Extending the Utility of the General Aggression Model

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ABSTRACT

To date, the General Aggression Model (GAM) is the most comprehensive and unified theory of aggression. It recognises the importance of a broad range of factors, including biological, personality, cognitive, emotional, social and environmental factors, to aggression propensity. However, empirical investigations of the GAM have tended to focus largely on the role of anger and several types of knowledge structures (aggressive scripts, normative beliefs and maladaptive schema) with little consideration given to other person-specific inputs such as personality. In addition, given the well-recognised link between cognition, emotion and behaviour, lack of consideration of relevant emotional and coping states (i.e., schema modes) associated with the primary knowledge structures, particularly maladaptive schema, represents a potential limitation of the model. Some researchers have therefore begun to argue that the application of the GAM to violent populations may, in fact, be limited. The present thesis, therefore, represented a preliminary step in overcoming this gap in the literature. It examined whether the addition of person-specific, clinically relevant models of maladaptive personality and integrative cognitive, emotional and coping states (schema modes) associated with the primary knowledge structures, improved the utility of the GAM in an offender sample.

In order to achieve this task, a series of theoretical and empirical investigations determining the importance of Diagnostic and Statistical Manual of Mental Disorders - 5th Edition (DSM-5) maladaptive personality traits, Schema Therapy (ST) schema modes, and GAM-delineated constructs to aggression were undertaken. Given the DSM-5 maladaptive trait model has only recently been developed, the empirical evidence base exploring DSM-5 trait-aggression...
associations is scarce. As such, this thesis first sought to examine the way in which DSM-5 maladaptive personality domains and facets may be meaningfully related to aggression. A comprehensive review of the literature regarding extant personality/PD and aggression literature was undertaken in an attempt to elucidate the nature of the relationships between DSM-5 maladaptive traits and aggression. The main findings emerging from this analysis were that DSM-5 maladaptive domains and over 20 facets likely bear relevance to clinically significant levels of aggression, and consideration of the DSM-5 trait model would enable more systematic assessment and treatment of personality traits that are conducive to aggression.

For the empirical component of the research, 208 offenders incarcerated at a maximum-security remand centre were assessed with regard to their histories of aggression, maladaptive personality traits, aggression-related and other maladaptive cognitions (aggressive behavioural scripts, normative beliefs supportive of aggression, Early Maladaptive Schema (EMS)), EMS-related emotional and coping states (schema modes) and trait anger. In order to build upon the theoretical review, the first empirical study utilised regression analyses to empirically examine the relationships between DSM-5 maladaptive personality domains (utilising two different scoring algorithms available within the literature, i.e., the APA-three facets only and Krueger et al. algorithms) and facets and histories of aggression. The results demonstrated non-significant relationships between DSM-5 domains (irrespective of the scoring algorithm utilised), while the facets of Hostility and Risk Taking were found to be related to past aggression. On the whole, the findings demonstrated that the DSM-5 trait model could be usefully applied within an
offender population, and highlighted the importance of a facet-level examination of maladaptive personality with respect to aggression.

The second empirical investigation explored the relevance of EMS and schema modes to offenders' aggression history. Although both EMS and schema modes were positively associated with aggression history, hierarchical regression analyses confirmed the predictive superiority of schema modes. Specifically, three schema modes, namely Enraged Child, Impulsive Child and Bully and Attack, emerged as significant predictors of aggression history. Overall, the findings highlighted that the EMS framework may not be the most valuable model to draw upon within the GAM, and instead suggested that the more comprehensive construct of schema modes warranted further consideration in contemporary aggression theory.

The findings of the two preliminary empirical investigations represented important interim steps to examine the role of maladaptive personality and schema modes within the context of the GAM. Accordingly, the third empirical study sought to amalgamate these research findings by examining whether consideration of DSM-5 Hostility and Risk Taking and the Enraged Child, Impulsive Child and Bully and Attack schema modes, in addition to GAM-delineated aggressive scripts, normative beliefs supportive of aggression and anger, improved the prediction of aggression history. Hierarchical regression analyses revealed that maladaptive personality and schema modes accounted for unique variance, over and above that of GAM-delineated constructs. Specifically, Trait Anger, DSM-5 Risk Taking and the Enraged Child mode concurrently increased the likelihood of past aggression. On the whole, these findings highlighted that consideration of maladaptive personality traits and schema modes, within the context of the GAM, could enhance contemporary
aggression theory by improving current understandings of the person-specific factors that characterise individuals who are prone to aggression. Moreover, consideration of relevant aggression-related personality, cognitive, emotional, and coping constructs has the potential to enhance assessment and treatment efforts with violent offenders.

Taken together, these findings confirmed that consideration of novel, clinically meaningful maladaptive personality and schema concepts within the context of a contemporary aggression framework, has much to offer in enhancing understandings of aggression in offender populations. Furthermore, they indicated that broader inclusion of maladaptive personality traits and schema modes within the GAM framework is likely to assist in both characterising and differentiating among violent offenders and would provide a more comprehensive conceptual framework by which to target and ameliorate aggression risk.
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DECLARATIONS

In accordance with the Swinburne University of Technology Statement of Practice for the completion of a Higher Degree by Research, the following declarations are made:

I, Ashley Lauren Dunne, hereby declare that this thesis, titled, ‘Extending the Utility of the General Aggression Model,’ contains no material which has been accepted for the award to myself, the candidate, of any other degree or diploma, except where due reference is made in the text of the examinable outcome. I declare that, to the best of my knowledge, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the examinable outcome. Where the work is based on joint research or publications, the thesis discloses the relative contributions of the respective workers or authors.

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Signature of Candidate: ____________________________

Date: _____________________ 09/06/2017
# TABLE OF CONTENTS

ABSTRACT .................................................................................................................. i

ACKNOWLEDGEMENTS .......................................................................................... v

DECLARATIONS ...................................................................................................... vii

TABLE OF CONTENTS .......................................................................................... viii

INDEX OF TABLES ................................................................................................... xiii

INDEX OF FIGURES .................................................................................................. xv

LIST OF ABBREVIATIONS ...................................................................................... xvi

PAPERS PUBLISHED OR SUBMITTED DURING CANDIDATURE ................... xviii

PART I: INTRODUCTION AND THESIS OVERVIEW .......................................... 1

Chapter One. Overview and Background to Thesis .............................................. 2

1.1 Thesis Outline .................................................................................................. 2

1.2 Overarching Research Aims ........................................................................... 7

1.2.1 Research Aim One ................................................................................... 7

1.2.2 Research Aim Two ................................................................................... 7

1.2.3 Research Aim Three ................................................................................. 8

PART II: LITERATURE REVIEW ........................................................................... 9

Chapter Two. Aggression and Violence: Definitions, Distinctions and Theories .... 10

2.1 Aggression and Violence ................................................................................ 11

2.2 The Distinction Between Aggression and Other Related Constructs .......... 12

2.3 Aggression Categorisation Schemes ............................................................. 15

2.4 Interim Summary .......................................................................................... 17

2.5 A Theoretical Orientation to the Study of Aggression ................................. 17

2.5.1 Social-Cognitive Theories of Aggression ................................................... 18

2.5.1.1 Social Learning Theory ...................................................................... 18

2.5.1.2 Script Theory ...................................................................................... 21

2.5.1.3 Excitation Transfer Theory ............................................................... 24

2.5.1.4 Cognitive Neoassociation Theory ...................................................... 26

2.5.1.5 Social Interaction Theory ................................................................. 28

2.5.1.6 Social Information Processing .......................................................... 30

2.5.1.7 $I^3$ Theory ......................................................................................... 32
9.2.1 DSM-5 Personality and Aggression: A Preliminary Theoretical Application .................................................. 320
9.2.2 DSM-5 Personality and Aggression: Two Empirical Applications .................................................. 322
  9.2.2.1 DSM-5 Personality Facets Are Important Factors that Help Explain Past Aggression .................. 322
  9.2.2.2 Integrating DSM-5 Personality Facets within the General Aggression Model Adds to the Prediction of Aggression History ........ 324
    9.2.2.2.1 Trait Anger is Important in Explaining Aggression History .. 327
    9.2.2.2.2 Risk Taking Adds Significantly to the Prediction of Aggression History .................................................. 327
    9.2.2.2.3 A Final Word on the Non-Significant DSM-5 Trait Hostility and Aggression Relationship .................. 328
  9.2.3 Summary of Outcomes and Contribution to the Literature .......... 329
9.3 The Relevance of Schema Constructs to Aggression Research .......... 330
  9.3.1 The Role of Early Maladaptive Schema and Schema Modes to Aggression .................................................. 330
  9.3.2 Schema Modes and the General Aggression Model .................. 332
  9.3.3 Summary of Outcomes and Contribution to the Literature .......... 333
9.4 Limitations and Methodological Issues of the Present Research .......... 334
9.5 Implications of the Findings .................................................. 339
  9.5.1 Research Implications .................................................. 339
  9.5.2 Clinical and Practical Implications .......................... 341
    9.5.2.1 Assessment .................................................. 341
    9.5.2.2 Treatment .................................................. 344
9.6 Avenues for Future Research .................................................. 346
9.7 Conclusions .................................................. 350
REFERENCES .................................................. 353
APPENDICES .................................................. 404
Appendix A: Ethics Approval Notices .................................................. 405
Appendix B: Recruitment Poster .................................................. 408
Appendix C: Recruitment Flyer .................................................. 409
Appendix D: Explanatory Statement .................................................. 410
Appendix E: Consent Form .................................................. 412
Appendix F: Certificate of Participation .................................................. 413
Appendix G: Life History of Aggression-Self Report-Aggression Subscale .......... 414
INDEX OF TABLES

CHAPTER TWO

Table 2.1. Description of Early Maladaptive Schemas and their Associated Clusters........................................................................................................................................46
Table 2.2. Schema Modes and Associated Domains..........................................................60

CHAPTER THREE

Table 1. The Strength of the Anticipated Associations Between Aggression and DSM-5 Domains and Facets.................................................................130

CHAPTER FIVE

Table 5.1. DSM-5 (Section III) Personality Disorder Domains and Facets.....145

CHAPTER SIX

Table 1. DSM-5 Facets Included in the Different Domain-Level Scoring Algorithms........................................................................................................................................213
Table 2. Mean (M), Standard Deviations (SD), Range and Internal Reliability Statistic (α) for LHA-S-A, IM-PDS and the PID-5 Domains and Facets ........................................................................................................................................214
Table 3. Partial Correlations Between Significant Personality Facets and Life History of Aggression.........................................................................................215
Table 4. Hierarchical Multiple Regression Unstandardized Coefficient (B), Standard Error of Beta (SE B), and Standardized Coefficient Values (β) ........................................................................................................................................216

CHAPTER SEVEN

Table 1. Mean (M), Standard Deviation (SD), Range and Internal Reliability Statistic (α) for LHA-S-A, IM-PDS, YSQ-S3 Subscales and SMI Subscales........................................................................................................................................257
Table 2. Partial Correlations for Hypothesised EMS and SMI Subscales that were Significantly Related to Life History of Aggression............. 258

Table 3. Hierarchical Multiple Regression Unstandardised Coefficient ($B$), Standard Error of Beta ($SE_B$), Standardised Coefficient ($\beta$), and $R^2$ Change................................................................. 259

CHAPTER EIGHT

Table 1. Mean ($M$), Standard Deviation ($SD$), Range and Internal Reliability Statistic ($\alpha$) for LHA-S-A, IM-PDS and GAM, Maladaptive Personality and Schema Mode variables............................................. 313

Table 2. Partial Correlations............................................................... 314

