analysed. Thus, the reliability of these measures is unknown, and as such, caution should be used when interpreting the results of this research.

There were also limits to the measurement of inpatient aggressive behaviour, in that this was measured as a combination of verbal aggression against patients, verbal aggression against staff, physical aggression against patients, physical aggression against staff, and physical aggression against objects. Although 35% of patients engaged in any form of aggression during their admission, for most patients this consisted of verbal aggression or physical aggression against objects. Only 9.5% of patients engaged in physical aggression targeting staff and/or co-patients, making it statistically untenable to break down the different types of aggressive behaviour and analyse relationships with independent variables. Future research with larger samples may assist delineation of the unique relationships between the variables studied in the current research and the conduct of physical aggression targeting patients and staff. Second to this, the current research is limited by the low rate of psychopathy in the study sample. The mean total score on the PCL:SV was only 1.74 ( $SD=2.27$ ) out of a possible 24. Even the maximum score (15) was below the suggested diagnostic cutoff ( $>18$ ; Hart et al., 1995). While low psychopathy is common in civil samples, these results may not generalise to patients higher in psychopathy.

It is also important to note that the PANSS was chosen as an alternate measure to the Brief Psychiatric Rating Scale-18 (BPRS-18; Overall & Gorham, 1962); HD, as measured by the IMI-C and the BPRS-18 Paranoid Disturbance subscale appear to suffer a conceptual overlap. The BPRS-18 Paranoid Disturbance scale includes the item ‘hostility’, which is rated on the basis of observed hostile behaviour. This may reflect a personality characteristic rather than a symptom of mental illness. However, the PANSS may suffer from a similar conceptual overlap; the Excited subscale of the PANSS also includes the items ‘hostility’ and ‘uncooperativeness’, both of which may be affected by character. While the other subscales do not appear to suffer from this conceptual overlap, the association between HD and excited symptomatology should be viewed in light of this. Further research is needed to determine the stability of the PANSS Excited scale scores over time, and in the context of fluctuations in other symptoms of psychiatric illness to determine the impact of character on PANSS Excited scale scores.

An additional limitation relates to the use of a sample drawn from one Australian inpatient psychiatry service. This may limit the generalisability of the current research findings to other services for several reasons. These may include: (1) differences in inpatient environments, including structure/layout of the unit, behaviour of other patients, degree of privacy, ward rules and regulations, and staff demands/communication levels, (2) differences in patient diagnostic and demographic mix, and (3) differences in the way patients are supported and managed following a return to the community. Thus, future research might recruit a multi-site sample to increase the generalisability of the findings.

The current research highlights the importance of HD to psychiatric inpatient aggression, encouraging future research into the development of risk assessment

measures that incorporate interpersonal functioning, and in particular HD. In doing this, the development of cut scores and normative data for clinically relevant levels of HD will be useful to assist clinicians in determining which patients require different or additional interventions due to their elevated level of HD. Second to this, suggestions made here regarding the efficacy of treating HD in psychiatric patients remain speculative. The development of evidenced-based treatment approaches targeting reductions in HD and aggression is necessary. Modifying approaches to managing patients high in HD will also be useful. The development of such approaches should be based on the findings of the current research; HD is characterised by interpersonal and affective difficulties, combined with a tendency towards more frequent rehearsal of aggressive scripts. Therefore reductions in HD may be achieved by using multiple strategies to target a range of factors. However, as individuals with higher HD have difficulties with treatment adherence and therapeutic alliance (Cookson et al., 2012), engaging these individuals in treatment is likely to be a challenging endeavour. Treatment engagement may influence the expression of HD, as well as the significance of HD in relation to aggressive behaviour, and thus evaluation of these relationships should be a focus of future research. Interventions directed at supporting people with a HD interpersonal style to manage the demands of psychiatric treatment are also required as these may limit aggression and enhance engagement. Future research should test the impact of these novel interventions. Consideration of the inter-relationship between psychiatric symptoms and HD is also needed. HD may exacerbate particular symptoms or increase the probability an individual will develop certain symptoms that manifest in aggressive behaviour. As such, the treatment and management of HD may be necessary

for treatment adherence and engagement (e.g. Cookson et al., 2012) and improved treatment outcomes.

In addition to the above, variants of psychopathy are increasingly being considered; a fourfold typology of psychopathy (Primary, Secondary, Controlled and Inhibited) has been developed, with each type distinguished on the basis of their interpersonal patterns (Skeem et al., 2007; Blackburn, 2009). It will be important for future research to explore the relationships between these subtypes of psychopathy and interpersonal HD and inpatient aggression. Elucidation will help to characterise HD with greater specificity.