Table 3. Hierarchical Multiple Regression Unstandardized Coefficient ($B$), 95% Confidence Interval (CI), Standardized Coefficient ($\beta$), and $R^2$ Change................................................................. 315
INDEX OF FIGURES

CHAPTER TWO

Figure 2.1. Overall view of the General Aggression Model.................................36
Figure 2.2. Expanded view of the appraisal and decision making processes of the GAM.................................................................38
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APA</td>
<td>American Psychiatric Association</td>
</tr>
<tr>
<td>AQ</td>
<td>Aggression Questionnaire</td>
</tr>
<tr>
<td>ASPD</td>
<td>Antisocial Personality Disorder</td>
</tr>
<tr>
<td>BPD</td>
<td>Borderline Personality Disorder</td>
</tr>
<tr>
<td>CL-V</td>
<td>Cormier-Lang System for Quantifying Criminal History-Violence Offences Index</td>
</tr>
<tr>
<td>CTS-2</td>
<td>The Revised Conflict Tactics Scale</td>
</tr>
<tr>
<td>CU</td>
<td>Callous and Unemotional</td>
</tr>
<tr>
<td>DSM-5</td>
<td>Diagnostic and Statistical Manual of Mental Disorders-5th Ed</td>
</tr>
<tr>
<td>DSM-IV</td>
<td>Diagnostic and Statistical Manual of Mental Disorders-4th Ed</td>
</tr>
<tr>
<td>EMS</td>
<td>Early Maladaptive Schema</td>
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<tr>
<td>FFM</td>
<td>Five Factor Model</td>
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<tr>
<td>GAM</td>
<td>General Aggression Model</td>
</tr>
<tr>
<td>HCR-20:V3</td>
<td>Historical Clinical Risk Management-20:Version 3</td>
</tr>
<tr>
<td>HPD</td>
<td>Histrionic Personality Disorder</td>
</tr>
<tr>
<td>IM-PDS</td>
<td>Impression Management Subscale of the Paulhus Deception Scale</td>
</tr>
<tr>
<td>LHA</td>
<td>Life History of Aggression</td>
</tr>
<tr>
<td>LHA-A</td>
<td>Life History of Aggression-Aggression Subscale</td>
</tr>
<tr>
<td>LHA-S-A</td>
<td>Life History of Aggression-Self-Report-Aggression Subscale</td>
</tr>
<tr>
<td>MCAA-AV</td>
<td>Measures of Criminal Attitudes and Associates-Attitudes to Violence Subscale</td>
</tr>
<tr>
<td>MOS</td>
<td>Mode Observation Scale</td>
</tr>
<tr>
<td>MPQ</td>
<td>Multidimensional Personality Questionnaire</td>
</tr>
<tr>
<td>MRC</td>
<td>Metropolitan Remand Centre</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>NPD</td>
<td>Narcissistic Personality Disorder</td>
</tr>
<tr>
<td>PCC</td>
<td>Psychology of Criminal Conduct</td>
</tr>
<tr>
<td>PD</td>
<td>Personality Disorder</td>
</tr>
<tr>
<td>PD-NOS</td>
<td>Personality Disorder-Not Otherwise Specified</td>
</tr>
<tr>
<td>PDS</td>
<td>Paulhus Deception Scale</td>
</tr>
<tr>
<td>PID-5</td>
<td>Personality Inventory for the DSM-5</td>
</tr>
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<td>PID-5-BF</td>
<td>Personality Inventory for the DSM-5-Brief Form</td>
</tr>
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<td>PID-5-IRF</td>
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</tr>
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<td>PPD</td>
<td>Paranoid Personality Disorder</td>
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<td>PSY-5</td>
<td>Personality Psychopathology Five</td>
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<tr>
<td>RR</td>
<td>Risk Ratio</td>
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<td>SIP</td>
<td>Social Information Processing</td>
</tr>
<tr>
<td>SIV</td>
<td>Schedule of Imagine Violence</td>
</tr>
<tr>
<td>SIV-S</td>
<td>Schedule of Imagined Violence-Self-Report</td>
</tr>
<tr>
<td>SIV-S-F</td>
<td>Schedule of Imagined Violence-Self-Report-Frequency</td>
</tr>
<tr>
<td>SIV-S-F(Log)</td>
<td>Log transformation of SIV-S-F</td>
</tr>
<tr>
<td>SMI</td>
<td>Schema Mode Inventory</td>
</tr>
<tr>
<td>ST</td>
<td>Schema Therapy</td>
</tr>
<tr>
<td>STAXI-2</td>
<td>State-Trait Anger Expression Inventory-2</td>
</tr>
<tr>
<td>STAXI-2-T-Ang</td>
<td>State-Trait Anger Expression Inventory-2-Trait Anger Subscale</td>
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<td>TriPM</td>
<td>Triarchic Psychopathy Measure</td>
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<td>VRS</td>
<td>Violence Risk Scale</td>
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<td>YSQ</td>
<td>Young Schema Questionnaire</td>
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<tr>
<td>YSQ-S3</td>
<td>Young Schema Questionnaire-Short Form, Version 3</td>
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PART I: INTRODUCTION AND THESIS OVERVIEW
Chapter One. Overview and Background to Thesis

1.1 Thesis Outline

This thesis concerns the integration of aggression theory, maladaptive personality, cognition, emotion and coping behaviours. Specifically, it draws upon contemporary models within the respective fields, these being the General Aggression Model (GAM; Anderson & Bushman, 2002; Anderson & Carnagey, 2004), the Diagnostic and Statistical Manual of Mental Disorders - 5th Edition (DSM-5) dimensional model of maladaptive personality traits (American Psychiatric Association, 2013) and Schema Therapy (ST) schema modes (Young, Klosko, & Weishaar, 2003). The GAM identifies that several types of cognitive knowledge structures (aggressive scripts, normative beliefs, maladaptive schema) and anger are important to explanations of aggressive behaviour. Although the relevance of these aggression-related constructs to actual aggressive behaviour and to violent offender populations has been established, the GAM has been criticised for its purported disproportionate focus on cognitive structures to the detriment of other person-centred inputs, particularly personality variables (Ferguson & Dyck, 2012). In addition, given the GAM emphasises a strong link between cognition, emotion and behavioural responses, a lack of consideration of relevant emotional and coping states (i.e., schema modes) associated with the primary cognitive knowledge structures, particularly maladaptive schema, represents a potential shortcoming of the model. As such, this thesis sought to examine whether consideration of maladaptive personality traits and schema modes, in addition to the cognitive knowledge structures and anger delineated by the GAM, improves the prediction of aggression in an offender population. By incorporating novel, clinically meaningful concepts and instruments into the most contemporary aggression framework, this
thesis aims to contribute to the ongoing refinement of aggression theory and ensure that violent offender assessments and treatments are theoretically coherent. Improved assessment and treatment of violent offenders is a fundamental priority for this thesis. Considerably less attention has been paid to violent offender treatment in comparison to other offence categories, such as sexual offending (Howells, 2009b). Although violent offender treatment is guided by various underlying principles that purportedly contribute to effective interventions (e.g., altering antisocial attitudes, reducing substance misuse) (McMurran & Howard, 2009), this area is lacking an empirical foundation upon which to base violent reduction efforts. Accordingly, the present research aims to shed light on the cognitive, personality and emotional and coping factors that should be prioritised within assessment and treatment, and the manner in which they should be targeted.

This thesis comprises nine chapters, including one manuscript that has been accepted for publication, and three manuscripts that are currently under review in peer-reviewed scientific journals. Due to the inclusion of these manuscripts within this thesis, a degree of overlap and/or repetition of content across the chapters is unavoidable, although every effort has been made to minimise this to the highest extent possible. This overlap and repetition is evident when describing the introductory information within each of the four papers, and when detailing the research design, methodology, and related issues. Despite this, the review paper and three empirical papers reflect original research that is unique in its objective, approach, and outcomes, and that, when considered collectively, serve to address the three overarching research aims presented in Section 1.2 below. To assist in developing a sustained and cohesive research narrative, a brief preamble precedes each of the manuscripts. These preambles function to orient the reader and highlight
how each study inter-relates. Australian English spelling is used throughout this thesis, except in the review paper and two of the empirical papers, which conform to American spelling guidelines, consistent with journal formatting requirements.

The thesis is organised as follows. Part II of the thesis, comprises three chapters, which establish a theoretical foundation for the subsequent empirical work. Chapter Two provides an introduction to the field of psychological aggression theory. It begins with an examination of the definition of aggression and related constructs, and considers and critiques extant social-cognitive theories of aggression that guide current research. A detailed description of the GAM, a comprehensive framework that integrates many of the constructs and processes evident in the previously identified social-cognitive theories, is presented. Here, the primary GAM-delineated cognitive (aggressive scripts, normative beliefs, and maladaptive schema), and affective components (trait anger) are described and empirical evidence for the utility of these concepts in relation to aggression is presented. Finally, a summary of the major strengths and limitations of the GAM is presented; with the latter forming the rationale for the current thesis. Specifically, attention is drawn to methodological issues in extant research and the purportedly ambiguous role of personality within the GAM. In addition, limitations associated with the maladaptive cognitive schema framework are highlighted, and reference is drawn to the schema mode concept, and its potential application within the GAM.

As will be emphasised throughout this thesis, the GAM is the most contemporary and sophisticated model of aggression. One shortcoming of the GAM, however, is that the role of personality in increasing aggression propensity is not fully articulated. Various factors have hindered progress in this area, including both conceptual (e.g., the definition of personality is confounded within GAM language)
and methodological issues (e.g., the use of general trait models and measures to examine the role of personality pathology within the GAM and a reliance on domain-level personality trait analyses). In light of these issues, consideration of the new DSM-5 dimensional maladaptive personality trait model is proposed as one contemporary approach to advance knowledge in this area. As such, an important first step in this process of theory advancement is to consider the strength of the associations between DSM-5 domains and facets and aggression. To date, the link between the DSM-5 maladaptive personality model and aggression has not yet been empirically tested within a high-risk, aggressive population. Accordingly, Chapter Three (Review Paper One) present a novel approach to elucidate DSM-5 maladaptive personality trait-aggression relationships. The paper begins by providing an overview of the literature concerning the relationship between personality disorder (PD) and aggression, before highlighting how existing conceptualisations of these relationships are compromised by current diagnostic classification and methodological issues. It then provides an overview of the DSM-5 hybrid dimensional-categorical model of PD, and draws upon extant personality/PD and aggression literature in an attempt to elucidate the nature of the relationship between DSM-5 maladaptive traits and aggression. The review concludes by examining the ways in which this conceptualisation may contribute to clinical assessment, formulation and aggression related treatment efforts.

Chapter Four presents a summary of the scope of the present research. Specifically, it highlights the key objectives and research questions that will be addressed by the three empirical studies within the thesis.

Part III provides a detailed description of the methodology implemented in the empirical part of this thesis, beyond that which could be included in the relevant
CHAPTER ONE: THESIS OVERVIEW

journal papers. Chapter Five begins by describing the overall research design, followed by a brief rationale for use of the Victorian remand centre as the data collection site for the present research. Key ethical considerations are also discussed. A comprehensive explanation of the recruitment and data collection procedure is provided, followed by a detailed description of the measures included within the present research. Finally, characteristics of the sample are presented, and the approach to data preparation and statistical analysis is outlined.

Part IV presents the empirical research component of the thesis. Specifically, Chapter Six (Empirical Study One) presents an article accepted for publication that explores the relationship between DSM-5 maladaptive personality domains and facets and aggression in an offender population using the Personality Inventory for the DSM-5. Chapter Seven (Empirical Study Two) details the findings in relation to the role of aggression related Early Maladaptive Schema (EMS) and schema modes to aggression in a prisoner sample. Chapter Eight (Empirical Study Three) present a novel approach to extend the utility of the GAM. Specifically, the relative contributions of anger and the two main types of knowledge structures delineated by the GAM (aggressive scripts and normative beliefs) were explored, alongside DSM-5 maladaptive personality facets and schema modes, to determine the importance of each variable to aggressive behaviour in a sample of offenders.

Finally, Part V of the thesis consists of an integrated discussion, whereby in Chapter Nine the main findings of the three empirical chapters are jointly considered within the context of the overarching thesis aims and the broader literature, and in light of the methodological limitations of the present research. The theoretical and practical implications of the results are discussed, and priorities for future research
are suggested. A list of the references cited throughout the thesis and appendices follow.

1.2 Overarching Research Aims

The overarching objective of this thesis is to identify the key cognitive constructs, personality traits and emotional and coping states that are important to understanding aggression. As such, the present research is underpinned by three broad and inter-related aims:

1.2.1 Research Aim One

The first research aim is to explore associations between DSM-5 maladaptive personality domains and facets and aggression. The present thesis addresses this aim in two ways. First, given the paucity of research in this area, it reviews existing psychological literature on aggression and general personality and psychopathy to draw attention to anticipated associations between the newly proposed DSM-5 maladaptive traits and aggressive behaviour (Review Paper One). Second, it conducts an empirical investigation into the relationship between DSM-5 maladaptive broad trait domains (utilising two separate scoring approaches available within extant literature), as well as narrower trait facets, to histories of aggression in an offender population (Empirical Study One).

1.2.2 Research Aim Two

General maladaptive cognitions (i.e., EMS) have been linked to higher rates of aggressive behaviours in offenders. However, the EMS framework is limited in its
application because it does not take into account key emotional and coping states that are known to be linked to EMS and conducive to aggression. The second research aim is, therefore, to concurrently examine the importance of maladaptive cognition (i.e., EMS) and emotional and coping states (i.e., schema modes) to histories of aggression in a sample of offenders (Empirical Study Two). Addressing this aim will not only isolate specific EMS and schema modes associations with aggression, but will also highlight which construct demonstrates the greatest predictive utility in regard to aggressive behaviour.

1.2.3 Research Aim Three

The GAM identifies the importance of several types of knowledge structures and trait anger to explanations of aggression; the relevance of these constructs to actual aggressive behaviour has received empirical support. However, given the emphasis on knowledge structures, it has been argued that the GAM fails to recognise the importance of other person-specific (i.e., personality) and aggression-related (e.g., emotional and coping states) inputs. The fourth aim of this research is to integrate the findings from the first two empirical studies with the key determinants of aggression propensity as identified by the GAM (Empirical Study Three). Specifically, this research aims to determine whether the addition of aggression-related DSM-5 maladaptive personality facets and schema modes, alongside GAM-delineated aggressive scripts, normative beliefs and trait anger, improves the prediction of aggression in an offender population. Overall, by incorporating clinically relevant constructs into contemporary social-cognitive aggression theory, this research seeks to inform and unify forensic and clinical theory and practice.
PART II: LITERATURE REVIEW
Chapter Two. Aggression and Violence: Definitions, Distinctions and Theories

This chapter provides a summary and critical synthesis of the relevant literature pertaining to aggression and violence. It begins with an overview of the deleterious impact of aggression and violence, followed by an examination of the differences between definitions of anger, hostility, aggression, violence and violent offending. Limitations in popular aggression classification schemes are highlighted, and a summary of a more contemporary dimensional approach to classification is provided. Given the comprehensiveness of the model, the present thesis primarily considers aggression within the context of the GAM, nevertheless a brief overview and critique of prominent social-cognitive models of aggression is provided. This is followed by a more detailed examination of the GAM. Particular attention is given to GAM distal and proximate causes and processes of aggression, as well as the primary cognitive knowledge structures (i.e., aggressive scripts, normative beliefs and maladaptive schema) and trait anger. The chapter concludes with a review of the strengths and weaknesses of the GAM. With regards to the latter, particular attention is paid to methodological issues in extant GAM research, the ambiguous role of personality within the GAM, and shortcomings of the maladaptive schema framework. Directions to address each of these shortcomings are presented, and thus form the rationale for the current research.

To prepare the literature review (Chapters Two and Three) and the design of the empirical studies (Chapters Six, Seven and Eight), literature searches were conducted on the PsychINFO and Ovid MEDLINE databases. These searches used various combinations of key words, including “aggression”, “violence”, "theory", “social cognition”, "general aggression model", "scripts", "normative beliefs", "attitudes", "early maladaptive schema", "schema", “anger”, "personality", "traits", "traits",
2.1 Aggression and Violence

Beyond physical injury, aggression and violence lead to widespread adverse mental health problems, reproductive and physical health problems, high risk sexual behaviours, smoking and alcohol and drug misuse (World Health Organization, 2014). Further, aggression and violence place heavy strain on health and justice systems, as well as social and welfare services, and the economic costs of workforce absenteeism, lost productivity and loss of human capital are immense (World Health Organization, 2014). Since various acts can be encompassed within the broad constructs of aggression and violence, it is difficult to discern precise prevalence statistics. Official Australian statistics are available for violent crimes, for example homicide, violent assault and robbery, however there are a myriad of aggressive behaviours occurring in addition to, and not adequately captured by, these statistics, e.g., verbal aggression, non-verbal intimidation or intentional social exclusion.
2.2 The Distinction Between Aggression and Other Related Constructs

Given there is a large and diverse array of research conducted under the broad term of 'aggression,' it is unsurprising that there is a lack of clarity regarding the nature of aggression and its relationship to anger, hostility and violence (Howells, Daffern, & Day, 2008). As such, an important initial task is to provide clear operational definitions of each of these terms. To begin, anger refers to an internal emotional state that involves displeasure and subjective feelings that vary in intensity from mild irritation or annoyance to extreme rage (Spielberger, Jacobs, Russell, & Crane, 1983). State versus trait distinctions are commonly identified, whereby state anger refers to temporary, short-lasting episodes of anger, and trait anger reflects a general disposition to experience angry feelings in response to a wide variety of innocuous triggers (e.g., a short delay at a supermarket line) or specific types of stimuli (e.g., competition or rejection) (Spielberger, 1999). Autonomic nervous system arousal (e.g., increased heart rate, perspiration) is commonly associated with anger. In contrast, hostility refers to negative cognitive evaluations of people or events (Howells et al., 2008). Hostility can lead to the tendency to interpret ambiguous situations in a threatening and antagonistic manner (Berkowitz, 2000), expectations that others will behave aggressively, and a belief that aggression is the most appropriate response in a variety of situations (Smith, 1994). Similar to anger, hostility may be evident in relation to particular acts or events, but may also reflect an on-going disposition. Importantly, although both anger and hostility can serve as precursors to aggressive behaviour, they are not essential conditions to elicit aggressive action (Howells et al., 2008). In any case, given anger and hostility often co-occur with aggressive behaviour they are frequently included in measures of aggressive personality (Allen & Anderson, in
press), thus leading to considerable confusion in the research literature when the distinctions among these three very different concepts are ignored.

The term aggression has taken on various meanings over many years. In fact, it has been estimated that more than 200 definitions of aggression exist in the literature (Howells et al., 2008). This multitude of different conceptualisations and the corresponding varied measurement approaches represents a critical problem in aggression research. Several conceptualisations of aggression encompass basic criteria, such as the infliction of harm on others (e.g., a response that delivers noxious stimuli to another organism (Buss, 1961) or destructive or punitive behaviour directed towards other persons or objects (Spielberger et al., 1983)). Others suggest that aggression is any form of behaviour directed towards the goal of harming or injuring another living being who is motivated to avoid such treatment (Baron & Richardson, 1994) or any behaviour directed towards another individual that is carried out with the proximate (immediate) intent to cause harm, and where the perpetrator believes the behaviour will harm the target and the target is motivated to avoid that harm (Anderson & Bushman, 2002). In comparison to basic definitions, these more precise definitions of aggression emphasise key characteristics that differentiate aggression from other phenomena. Specifically, they highlight that aggression is a behaviour that is observable, intentional and carried out with the purpose of causing harm to another person, and that the target of the aggression is motivated to avoid that harm (Allen & Anderson, in press; Anderson & Bushman, 2002; Baron & Richardson, 1994). Importantly, research has shown that these more specific definitions of aggression demonstrate strong utility when developing and testing high-quality theories of aggression, and that various types of behaviours that meet these specific criteria are comparable in aetiology and underlying processes.
(Allen & Anderson, in press). Aggression can take on many forms, ranging from relatively minor acts (e.g., name-calling or pushing), to more serious acts (e.g., hitting, kicking, punching), with some aggressive behaviours having severe consequences (e.g., stabbing, shooting, and killing) (Allen & Anderson, in press). Violence is considered to be an extreme subset of aggression, whereby the degree of harm inflicted represents the key distinguishing feature. Anderson and Bushman (2002) define violence as aggression that has extreme harm (e.g., serious injury or death) as its end goal, while Blackburn (1993) terms violence as the forceful infliction of physical injury. Most research focuses on violence in the context of extreme physical aggression (Allen & Anderson, in press). Although some non-physical forms of aggression that have severe consequences (e.g., verbal aggression directed at children with the intention of severely harming the child's emotional or social well-being) are referred to as violence, they are probably best labelled as aggression due to the fact that the nature of the harm inflicted is predominantly psychological rather than physical (Howells et al., 2008). Presently, aggression and violence are best viewed as existing on a continuum of severity, whereby relatively minor acts of aggression (e.g., name calling) are situated at the lower end of the spectrum and physical violence (e.g., homicide) are located at the higher end of the spectrum. Lastly, violent offending reflects a subcategory of violence, in which the act of violence contravenes the law. For the remainder of this thesis, the term aggression will be used to describe this broad field, with violence being encompassed under this term. In instances where a particular author or study being reviewed has explicitly used the term violence or violent offending then the original term used has been retained.
2.3 Aggression Categorisation Schemes

Various attempts have been made to classify aggressive behaviour. Often these attempts have involved the use of simple dichotomies, whereby some are based on the typography of aggressive behaviour (e.g., physical versus verbal aggression, active versus passive aggression, and direct versus indirect aggression (Berkowitz, 1994; Björkqvist, 1994; Buss, 1961)), and others on function. Perhaps the most widely used classification system is the hostile-instrumental aggression dichotomy (Berkowitz, 1993a; Geen, 2001; Myers, 2012; Tedeschi & Felson, 1994). According to this classification scheme, two primary subtypes of aggression have been identified: a hostile (also referred to as "impulsive," "reactive," and "affective") subtype and an instrumental (also referred to as "controlled," "proactive," and "predatory") subtype¹ (Anderson & Bushman, 2002; Berkowitz, 1993b; Blackburn, 1993; Buss, 1961; Geen, 2001; Weinshenker & Siegel, 2002). The hostile subtype encompasses impulsive, angry behaviour that is often motivated by the presence of pain, frustration, provocation, anger and/or a real or perceived threat (Anderson & Bushman, 2002). The ultimate goal of hostile aggression is to hurt another person. Conversely, instrumental aggression is premeditated, calculated behaviour that is thought to be motivated by the desire to obtain some other goal (e.g., money, power, control, relief from compulsive drives, or gratification of vengeful or retributive desires and fantasies) (Anderson & Bushman, 2002; Weinshenker & Siegel, 2002).