Finally, future research should endeavour to elucidate other variables related to inpatient aggression, and in particular those situational variables that might exacerbate HD and trigger aggressive behaviour in patients with high levels of HD. Factors such as the structure/layout of the unit, behaviour of other patients, degree of privacy, ward rules and regulations, and staff demands/communication levels all impact on the rates of aggressive behaviour (for review see Cutcliffe & Riahi, 2013a, 2013b). Developing a greater understanding of how patients high in HD differ from patients with low HD in experiencing and responding to these situational factors will be important for enhancing knowledge of the relationship between HD and psychiatric inpatient aggression. Furthermore, the overt and covert interpersonal behaviours that characterise HD need to be further explicated. This will increase the specificity of HD as a target for aggression reduction strategies. As a final point, it is possible that the relationship between childhood maltreatment and HD is influenced by protective factors, such as parental and peer relationships (Collishaw et al., 2007). Exploration of the relationships between

such variables in future research will be important for clinical practice, and may inform early intervention strategies averting the development of HD.

### **Conclusion**

Psychiatric hospitals commonly contend with aggressive behaviour that if not appropriately managed, can result in various adverse outcomes that ultimately reduce the quality of care that can be offered. In this thesis, a number of personal features relevant to aggression in hospital psychiatry services were discussed. The main focus was on understanding interpersonal HD and its relationship with aggression in hospital psychiatry services through the integration of two complementary theoretical models: the GAM and Interpersonal Theory. Overall, the findings emphasised the importance of Interpersonal Theory and interpersonal HD more specifically; the GAM, as applied to inpatient aggression, may be enhanced through the integration of Interpersonal Theory and locating interpersonal style as a key person input. The importance of HD in predicting inpatient and post-discharge aggression was highlighted. Importantly, the results indicated that childhood abuse and neglect experiences are common in inpatient populations and contribute to the development of interpersonal HD, which then influences inpatient aggressive behaviour. Additionally, conceptualisations of HD were enhanced, with HD found to be a stable characteristic reflecting interpersonal and affective difficulties typical of psychopathy, combined with a tendency towards more frequent rehearsal of aggressive scripts. HD was also found to be associated with greater symptom severity.

Overall, these results indicate that the assessment of interpersonal style on admission to a psychiatric inpatient unit is warranted; patients with elevated levels of

HD can be identified and targeted, and HD can be considered in subsequent treatment plans and violence prevention strategies. Post-discharge assessments of HD would also be useful. Reductions in HD, and therefore aggression might be achieved through a broad intervention that covers interpersonal and affective characteristics, emotional and behavioural regulation, cognitions, and psychiatric symptoms, in an interpersonally informed framework. As a final point, the most clearly articulated policy emerging from the trauma-informed care movement in Australia has been to focus on reducing and eliminating restrictive practices. A focus on HD and interpersonal dysfunction more generally may assist in this, and therefore should be considered as part of future trauma-informed care approaches.

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## Legislation

*Mental Health Act 2014 (Vic)*

# Appendix A: Monash University Human Research Ethics Committee Approval

## Certificate



**MONASH** University

Monash University Human Research Ethics Committee (MUHREC)  
Research Office

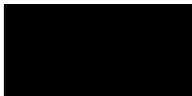
### Human Ethics Certificate of Approval

**Date:** 27 September 2011  
**Project Number:** CF11/2658 - 2011001547  
**Project Title:** The psychological characteristics of hospitalised inpatients with problematic interpersonal styles  
**Chief Investigator:** Dr Yitzchak Hollander  
**Approved:** From: 27 September 2011 to 27 September 2016

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#### Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. **Complaints:** The researchers are required to inform MUHREC promptly of any complaints made about the project, whether the complaint was made directly to a member of the research team or to the primary HREC.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



Professor Ben Canny  
Chair, MUHREC

Cc: Dr Michael Daffern; Dr Stuart Lee; Ms Tegan Podubinski

Postal – Monash University, Vic 3800, Australia  
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton

 [www.monash.edu/research/ethics/human/index/html](http://www.monash.edu/research/ethics/human/index/html)  
ABN 12 377 614 012 CRICOS Provider #00008C

## Appendix B: Alfred Human Research Ethics Committee Approval Certificate



### ETHICS COMMITTEE CERTIFICATE OF APPROVAL

*This is to certify that*

**Project No:** 303/11

**Project Title:** The psychological characteristics of hospitalised inpatients with problematic interpersonal styles

**Principal Researcher:** Dr Yitzchak Hollander

**Project Proposal:** 303/11

**Participant Information and Consent Form (Phase 1) version 2 dated:** 17-Aug-2011

**Participant Information and Consent Form (Phase 2) version 2 dated:** 17-Aug-2011

**Participant Information and Consent Form (Phase 3) version 2 dated:** 17-Aug-2011

*was considered by the Ethics Committee on 25-Aug-2011 and APPROVED on 09-Sep-2011*

It is the Principal Researcher's responsibility to ensure that all researchers associated with this project are aware of the conditions of approval and which documents have been approved.

***The Principal Researcher is required to notify the Secretary of the Ethics Committee, via amendment or progress report, of***

- Any significant change to the project and the reason for that change, including an indication of ethical implications (if any);
- Serious adverse effects on participants and the action taken to address those effects;
- Any other unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role, or any other change in research personnel involved in the project;
- Any expiry of the insurance coverage provided with respect to sponsored clinical trials and proof of re-insurance;
- A delay of more than 12 months in the commencement of the project; and,
- Termination or closure of the project.