Despite the popularity of this traditional dichotomous classification system, some researchers argue that there are inherent difficulties that arise when characterising aggression using limited and simplistic distinctions (Anderson & Carnagey, 2004; Geen, 2001; Myers, 2012; Tedeschi & Felson, 1994).

¹ It is important to note, that although the dichotomies of hostile versus instrumental aggression, impulsive versus controlled aggression, reactive versus proactive aggression, and affective versus predatory aggression each emphasise slightly different aspects of aggressive behaviour, there is considerable overlap and the terms are often used interchangeably (Anderson & Huesmann, 2003).
Andersen & Huesmann, 2003; Bushman & Anderson, 2001). For instance, the hostile-instrumental dichotomy fails to take into account mixed motives and the potential for aggressive behaviour to be influenced by both automatic and controlled information processing (Bushman & Anderson, 2001). In light of these classification difficulties, more recent conceptualisations consider aggression in terms of proximate and/or ultimate goals and adopt a dimensional approach to classification (Anderson & Carnagey, 2004; Anderson & Huesmann, 2003). Specifically, the proximate (immediate) goal of aggressive behaviour is always to cause harm to another person, but the ultimate goal may vary. For example, although both robbery and physical assault are acts of aggression because both include the intention to harm the victim proximally, they differ in ultimate goals in that robbery is primarily motivated by attainment of profit-based goals while assault is primarily motivated by attainment of harm-based goals (Allen & Anderson, in press). Further, aggression can be viewed as existing on a continuum of four key dimensions, including (1) the degree of hostile affect present, (2) the degree of automaticity of the behaviour, (3) the extent to which the ultimate goal benefits the perpetrator versus harms the victim, and (4) the extent to which the consequences of the aggressive behaviour were considered (Allen & Anderson, in press). Importantly, in contrast to the hostile-instrumental scheme, these types of dimensional distinctions allow for a better understanding of both the similarities and differences between aggressive acts, while also accounting for the fact that aggression can serve multiple purposes and be driven by both automatic and controlled cognitive processing.
2.4 Interim Summary

The literature reviewed highlights that aggression and violence are of substantial social and clinical importance. A large array of research is conducted under the broad term of 'aggression,' therefore knowledge on the distinction between aggression and the related constructs of anger, hostility, violence and violent offending is imperative. Importantly, aggression is characterised as any behaviour that is (a) observable, (b) intentional and (c) carried out with the goal of harming another individual. Additionally, the target of the aggression must be motivated to avoid the harmful behaviour. Although various dichotomies have emerged overtime to categorise aggression, these schemes are flawed due to their simplistic and limited nature. Instead, more recent conceptualisations adopt a dimensional approach to categorisation, which takes into account differences in ultimate goals, differing degrees of hostile affect, cognitive processing and perpetrator gain versus victim harm, and the consideration of consequences.

2.5 A Theoretical Orientation to the Study of Aggression

Over many years, various psychological theories have emerged that seek to understand why certain individuals have an increased propensity for aggressive behaviour. Importantly, social-cognitive perspectives of aggression tend to dominate the literature. Although various social-cognitive theories of aggression emphasise the importance of differing focal constructs and processes (e.g., some focus on one or two domain specific factors that lead to aggression, while others focus on a range of factors that lead to aggression), the theories are invariably

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2 The role of genetic, biochemical and neuroanatomical contributors to aggression are also well documented (Cadoret, Leve, & Devor, 1997; DiLalla & Gottesman, 1991; Nelson & Trainor, 2007), however will not be explicitly reviewed in this thesis.
CHAPTER TWO: AGGRESSION

intertwined. The following section presents an overview of prominent social-cognitive theories relevant to the study of aggression. Specifically, social learning theory, script theory, excitation transfer theory, cognitive neoassociation theory, social interaction theory, social information processing and I3 theory, are described, and evidence for the validity of each of the models is examined and critiqued. Important constructs and processes of these individual theories have been amalgamated into the GAM, a broad and comprehensive model of human aggression, and as noted this model will serve as the guiding theoretical framework to explore aggression within the present research. As such, a detailed description of the GAM will follow, along with a critique of the model’s strengths and weaknesses.

2.5.1 Social-Cognitive Theories of Aggression

2.5.1.1 Social Learning Theory

According to social learning theory (Bandura, 1971, 1973; Mischel, 1973), people are not born with preformed repertoires of aggressive behaviour, but rather aggressive behaviours are acquired through both enactive (i.e., learning by doing and experiencing the consequences of personal actions) and vicarious learning (i.e., learning by observing the behaviour of others and its consequence for them). Importantly, social learning theory suggests that because environments are filled with potentially lethal and hazardous consequences to those that perform mistakes, it would be risky for individuals to rely solely on trial and error performances (enactive learning) to learn new behaviours. As such, the influence of modelling is recognised as an indispensable aspect of learning.

Social learning theory relies upon four interrelated subprocesses (i.e., attention, memory, motor production, and reinforcement and motivational processes)
CHAPTER TWO: AGGRESSION

to guide cognitive evaluation and interpretation of events taking place in the individual's environment. With regards to attentional processes, in order to learn by observation an individual needs to attend to and recognise the essential features of a model's behaviour. The people with whom one regularly associates largely determines the types of behaviours that will be repeatedly observed and learned most thoroughly (e.g., opportunities for learning aggressive behaviour are likely greater for children growing up in high crime neighbourhoods). Additionally, attentional processes are more likely to be activated if the observed individual possesses high interpersonal value and attraction (i.e., they are likeable, have high status and command attention). Regarding memory processes, a critical feature of observational learning is the long-term retention of symbolic response patterns of activities that have been modelled at one time or another. These symbolic response patterns can be represented in memory via imaginal (i.e., enduring, retrievable images of modelled sequences of behaviour) and verbal (i.e., verbal coding of observed events) representational systems, with these images and verbal codes serving as guides for subsequent similar behaviours. Both mental and real-life rehearsal of symbolic response patterns strengthen the retention of learned behaviours, and within the context of aggression, mental rehearsal of modelled aggression is suggested to be particularly important given overt engagement in aggressive behaviour is typically deemed socially unacceptable. Regarding motor reproduction, the learner must enact a set of overt actions that are in line with the symbolic response pattern. However, enactment of behavioural responses will be hampered if the learner does not possess the capabilities for skilful execution of the modelled behaviour (e.g., they do not have relevant skills to carry out the behaviour, they have physical limitations or they are unable to use informative feedback on performance to make self-corrective
adjustments). Finally, observational learning will only be expressed into action when reinforcement and motivational processes are positive. Ultimately, these four cognitive processes establish a basis for aggressive behavioural response patterns that are retained over extended periods of time and across various situations.

A key strength of social learning theory is the ability to explain differences between and within individuals based on context dependent learning and selective reinforcement (Bandura, 1973). Additionally, numerous empirical studies have shown that both children and adults can acquire novel aggressive behaviours from observing aggressing models (Bandura, 1973; Bushman & Huesmann, 2006; Leyens, Camino, Parke, & Berkowitz, 1975; Silver, Dublin, & Lourie, 1969). Social learning theory has contributed significantly to the development of one of the most prominent theories of offender rehabilitation, known as the Psychology of Criminal Conduct (PCC; Andrews & Bonta, 2010), whereby one of the key theoretical underpinnings of PCC is the idea that the likelihood of a criminal act (i.e., aggression) increases or decreases as a result of social reinforcement and motivational processes (i.e., social rewards and costs). According to PCC, and consistent with social learning theory, social and motivational reinforcement for crime may be provided by antisocial peers that one has regular contact with or by which one admires.

Although social learning theory has contributed significantly to knowledge regarding aggression and criminal conduct, critics have called attention to limitations set by laboratory designs that dominate social learning theory studies on aggression (Tedeschi & Felson, 1994). Specifically, the external validity of laboratory studies have been called into question, as many studies tend to underestimate the reciprocal behaviour of people engaged in aggressive social interactions, and instead focus exclusively on the individual of interest in the investigation. Although the
importance of attentional and memory processes are emphasised, social learning theory provides few details as to the cognitive constructs involved in increasing aggression potential. Furthermore, the theory does not delineate appraisal and decision-making processes that lead to aggressive behaviour (Kirsch, 2012; Shaffer, 2008). Finally, it has been argued that there is more to aggressive behaviour than the sum of an individuals' learning (Anderson & Bushman, 2002). Social learning theories reliance on the four identified learning subprocesses, means that the theory ignores the important influence of emotions, personality, biological, environmental and a range of other factors on aggression potential.

### 2.5.1.2 Script Theory

Script theory can be viewed as a more specific and detailed account of the aggression-related cognitive content that may arise via social learning processes (Huesmann, 1986, 1998). Script theory proposes that two specific kinds of cognitive structures, aggressive scripts and normative beliefs, and the sequences of cognitive processing are critical to the development of aggressive behaviour (Huesmann, 1986, 1998). Aggressive scripts are sets of well-rehearsed, highly associated concepts stored in memory that are used to guide behaviour and social problem solving. They act as a step-by-step behavioural sequence by outlining what events are to happen in the environment, how the person should behave in response to these events and what the outcome of those behaviours are likely to be. According to Huesmann (1986, 1988), the learning of scripts is influenced by both observational and enactive learning and conditioning, and frequent rehearsal of scripts, via simple recall of the original event, fantasising about it, or play-acting (Huesmann & Eron, 1984), results in strong connections to other aggression related concepts stored in memory (e.g.,
hostile schemas, which are comprised of past memories, acquired rules and social knowledge). Normative beliefs refer to the evaluation of the "appropriateness" of a particular script with regards to internalised social norms and likely consequences. Specifically, normative beliefs are used to evaluate others' behaviour, guide the search for social scripts and filter out inappropriate scripts and behaviours (Huesmann, 1998). According to script theory, when a script is selected it is filtered through normative beliefs. If the evaluation deems the outcome of the script unfavourable, the individual will search for an alternative script that can be evaluated. Typically, only favourable scripts will be enacted. Overall, script theory posits that habitually aggressive individuals are those who (a) view the world as a hostile place (i.e., they possess hostile schemas), (b) hold more normative beliefs condoning the use of aggression, and (c) have encoded in memory more extensive, well-connected networks of scripts that emphasise aggressive responding (Huesmann, 1998). Aggressive individuals therefore regularly retrieve and employ aggressive scripts for a broad range of social behaviours.

Script theory demonstrates several advantages with regards to the explanation of aggression. Unlike previous theories which emphasise the acquisition of abstract rules for social behaviour (e.g., Bandura, 1986), script theory emphasises that individuals acquire specific aggressive behavioural sequences (Gilbert & Daffern, 2010). The theory provides a clear and coherent explanation of the cognitive structures involved in the development and maintenance of aggressive behaviour. Huesmann (1986, 1998) identifies that aggressive scripts develop from a wide variety of contexts (e.g., growing up in a violent household) and stimuli (e.g., media violence) that can provide for both direct and observational learning of aggressive behaviours. As such, script theory is particularly useful in accounting for the
generalisation of social learning processes to aggressive behaviour. Moreover, given the emphasis on the presence of extensive and well-connected networks of scripts, script theory can account for the automatisation of complex cognitive-behavioural processes that lead to aggressive outcomes (Anderson & Bushman, 2002). Script theory is novel in its contribution to aggression in that it incorporates the influence of social norms via an individuals’ internalised normative beliefs. The theory highlights that in addition to the primary cognitive structures identified within the theory, factors that influence social norms also influence the likelihood of aggression (Kirsh, 2012). Huesmann and colleagues also specify a role for arousal and emotion, suggesting that individual differences in responsivity and regulation (a) innately predispose some individuals to aggression (Guerra, Huesmann, & Spindler, 2003), and (b) influence different stages of aggressive behavioural sequences (Huesmann, 1998). Although a number of key strengths of script theory have been highlighted, the heavy focus on cognitive processes mediating aggressive behaviour means that the influence of biological, personality and environmental instigators and socialisers important to the development of aggression are largely disregarded. Moreover, although the theoretical importance of scripts is emphasised across a number of theories of aggression, the empirical literature base remains underdeveloped, and conceptual confusion with other similar terms, such as violent fantasy, confounds the existing literature (Gilbert & Daffern, 2017). Additionally, ambiguity continues to exist as to the best method to assess scripts both within research and clinical contexts. Finally, given no published treatment protocols directly target aggressive script rehearsal, little is known about the efficacy of script-based interventions in reducing aggression risk (Gilbert & Daffern, 2017).
Given the GAM draws heavily on script theory, only a brief description of aggressive scripts and normative beliefs and the strengths and limitations of the theory as a whole has been presented here. Within the GAM section of this thesis, the role of aggressive scripts (see Section 2.6.3) and normative beliefs (see Section 2.6.4) in increasing aggression propensity will be further elaborated on and the supporting empirical evidence will be presented.

2.5.1.3 Excitation Transfer Theory

Broadly predicated on drive theory (Hull, 1943, 1952) and the two factor theory of emotion (Schachter, 1964), excitation transfer theory highlights the effect of emotional arousal on aggression propensity (Zillmann, Katcher, & Milavsky, 1972). The theory posits that because physiological arousal dissipates relatively slowly, residual excitation from one arousing event can increase excitation from a second arousing event, so long as the two events are separated by a short period of time. Essentially, arousal from the first event becomes misattributed to relevant cues in the environment of the second event. Consequently, the excitation at that time, which potentially involves residues from lingering, unrelated antecedent arousal, energises and thus intensifies the present states cognitively labelled emotion and subsequent behaviours. Although, excitation transfer is not limited to a single emotion, within the context of aggression, it is presumed that if the second event is related to anger, then the residual arousal should elicit even angrier responses from the individual.

In support of excitation transfer theory, Zillmann and colleagues have shown that when participants were provoked by a confederate prior to watching a physiologically arousing aggressive or erotic film clip (as compared to a neutral film
clip) (Zillmann, 1971; Zillmann, Hoyt, & Day, 1974) or engaging in a strenuous physical activity on an exercise bike (as opposed to a sedentary task) (Zillmann & Bryant, 1974; Zillmann et al., 1972), they were more likely to act aggressively towards the confederate at a later time point. It therefore appears that arousal may not always be attributed to the most appropriate emotion-provoking event. Although the findings reported establish a link between arousal and aggression, one criticism of excitation transfer theory is that the role of emotions and their contribution to aggression remains unclear. As Geen (2001) highlights, excitation transfer research assumes that anger is a mediating factor between arousal and aggression, yet this proposition remains speculative. Furthermore, given the proposed role of anger in inducing aggression, excitation transfer theory cannot account for acts of aggression that occur without the presence of anger. Whether less negative but equally intense emotions, such as excitation, resulting from sensation seeking or risk taking may also result in elevated physiological arousal and thus an increased propensity to act aggressively is unknown. The role of anger-related cognitions in perpetuating physiological arousal has also received mention within the theory (Zillmann & Bryant, 1974), but has not been the focus of empirical follow up. Furthermore, cognitive appraisal processes that assist an individual to control their aggressive impulsive are disregarded (e.g., reflection that reveals that acting aggressively would be disadvantageous to the self because punishment would follow). Of the studies exploring excitation transfer processes, methodological shortcomings also limit the utility of the theory. Firstly, many of the investigations have been conducted in convenience samples (e.g., undergraduate student samples) that are not necessarily severely aggressive. Secondly, the dependent variable has included less severe acts of aggression, for instance providing noxious noises to an aggressor or thwarting an
opponent in a game. Thirdly, extant studies have focussed on situations that investigate direct retaliatory aggressive responses towards an initial aggressor. There is no reason why assessment of aggression towards a new target could not be conducted, except that the theory would then closely map onto the triggered displaced aggression paradigm (Miller, Pederson, Earleywine, & Pollock, 2003).

2.5.1.4 Cognitive Neoassociation Theory

A reformulation of the original frustration-aggression hypothesis (Dollard, Miller, Doob, Mowrer, & Sears, 1939), Berkowitz's (1989, 1990) cognitive neoassociation theory describes the process wherein the experience of intense emotions, and the subsequent priming and activation of associated memory structures, contribute to aggression. The theory suggests that when an individual is exposed to an aversive, unpleasant event (e.g., frustration, provocation, loud noises, uncomfortable temperatures, or unpleasant odours) negative affect is triggered. As a result, certain cognitions, memories, physiological responses and motor reactions are elicited that are linked to basic fight (i.e., attack or anger) or flight (i.e., escape or fear) instincts. Several factors, such as prior learned responses to anger provoking or threatening situations, situational characteristics and individual trait dispositions, determine whether the fight or flight response prevails (Berkowitz, 1993a). Cues present in the environment during an aversive event may also become associated with the event itself and with the automatic fight or flight response. As a result of this process, extensive cognitive, emotional and behavioural networks develop in memory over time. Concepts that are frequently activated together and those that have similar meanings develop strong associations in memory; a notion consistent with script theory. When one concept is primed or activated, this activation spreads
to related concepts and increases their activation as well. Finally, cognitive neoassociation theory emphasises the role of higher-order cognitive processing. When motivated to do so, an individual will engage in cognitive evaluations and appraisals of attributions (i.e., they will consider how they feel, the causes of their unpleasant experiences, and the consequences of acting on their feelings), which enables the individual to more clearly differentiate between feelings of anger, fear, or both, and therefore guides the overall interpretation of events and the behavioural response enacted.

The emphasis on the associative linkages between affect, cognition, memory processes and expressive-motor and physiological reactions represent a key advantage of the cognitive neoassociation theory in the explanation of aggression. In particular, it provides a theoretical basis for a number of seemingly unusual affect-aggression observations frequently observed in real-life and research settings that are unable to be explained by other theories of aggression. For instance, associative linkages can explain why an individual who experiences sadness, grief or depression (i.e., a primary emotion) may display anger (i.e., a secondary emotion) and aggressive behaviours (Berkowitz, 1990). Another strength of the theory is that it provides a detailed explanation of the role of higher-order cognitive appraisal processes. Specifically, cognitive neoassociation theory highlights that consideration of the possible causes of negative feelings and the best way to respond/cope with such feelings, can reduce the likelihood of aggression occurring; a contention that is supported by empirical evidence (Berkowitz & Troccoli, 1989; Finman & Berkowitz, 1989). There are, however, limitations that impede upon the utility of the model for explaining aggression propensity. Although Berkowitz (1990) emphasises the importance of learning, in that aggressive cues are suggested to develop from
experience, others argue that cognitive neoassociation theory provides little explanation as to how particular stimuli develop into aggressive cues (Shaffer, 2008). Moreover, aggressive cue development is likely to be idiosyncratic. For instance, as a result of unrelenting sibling harassment, stimuli not typically linked to aggression (e.g., feathers or tape), could develop into aggressive cues (Shaffer, 2008). Empirical testing of less obvious aggression cues is therefore difficult. Furthermore, Berkowitz (1990) notes that cognitive neoassociation theory is a micro-analysis of the psychological (not neural or physiological) processes implicated in the anger experience and aggression. He also notes that the model does not take into account interpersonal relationships and social interactions that frequently give rise to negative feelings in everyday life. Finally, with regard to higher-order cognitive processing, it is not explicitly clear what is involved in activating this type of self-reflection and self-regulation (Berkowitz, 1990).

2.5.1.5 Social Interaction Theory

Social interaction theory of aggression is based on the premise that coercive actions (e.g., aggressive behaviours) are one form of social behaviour used to influence another person to gain a valued reward or compliance (e.g., money, information or sexual gratification), exact retributive justice for perceived wrongs, and/or assert and protect a desired social identity (e.g., toughness, competence) (Tedeschi & Felson, 1994). According to this theory, the decision to behave aggressively depends on a calculation of the rewards, costs and likelihood of obtaining different outcomes. Specifically, the greater the expected value and the lower the expected cost for performing an aggressive action, the greater likelihood that it will be enacted.
A key benefit of social interaction theory is that it focuses on relevant social causes and functions of aggressive behaviour; a notion that is consistent with newer aggression classification schemes (Anderson & Carnagey, 2004; Anderson & Huesmann, 2003). In this regard, social interaction theory provides an explanation for aggressive behaviours motivated by various ultimate goals (Anderson & Bushman, 2002). For instance, social interaction theory can account for profit-based goals of an armed robber, as well as punishment-based goals of an individual who is violent to another in response to a transgression. Moreover, the theory can account for aggression that results when perceived or actual threats to self-esteem occur (Baumeister, Smart, & Boden, 1996; Bushman & Baumeister, 1998). Although social interaction theory identifies a variety of individual characteristics (e.g., sensation seeking, risk taking, self-awareness, physical stature, intelligence, sexual drive) that may contribute to increased use of coerciveness, limited explanations are presented to clarify the explicit roles of such variables. Furthermore, although the theory makes brief mention of the role of anger, there is little elaboration on how anger or other negative emotional states effect cognitive and behavioural functioning to increase coercive action. Social interaction theory posits that the decision to use coercion/aggression is based upon expectations of the costs and benefits of utilising the coercive action, however, to date there is little research to support the contention that individuals go through such an appraisal process before every act of aggression (Kirsh, 2012). Finally, social interaction theory provides little detail as to how a coercive repertoire is developed.
2.5.1.6 Social Information Processing

Crick and Dodge's (1994) social information processing (SIP) model was created to explain the development and maintenance of childhood aggression and thereby improve treatment practices. According to Dodge (2014), individuals understand and interpret social situations as a function of their past experiences and innate abilities. Aggressive behaviour therefore emerges as a consequence of one's understanding and interaction with the social world (Crick & Dodge, 1994). According to the model, aggression results from systematic biases or deficits occurring at different stages of the six stage SIP sequence, particularly the processing and interpretation of social cues (Crick & Dodge, 1994). The first step of the SIP sequence involves the encoding of internal and external social cues. At this stage, the theory emphasises that there is the potential for deficient or inaccurate encoding of social cues (e.g., not encoding all available cues/selectively attending to cues that reinforce prevalent schema). Once cues in the social situation are noticed and focused upon the second step is carried out, that is, cues are integrated with past experiences to produce a meaningful interpretation of the social situation. When cues are given meaning they are considered to be mental representations. At this stage, the role of aggression related cognition is especially important. Specifically, deficits in interpretation may occur if, based on past experiences, the individual has developed aggression inducing biases, schemas and scripts. For example, an individual that has grown up in a violent home environment may have developed a hostile attribution bias, whereby they attribute hostile intent to another person, even when the situation does not warrant hostility. Additionally, they may view aggression as normal and as such may have developed schemas and scripts that endorse their use of aggression. The third step of the SIP sequence requires the individual to make a clarification of
internal (e.g., self-survival) and/or external (e.g., developing social relationships) goals for the social situation. In general, the model posits that the selection of inappropriate goals (e.g., selecting a goal based on the expectation that aggression will lead to more positive outcomes and fewer negative outcomes) are relationship damaging and can lead to aggressive behaviour. Step four involves the search for possible behavioural responses that are appropriate to how the social information was encoded, interpreted, and to what goal the individual is working toward. Importantly, past socialisation experiences greatly contribute to the ability to generate responses. If previous stages of the SIP sequence have been conducted in an aberrant way, or if the individual has inadequate search skills or conducts a biased search based on prior experience, aggressive responses may be generated. Finally, the fifth and sixth SIP steps respectively involve the selection and enactment of a response to the social situation. Regarding selection, errors can occur when self-efficacy evaluations and estimates regarding the consequences of a particular behavioural response are biased by previous stages or by past experiences. For instance, overestimations of personal ability or the positive outcomes related to aggressive behaviour may result in the individual selecting an aggressive response. The enactment of the response is the culmination of the SIP sequence, and the final outcome and response from others is incorporated into the individual's memories of past experiences that will influence how the steps will be processed in future social situations. According to SIP theory, once aggression related patterns of systematised information processing are established, the situational context becomes less important. Instead, the habitual sequence guides behaviour in a largely consistent manner across situational contexts (Dodge, 1993). In effect, information processing
deficits and cognitive distortions are established, which promote aggression as an appropriate interpersonal response in various situations (Gilbert & Daffern, 2010).