***Additionally, the Principal Researcher is required to submit***

- A Progress Report on the anniversary of approval and on completion of the project (*forms to be provided*);

The Ethics Committee may conduct an audit at any time.

All research subject to the Alfred Hospital Ethics Committee review must be conducted in accordance with the National Statement on Ethical Conduct in Human Research (2007).

The Alfred Hospital Ethics Committee is a properly constituted Human Research Ethics Committee in accordance with the National Statement on Ethical Conduct in Human Research (2007).

#### **SPECIAL CONDITIONS**

*None*

**SIGNED:**   
*Chair, Ethics Committee (or delegate)*

**R. FREW  
SECRETARY  
ETHICS COMMITTEE**

***Please quote Project No and Title in all correspondence***

## Appendix C: Amended Schedule of Imagined Violence

Amended from Grisso, T., Davis, J., Vesselinov, R., Appelbaum, P. S., & Monahan, J. (2000). Violent thoughts and violent behavior following hospitalization for mental disorder. *Journal of Consulting and Clinical Psychology, 68*, 388-398. doi:10.1037//0022-006X.68.3.388

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### Schedule of Imagined Violence

1. How often have you had thoughts about hurting or injuring other people?

- Several times a day
- Once a day
- Several times a week
- Once a week
- Several times a month (less than once a week)
- Several times a year
- Once every few years
- Never (discontinue)

2. When was the last time you had such a thought?

- Today
- Yesterday
- During the past week
- During the past month
- During the past 2 months
- More than 2 months ago

3. When did you start having these thoughts?

- As long as can remember
- Several years ago
- Several months ago
- Several weeks ago
- After specific event (specify event, date)
- Other (describe)

## Appendix C Continued: Amended Schedule of Imagined Violence

Amended from Grisso, T., Davis, J., Vesselinov, R., Appelbaum, P. S., & Monahan, J. (2000). Violent thoughts and violent behavior following hospitalization for mental disorder. *Journal of Consulting and Clinical Psychology, 68*, 388-398. doi:10.1037//0022-006X.68.3.388

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4. When you have these thoughts, in what way do you think about injuring or hurting people?

- Physical aggression
- Verbal aggression
- Indirectly (e.g. property damage, undermining)
- Sexual aggression
- Other (describe)

5. When you have these thoughts, are they usually about the same each time you have them, or do you imagine all kinds of different ways of hurting someone?

- Same
- Different

6. Are they usually about the same person, or about many different people?

- Same person
- Different person

7. Since the time you first started having these thoughts, have they become more serious, less serious, or have they been about the same?

- More serious
- Less serious
- About the same

8. In the past two months, have you ever had these thoughts while actually being with or watching the person whom you imagine hurting?

- Yes
- No

## Appendix D: Amended Overt Aggression Scale

Amended from Silver, J. M., & Yudofsky, S, C. (1987). Documentation of aggression in the assessment of the violent patient. *Psychiatric Annals*, 17, 375-384.

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### Record of aggressive behaviour

During the patient's hospital stay did they engage in any of the following behaviours (place a tick against each behaviour exhibited)?

	Participant number:	
<b>VERBAL AGGRESSION AGAINST STAFF</b>	Absent	
	Makes loud noises, shouts angrily	
	Yells mild personal insults, e.g. "You're stupid!"	
	Curses viciously, uses foul language in anger, makes moderate threats to others or self	
	Makes clear threats of violence toward other or self ("I'm going to kill you") or requests to help control self	
<b>VERBAL AGGRESSION AGAINST OTHER PATIENTS</b>	Absent	
	Makes loud noises, shouts angrily	
	Yells mild personal insults, e.g. "You're stupid!"	
	Curses viciously, uses foul language in anger, makes moderate threats to others or self	
	Makes clear threats of violence toward other or self ("I'm going to kill you") or requests to help control self	
<b>PHYSICAL AGGRESSION AGAINST STAFF</b>	Absent	
	Makes threatening gestures, swings at people, grabs at clothes	
	Strikes, kicks, pushes, pulls hair (without injury to them)	
	Attacks others, causing mild-moderate physical injury (bruises, sprains, welts)	
	Attacks others, causing severe physical injury (broken bones, deep lacerations, internal injury)	
<b>PHYSICAL AGGRESSION AGAINST OTHER PATIENTS</b>	Absent	
	Makes threatening gestures, swings at people, grabs at clothes	
	Strikes, kicks, pushes, pulls hair (without injury to them)	
	Attacks others, causing mild-moderate physical injury (bruises, sprains, welts)	
	Attacks others, causing severe physical injury (broken bones, deep lacerations, internal injury)	
<b>PHYSICAL AGGRESSION AGAINST OBJECTS</b>	Absent	
	Slams doors, scatters clothing, makes a mess	
	Throws objects down, kicks furniture without breaking it, marks the wall	
	Breaks objects, smashes windows	
	Sets fires, throws objects dangerously	