SIP emphasises the importance of several social-cognitive influences on the development of aggressive behaviour. Importantly, research has consistently demonstrated that the SIP of aggressive children is biased by aggression-related perception, interpretation and decision making (Dodge & Crick, 1990). However, scholars have criticised the framework for several reasons. Firstly, SIP, in general, appears to lack emphasis on individual differences, such as personality and current mental state (Bushman & Anderson, 1998). As such, it is suggested that the SIP sequence in isolation cannot account for aggressive behaviour. Secondly, it has been suggested that the SIP model does not clearly articulate and integrate emotion-related processes that are important to aggression. Lemerise and Arsenio (2000) extended the SIP model to encompass emotionality/temperament, emotion regulation, mood and emotional prioritising. The authors highlight how individual differences in emotionality and emotional regulation can influence each stage of SIP. Finally, the response evaluation and decision-making stage of the model has been described as ambiguous. Consequently, additional investigations (e.g., Fontaine & Dodge, 2006) have been carried out to allow for a more thorough understanding of the fine-grained processes involved in SIP evaluation and decision-making.

2.5.1.7 \( I^3 \) Theory

A relatively new theory, \( I^3 \) theory, presents a process-oriented framework for categorising and examining the interplay among various aggression risk factors that aggravate or mitigate aggression-promoting tendencies (Slotter & Finkel, 2011). Specifically, the theory examines instigating triggers (e.g., provocation), impelling
forces (e.g., hostile disposition) and inhibiting factors (e.g., high self-regulation) that
directly influence aggressive behaviour, and strong emphasis is given to the
interactive effects at play amongst the factors identified as relevant for any
individual. Central to the theory is the notion that although the urge to behave
aggressively can vary across situations and individuals, inhibitory processes have the
potential to override aggressive urges, leading to reduced rates of aggressive
behaviours. Aggression is therefore only expected when the collective influences of
the instigating triggers and impelling forces are stronger than the collective influence
of the inhibitory processes. Although I^3 theory puts forward a reasonable case for the
influence of variables that either increase or inhibit aggressive impulses, the theory
lacks an empirical basis for which to classify a given risk factor into a definitive I^3
category (i.e., instigating, impelling, and/or inhibiting forces) (Slotter & Finkel,
2011). Further, no evidence is currently available to support the three-way
interaction effect (i.e., Instigating Trigger × Impelling Factor × Inhibiting Factor)
proposed by the model. Before I^3 theory can be usefully drawn upon in aggression
research, empirical procedures for distinguishing impulses toward aggressive
behaviour from self-controlled processes that override those impulses must be
developed. Associations between the given risk factors must then be substantiated
empirically.

2.5.2 General Critique of the Reviewed Social-Cognitive Theories of
Aggression

Although the reviewed social-cognitive theories identify certain factors
important to the development, enactment and maintenance of aggression, there are
overarching limitations associated with these types of fragmented theories. Several
of the theories reviewed are limited in scope. That is, they tend to explain certain aspects of aggression well, but disregard other constructs or processes known to be important to understanding aggression (Anderson & Bushman, 2002). Additionally, it is clear that aspects of the same phenomena overlap across the theories. As has been argued for theories of sexual offending (Ward & Hudson, 1998), such overlap may have occurred due to the proliferation of social-cognitive theories of aggression over time, whereby theory developers have unknowingly neglected the existence of other similar theories. Ultimately, consideration of the reviewed social-cognitive theories in isolation may mean that (a) aggression is not adequately understood, (b) theories are not developed to their full extent and (c) the process of theory integration is halted. Importantly, however, without the development of many of these social-cognitive theories, overarching, integrated theories, like the GAM, would not be able to emerge (Ward & Hudson, 1998). Many of the social-cognitive theories of aggression reviewed have provided the conceptual basis for the GAM, whereby important concepts and processes have been linked together into a coherent and comprehensive framework.

2.5.3 Interim Summary

Social-cognitive theories of aggression call attention to the vast array of constructs and processes considered pertinent to understanding aggression propensity. While certain theories focus specifically on one or two factors considered critical to the development and maintenance of aggression, others are more expansive and delineate the role of a range of factors pertinent to aggression. Importantly, although the reviewed theories offer valuable insight into several underlying mechanisms that contribute to aggression potential, conceptual overlap,
limitations in scope and a lack of empirical support detract from the utility of these models.

2.6 The General Aggression Model

Over the last two decades, a notable development in aggression research has been the introduction of more focused efforts to unify the various fields of study and to amalgamate discipline-specific conceptualisations of aggression. These efforts have resulted in the development of the GAM, a dynamic theoretical framework that draws upon a range of biological factors, personality traits, social, cognitive and emotional processes, short- and long-term memory processes, and decision processes, to assist in explicating the fundamental features involved in increasing aggression propensity across individuals. The GAM has been selected as the primary theoretical model upon which to base the present research because it offers an integrative, expansive, sophisticated and coherent conceptual framework for understanding aggression. The following section presents a detailed description of the key components of the GAM and reviews extant empirical evidence linking these concepts to aggression. A critique of the strengths and limitations of the model will also be presented, and avenues by which to address gaps in current knowledge are outlined.

2.6.1 Distal and Proximate Causes and Processes of the General Aggression Model

According to the GAM, risk factors for aggression can be separated into distal causes and processes (i.e., those factors and processes that exert their influence
over long periods of time) and proximate causes and processes (i.e., those factors and processes that are present and active during any social encounter). As illustrated in Figure 2.1, two types of distal factors (i.e., biological and environmental modifiers) influence an individual's personality, which is seen as the sum of a person's knowledge structures (i.e., scripts, beliefs and schemas) and represents an individuals' personal preparedness to aggress.

![General Aggression Model](image)

*Figure 2.1 Overall view of the General Aggression Model (Recreated from Anderson & Carnagey, 2004)*

The interplay of distal factors subsequently influence proximate causes and processes. More specifically, distal factors may (a) facilitate proximate factors that directly increase aggression likelihood, or (b) inhibit proximate factors that directly decrease aggression likelihood. At the proximate level, the GAM focuses on (1) predisposing person and precipitating situational factors (i.e., inputs), (2) the present internal state which encompasses cognition, affect and arousal (i.e., routes), and (3)
underlying appraisal and decision making processes (i.e., outcomes). Importantly, some distal factors and processes also serve as proximate factors and processes (Anderson & Carnagey, 2004).

At the input level, the GAM takes into account features of the person or situation that influence aggressive behaviour (Anderson & Bushman, 2002). Person factors include all of the characteristics that make up an individual. Some examples include gender, personality traits, beliefs, attitudes, values and goals, schemas and scripts. Person factors also influence the types of situations that a person is likely to seek out or to avoid. Overall, person factors comprise an individual's personal preparedness to behave aggressively across time, across situations, or across both. Situation factors include any important features within a particular situation, for example, the presence of aggressive cues, provocation, level of frustration, pain or discomfort, effects of drugs or implicit or explicit incentives (Anderson & Bushman, 2002). Both person and situation input variables directly influence an individual's present internal state of cognition, affect and arousal. For instance, an inherently hostile disposition (person input), viewing a violent film (situation input) and a hot room temperature (situation input) may interact to influence an individual's access to aggressive thoughts (Anderson, 1997), aggressive feelings (Bushman, 1995) and aggressive actions (Bushman, 1995). Importantly, these three routes are strongly interconnected, such that activation of one can lead to a spreading of activation to the others (Anderson & Bushman, 2002). Importantly, at both the input and route level, it is evident that the GAM draws upon a variety of factors and processes originally identified by earlier social-cognitive theories of aggression, particularly script theory and cognitive neoassociation theory.
In addition to inputs and internal states, behavioural outcomes are influenced by appraisal and decision making processes (Anderson, Krull, & Weiner, 1996; Krull, 1993; Krull & Dill, 1996; Uleman, 1987). Figure 2.2 shows that inputs enter into appraisal and decision processes via their effect on the present internal state.

![Figure 2.2 Expanded view of the appraisal and decision making processes of the GAM (Recreated from Anderson & Bushman, 2002).](image)

Two types of information processing are central to the GAM. The first are automatic processes, known as immediate appraisals, which are relatively effortless, spontaneous and occur without awareness. Immediate appraisals may reflect either a general disposition (e.g., if an individual has a tendency to be biased by hostile thoughts when they are bumped they are likely to perceive the bump as an aggressive act on the part of the other person) or a situational inference (e.g., if an individual is thinking how crowded the room is and is bumped, they are likely to attribute the bump as an accidental consequence of the crowded room). The response that prevails is highly dependent on the present internal state (i.e., which cognition, affect and arousal are most accessible). The second type of information processing is the more controlled process, known as reappraisal, which involves the search for relevant information about the cause of an event, a search for relevant memories, and a search
for features of the present situation, in order to form an alternative view of a situation. Two kinds of behavioural outcomes are possible based on the type of information processing engaged in. If an individuals' resources are limited (e.g. they lack time or cognitive capacity) and the immediate appraisal outcome is deemed satisfactory or unimportant, impulsive action may occur. If this is the case, such action may be aggressive or non-aggressive depending on the content of the immediate appraisal. Alternatively, if an individual has sufficient resources and the immediate appraisal outcome is considered important and unsatisfying, a more effortful set of reappraisals will occur. Such reappraisals may include numerous cycles where alternatives are considered and discarded, until an acceptable outcome is reached and thoughtful action occurs.

2.6.2 Aggression Related Knowledge Structures

The GAM draws heavily on established work by Berkowitz (1993a) and Huesmann (1988, 1998) regarding the development and use of knowledge structures for perception, interpretation, decision making, and action. Although briefly mentioned earlier, a more thorough description will be provided here to orient the reader to the development and operation of knowledge structures within the GAM. As suggested by Huesmann (1988, 1998) knowledge structures (a) develop from experience, (b) influence perception at both basic and complex levels, (c) become automatic with repeated use and rehearsal, (d) are comprised of and linked to beliefs, internal affective states and behavioural responses, and (e) guide people's interpretations and actions to the surrounding social and physical environment (Huesmann, 1988, 1998). Aggressive scripts and normative beliefs are two types of knowledge structures directly linked to aggression (Anderson & Bushman, 2002;
Huesmann, 1988, 1998). These structures influence the way an individual responds when a threat is detected and to whom they direct their attention, emotional responses to provocation or cues linked to aggression in memory, attributions regarding the causes of other peoples perceived aggressive behaviour, appraisal of the advantages and disadvantages of aggressive behaviour, and memory for people who pose potential threat and exhibit actual aggressive behaviour (Anderson & Bushman, 2002). Other entrenched cognitions (i.e., maladaptive schema) that generate uncomfortable cognitive and affective states are also thought to be critical in eliciting aggressive responses (Anderson & Bushman, 2002; Huesmann, 1988, 1998). Importantly, individuals prone to aggression are more likely to hold and easily access these cognitive knowledge structures related to aggression (Anderson & Bushman, 2002; Crick & Dodge, 1994; Huesmann, 1998). In line with Berkowitz (1989, 1990, 1993a), the GAM also emphasizes the importance of affective states, particularly anger, and suggests that anger serves as one of the main routes by which aggression-related knowledge structures are activated and influence aggression propensity. Given the GAM's strong focus on aggressive behavioural scripts, normative beliefs supportive of aggression, maladaptive schema and anger, these constructs, and their empirical bases, will be reviewed in detail in the following section of this thesis.

2.6.3 Aggressive Behavioural Scripts

As noted, aggressive behavioural scripts represent one type of cognitive knowledge structure within the GAM that are used to define situations and guide subsequent social behaviour (Anderson & Bushman, 2002; Huesmann, 1986). Scripts comprise procedural knowledge to assist an individual in predicting events
that are to happen, how a person should respond and the likely outcomes of certain
behaviours. Motives, intentions and situational features may also be encompassed
within scripts. Scripts are acquired though observation and behaviour, and through
frequent use and positive reinforcement become entrenched and highly accessible to
an individual. Important factors that influence the selection and retrieval of
aggressive scripts include: (a) social cues, (b) the activation of related aggressive
cognitive content (e.g., maladaptive schema or normative beliefs), (c) an individuals'
current affective state or level of arousal, and (d) the extent to which the script has
been rehearsed. Mental rehearsal of a script (e.g., mentally rehearsing a violent act to
prepare for action in case somebody acts provocatively) increases and reinforces the
availability of such scripts in memory, strengthens their links with associated
knowledge structures, and consequently has the potential to alter expectations and
intentions regarding appropriate social behaviour (Huesmann, 1998). One form of
mental rehearsal, aggressive fantasising, is suggested to influence the availability of
aggressive scripts (Eron, 2001) by allowing for reinforcement of the script without
the need to directly observe aggressive behaviours or be involved in situational
provocation (Musher-Eizenman et al., 2004). Ultimately, the more an individual
fantasises about behaving aggressively, the greater the amount of time the script is
activated in memory, and the greater the likelihood that aggressive behaviours will
be enacted. Individuals who regularly retrieve and employ aggressive scripts are
presumed to hold a large number of these types of scripts in memory (Huesmann,
1998), thereby increasing the likelihood that they will behave aggressively in varying
circumstances.

To date, there is limited research investigating the relationship between
scripts and aggression primarily due to a lack of standardised measures available to
assess the nature and extent of aggressive scripts. The few investigations that have explored direct script-aggression relationship have done so utilising the Schedule of Imagined Violence (SIV; Grisso, Davis, Vesselinov, Appelbaum, & Monahan, 2000). The SIV assesses the extent to which a person has thoughts about physically injuring other people, and the quality of such thoughts. In non-clinical (Nagtegaal, Rassin, & Muris, 2006), civil and clinical psychiatric inpatient (Grisso et al., 2000; Podubinski, Lee, Hollander, & Daffern, 2017) and forensic populations (Gilbert & Daffern, 2011; Gilbert, Daffern, Talevski, & Ogloff, 2015; Nagtegaal, Rassin, & Muris, under revision) aggressive script rehearsal has been found to be a common experience, with approximately one-third to one-half of study participants endorsing aggressive thoughts. Importantly, in all of the investigations greater degrees of script rehearsal predicted higher rates of aggression, suggesting that frequently rehearsed scripts involving harm to others serve as templates for aggressive responding in various social encounters. Aggressive scripts have also been empirically linked to impulsiveness and anger (Gilbert, Daffern, Talevski, & Ogloff, 2013b; Grisso et al., 2000), suggesting that social situations are more likely to interfere with decision making processes and trigger negative affect among people for whom script rehearsal is frequent. Although the noted research suggests that scripts can be inferred and accessed via self-report methodology, measurement and testing via the SIV represents a simplistic approach (Gilbert et al., 2013b). As a result, there is a need to develop and utilise more comprehensive and sensitive assessment instruments to measure aggressive scripts and determine whether the script-aggression relationship remains significant.
2.6.4 Normative Beliefs Supportive of Aggression

Normative beliefs supportive of aggression comprise an individual's own beliefs about the acceptability of aggressive behaviour. A variety of factors impact upon the development and selection of aggression-related normative beliefs, including (a) perceived social norms (Huesmann, 1988, 1998; Nisbett & Ross, 1980), (b) social events (Huesmann, 1998), (c) affective states (Huesmann & Guerra, 1997), and (d) recent situational cues (Huesmann & Guerra, 1997). According to the GAM, habitually aggressive individuals typically select inappropriate aggressive behavioural scripts that are subsequently filtered through normative beliefs that endorse aggression. As a result, aggressive responses are perceived to be favourable outcomes (Anderson & Bushman, 2002).

The role of normative beliefs in the development, enactment and maintenance of aggressive behaviour has been well documented (Gilbert et al., 2013b; Healy & O'Donnell, 2006; Holtzworth-Munroe, Meehan, Herron, Rehman, & Stuart, 2000; Mills, Kroner, & Hemmati, 2004); and a range of measures have been incorporated into research to empirically investigate the relationship (e.g., the Measure of Criminal Attitudes and Associates, Mills, Kroner, & Forth, 2002; Mills et al., 2004; the Criminal Attitudes to Violence Scale, Polaschek, Collie, & Walkey, 2004). Polaschek and colleagues (2004) have shown that offenders often hold beliefs relating to hostile world views, whereby violence is believed to be an acceptable and necessary component of everyday life. In both male and female prison populations, endorsement of the belief - *aggression is a useful approach to controlling others* - is strongly related to self-reported physical aggression, and moderately associated with verbal aggression (Archer & Haigh, 1997a). Similarly, the belief that *violence is the only way to solve interpersonal issues* has been endorsed by prisoners with
Psychopathy, Narcissistic PD (NPD), Paranoid PD (PPD), and Histrionic PD (HPD) that exhibited disruptive violent behaviours within an institutional setting (Coid, 2002). In considering recent aggression classification approaches, these findings also suggest that normative beliefs may be associated with the ultimate underlying goal of aggressive behaviour.

2.6.5 Aggression-Related Maladaptive Cognition

Entrenched cognitions that influence perceptions and expectations of the social environment play a critical role in the GAM. The model posits a role for any cognitive structure that generates uncomfortable cognitive and affective states conducive to aggression and increases the accessibility of aggressive concepts in memory. In particular, narcissism-related (Anderson & Carnagey, 2004) and hostile world (Anderson, Gentile, & Buckley, 2007; Crick & Dodge, 1994; Dodge, 2006; Dodge & Pettit, 2003) cognitive structures and biases have often been implicated. The ST framework (Rafaeli, Bernstein, & Young, 2011; Young et al., 2003) has frequently been drawn upon in maladaptive cognition research, with particular reference made to rigid core beliefs, known as EMS. Unlike normative beliefs supportive of aggression, which reflect beliefs about the acceptability of aggressive behaviour, EMSs are broad, self-perpetuating and dysfunctional patterns of memories, emotions, cognitions and bodily sensations (Young et al., 2003). They develop early in life as a result of childhood exposure to adverse relational experiences with significant others, whereby basic psychological needs of the individual were not met. EMSs continually evolve throughout the course of an individual's life, and over time, in order to maintain cognitive consistency of the EMS individuals will distort information about themselves, others and interpersonal
relationships resulting in gross misperceptions and overgeneralisations (Young et al., 2003). When triggered, EMSs produce strong negative emotional reactions. Importantly, EMSs that are more extensive and developed are likely to be activated in a greater number of situations, ultimately leading to increases in the intensity of the associated emotions. The 18 EMSs, as conceptualised by Young and colleagues (2014a; 2003), are listed in Table 2.1, along with their key features. Fifteen of the EMSs are grouped into four higher-order schema clusters (Disconnection and Rejection, Impaired Autonomy, Impaired Limits and Excessive Responsibility and Standards), while three are unclassified due to insufficient evidence of how they cluster with the other EMSs.

Research focusing on the relationship between EMS and aggression has produced mixed findings. An investigation by Loper (2003) in a sample of incarcerated women revealed that the Impaired Limits cluster (characterised by Entitlement and Insufficient Self-Control) significantly predicted hostility, verbal threats and violence, while the Disconnection and Rejection cluster (characterised by Abandonment, Mistrust, Emotional Deprivation, Social Isolation and Defectiveness) predicted hostility. No relationships were found for the Impaired Autonomy cluster (characterised by Dependence, Vulnerability to Harm, Enmeshment and Failure) and aggression related variables. It is important to note, however, that since this study was conducted the structure of the Disconnection and Rejection and Impaired Autonomy EMS clusters have been modified. It is therefore unknown whether these results would be replicated using the updated cluster structures.
Table 2.1

*Description of Early Maladaptive Schemas and their Associated Clusters*

<table>
<thead>
<tr>
<th>Cluster/Schema</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cluster I: Disconnection and Rejection</strong></td>
<td></td>
</tr>
<tr>
<td>Emotional Deprivation</td>
<td>The expectation that one's desire for a normal degree of emotional support will not be adequately met by others</td>
</tr>
<tr>
<td>Mistrust</td>
<td>The expectation that others will hurt, abuse, humiliate, cheat, lie, manipulate, or take advantage</td>
</tr>
<tr>
<td>Emotional Inhibition</td>
<td>The excessive inhibition of spontaneous action, feeling, or communication</td>
</tr>
<tr>
<td>Defectiveness</td>
<td>The feeling that one is unlovable, defective, bad, unwanted, inferior, or invalid</td>
</tr>
<tr>
<td>Social Isolation</td>
<td>The feeling that one is isolated and different from other people</td>
</tr>
<tr>
<td><strong>Cluster II: Impaired Autonomy and Performance</strong></td>
<td></td>
</tr>
<tr>
<td>Dependence</td>
<td>The belief that one is unable to competently care for oneself or handle everyday responsibilities</td>
</tr>
<tr>
<td>Abandonment</td>
<td>The perception of unreliability or abandonment of those available for support and connection</td>
</tr>
<tr>
<td>Vulnerability to Harm</td>
<td>The exaggerated fear that imminent catastrophe will strike at any time</td>
</tr>
<tr>
<td>Enmeshment</td>
<td>Excessive emotional involvement and closeness with significant others</td>
</tr>
<tr>
<td>Failure</td>
<td>The belief that one has failed, will inevitably fail, or will never be able to achieve</td>
</tr>
<tr>
<td>Subjugation</td>
<td>Excessive surrendering of one's needs due to feelings of coercion</td>
</tr>
<tr>
<td><strong>Cluster III: Impaired Limits</strong></td>
<td></td>
</tr>
<tr>
<td>Entitlement</td>
<td>The belief that one is superior to other people and deserves special treatment</td>
</tr>
<tr>
<td>Insufficient Self-Control</td>
<td>Difficulty in exercising sufficient self-control and frustration tolerance to achieve one's personal goals</td>
</tr>
<tr>
<td><strong>Cluster IV: Excessive Responsibility and Standards</strong></td>
<td></td>
</tr>
<tr>
<td>Self-Sacrifice</td>
<td>Excessive attention to others' needs at the expense of one's own</td>
</tr>
<tr>
<td>Unrelenting Standards</td>
<td>The belief that one must meet very high standards of behaviour and performance to avoid criticism</td>
</tr>
<tr>
<td><strong>Unclassified Schemas</strong></td>
<td></td>
</tr>
<tr>
<td>Approval-Seeking</td>
<td>Excessive need to gain approval, recognition, or attention from others</td>
</tr>
<tr>
<td>Negativity</td>
<td>The pervasive focus on the negative aspects of life</td>
</tr>
<tr>
<td>Punitiveness</td>
<td>The belief that people should be harshly punished for making mistakes</td>
</tr>
</tbody>
</table>

Note: Adapted from Young (2014a).
Regarding individual EMS, a relationship has been found between aggression and the Insufficient Self-Control schema in both a non-clinical female sample (Tremblay & Dozois, 2009) and a community forensic mental health male sample (Gilbert et al., 2013b). From a GAM perspective, Insufficient Self-Control is likely associated with appraisal and decision making processes, whereby inadequate information processing and lack of cognitive resources results in difficulty restraining impulses, thereby increasing the likelihood of aggressive outcomes (Anderson & Bushman, 2002). In the same non-clinical female sample, two additional EMS, namely Mistrust and Entitlement, were also found to independently predict aggression (Tremblay & Dozois, 2009). Young and colleagues (2003) suggest that the Mistrust schema is strongly associated with hostile attribution towards others. According to the GAM, hostile attribution biases strongly increase the accessibility of aggressive scripts and beliefs, and thus the potential for aggressive behaviour (Anderson & Bushman, 2002). The GAM contends that in order to get one's own way and maintain feelings of superiority, the Entitlement schema may be linked to motivational functions/ultimate goals of and normative beliefs supporting the use of aggression (Tremblay & Dozois, 2009). Insufficient Self-Control, Mistrust and Entitlement have also been positively linked to anger (Ball & Cecero, 2001; Calvete, Estévez, López de Arroyabe Castillo, & Ruiz, 2005), the primary route by which aggression-related cognitive constructs operate.

The influence of implicit theories on offence-supportive cognitions provides additional support for the role of Insufficient Self-Control, Mistrust and Entitlement schemas to aggressive behaviour. Implicit theory centres around the idea of cognitive constructs, which develop from past experiences, and are comprised of structured, interconnected belief networks organised by an underlying dominant theme (Ward,
These cognitive constructs reflect the comprehensive theories that individuals develop about the actions of people, in terms of their perceived beliefs, intentions and desires, and how they are related to their behaviour (Polaschek, Calvert, & Gannon, 2009); a definition which converges with that of EMS. Polaschek and colleagues (2009) examined offence transcripts in violent offenders attending an intensive violence treatment program, and found that several violence-related implicit theories were present, including: (a) normalisation of violence, (b) the need to act violently to achieve or maintain status and autonomy in a violent world ("beat or be beaten"), (c) the sense of moral superiority and entitlement to attack, harm or discipline others ("I am the law"), and (d) the inability to appropriately regulate one's own behaviour and maintain self control without assistance ("I get out of control"). Importantly, the latter three implicit theories associated with violent offending in this study appear to resemble the EMS constructs of Mistrust, Entitlement, and Insufficient Self-Control, respectively; providing additional support for the results of Tremblay and Dozois (2009) and Gilbert et al. (2013b).

Contrary to the above research, one investigation has produced less than promising EMS results in male offenders meeting diagnostic criteria for Diagnostic and Statistical Manual of Mental Disorders - 4th Edition (DSM-IV) PD (Chakhssi, Bernstein, & De Ruiter, 2012). In this study, EMSs were not predictive of any form of institutional violence. The authors suggest that the non-significant findings may be attributable to the fact that externalising behaviours (i.e., the enactment of aggression) actually represent maladaptive coping responses to EMS, and such responses are not as stable as the EMS itself (Chakhssi et al., 2012). This suggestion appears consistent with Young and colleagues (2003) who note that enactment of any type of coping response, including those of an aggressive nature, are highly
dependent on the life circumstances of the individual and the events that activated the EMS in the first place. Consequently, the EMS-aggression relationship may be better conceptualised as idiosyncratic, whereby individual variation in life experiences, maladaptive cognition and related affective and coping responses account for aggression potential for different individuals.

2.6.6 Anger

The GAM proposes that one of the main routes that aggression-related knowledge structures (i.e., aggressive scripts, normative beliefs, and schema) operate is through anger. Anger is suggested to increase aggression in a number of ways. First, anger reduces aggressive inhibitions by interfering with higher level cognitive processing that typically guides moral reasoning, decision making and judgement (Huesmann, 1998). When cognitive processing is restricted, only the most accessible and frequently used knowledge structures are retrieved. Therefore if an aggressive repertoire is entrenched (i.e., more strongly connected to concepts in memory), aggressive actions are more likely to be enacted. Second, anger provides a justification for aggressive and retaliatory behaviours (Anderson & Bushman, 2002). Third, anger can serve as a cue for hostile biases, which consequently primes the retrieval of aggression related concepts in memory (Anderson & Bushman, 2002; Berkowitz, 1989, 1990). Finally, anger maintains aggressive dispositions over time by increasing attention to, depth of processing of, and ultimately recall of provoking events (Anderson & Bushman, 2002).

Many researchers consider anger to be an important antecedent to aggressive behaviour (Daffern & Howells, 2009; Novaco, 2007; Posternak & Zimmerman, 2002). Empirical studies have consistently found that across various settings and
populations individuals high in trait anger are more likely to exhibit aggressive behaviour (Cornell, Peterson, & Richards, 1999; Fives, Kong, Fuller, & DiGiuseppe, 2011; Gilbert et al., 2013b), particularly following provocation (Bettencourt, Talley, Benjamin, & Valentine, 2006). As noted, the GAM suggests that anger exerts significant influence over cognitive processes, whereby labelling an emotional experience as anger subsequently activates a connected network of hostile thoughts and aggressive motor impulses (Berkowitz, 1998), primes aggressive scripts and schemas (Berkowitz, 1990; Huesmann, 1988) and focuses attention exclusively on anger-related information (Eckhardt & Cohen, 1997). Consistent with SIP, a persons' interpretation of the situation is therefore biased by anger and aggression-related content and their preparedness to behave aggressively increases greatly (Anderson & Bushman, 2002). The heightened physiological arousal that is often associated with anger can impact appraisal and decision making processes of the GAM (Anderson & Bushman, 2002). Specifically, when an individual experiences increased physical arousal they may no longer possess the cognitive resources necessary to engage in effortful reappraisals of a given situation; a notion partly consistent with excitation transfer theory. As a result, they are more likely to engage in automatic appraisals leading to a greater likelihood of impulsive, aggressive action.

When an individual has difficulty regulating a negative or uncomfortable emotional state (e.g., anger, sadness, guilt, shame), they are generally left with an emotional experience that is difficult to tolerate. In this state an individual may act aggressively in an attempt to repair, terminate or avoid the intolerable emotional state (Roberton, Daffern, & Bucks, 2012). Empirical support for this proposition comes from Bushman, Baumeister, and Phillips (2001) who found that undergraduate students engaged in angry and aggressive behaviours with the
expectation of relieving their anger and, ultimately feeling better. Similarly, Daffern and Howells (2009) have shown that in a high secure Dangerous and Severe PD service population, anger expression, with the aim of reducing tension and discomfort, was the most common function of aggression across patients' violent index offences and aggressive behaviours inside a secure mental health unit. From a GAM perspective, aggression may therefore serve as a compensatory function to cope with angry or other negative feelings, particularly if an individual believes that aggression will improve the way they feel.

Excessive regulation or control of anger has also been linked to aggression. Over regulation of anger is suggested to result when an individuals' inhibitions are high, but in whom the drive to aggress has increased overtime (Blackburn, 1986; Megargee, 1966). Specifically, avoidance and suppression are two types of over-regulation strategies frequently described in the literature (Blackburn, 1986; Greenberg & Bolger, 2001; Spielberger, Sydeman, Owen, & Marsh, 1999). Some empirical evidence exists to support the link between aggression and over-regulation of anger. For instance, Tull and colleagues (2007) demonstrated that the use of both anger avoidance and anger suppression strategies predicted aggressive behaviour, above and beyond trait anger. Similarly, Norstrom and Pape (2010) found that individuals with high levels of suppressed anger were more likely to have greater levels of alcohol consumption and greater involvement in violent behaviour. Although the relationship was modest, in this study participants' level of suppressed anger was directly related to their involvement in violence. From a GAM perspective, avoidance and suppression of anger may increase aggression potential in a number of ways. First, emotion suppression has been shown to increase negative affect (Gross, 2002; Gross & John, 2003; Gross & Levenson, 1993; Szasz,
Szentagotai, & Hofmann, 2011). Consistent with cognitive neoassociation theory, negative affect primes and activates aggression-related cognitions, memories, physiological and motor responses, which in turn distort higher-order inferences made during the appraisal process, and thus increases an individual's preparedness to behave aggressively (Berkowitz, 1989, 1990). Second, it has been argued that anger avoidance may lower an individuals' inhibitions against aggressive behaviour (Roberton et al., 2012). Specifically, the state of cognitive deconstruction (i.e., constricted and concrete focus on the present, absence of long-term goals, cognitive rigidity with potentially irrational thinking, and a rejection of meaning, all of which lead to restricted affect) can be usefully drawn upon. (Baumeister, 1990). When an individual is in this state, they may become passive with regard to important decisions and meaningful actions, allowing them to evade responsibility and self-assessment; the latter of these being a notion that is consistent with a lack of higher-order self-reflection and self-regulation identified in cognitive neo-association theory (Berkowitz, 1989, 1990). As a result, the individual may become disinhibited and behaviour may cease to be in accordance with the individuals values and goals (Roberton et al., 2012). According to the GAM, long-term values and goals are critical person factors that impact on aggression likelihood, whereby disengagement from goals that would normally serve inhibitory purposes (e.g., maintaining positive relationships) increase the likelihood that aggressive behaviour will occur (Anderson & Bushman, 2002). Third, anger suppression depletes available cognitive resources, such as memory (Dillon, Ritchey, Johnson, & LaBar, 2007; Richards & Gross, 1999, 2006) and information processing (Schmeichel, Vohs, & Baumeister, 2003; Wallace, Edwards, Shull, & Finch, 2009). As described by the GAM, inputs enter an appraisal and decision process, whereby the use of immediate appraisals and/or reappraisals
determine the final action that is enacted. When an individual does not have sufficient cognitive capacity and/or time to engage in a set of effortful reappraisals they are unable to consider alternative explanations for a given situation, long-term goals, and potential consequences. The increased cognitive load brought about by engagement in anger suppression has the potential to interfere with reappraisal efforts, leaving the individual reliant on more automatic, immediate appraisals and therefore increasing the likelihood of aggressive behaviour in provoking situations. Finally, suppression of emotion has been linked to increased physiological arousal in difficult situations (Gross & Levenson, 1993, 1997; Hofmann, Heering, Sawyer, & Asnaani, 2009). Increased arousal can influence aggression through the GAM's affective route by strengthening dominant aggressive action tendencies (Anderson & Bushman, 2002). For instance, when an individual who is predisposed to acting aggressively enters into a state of heightened physiological arousal they may be more likely to enact aggressive action, particularly if aggression-related cues are present in the immediate environment (a notion that is partly consistent with excitation theory, e.g., Zillmann, 1971; Zillmann & Bryant, 1974; Zillmann et al., 1974; Zillmann et al., 1972).

2.7 Interim Summary

The GAM is a dynamic social-cognitive model of aggression that emphasises the importance of a range of person-focused and environmental/situational factors to account for aggression propensity across individuals. The GAM draws heavily on the development and activation of aggression-related knowledge structures, including aggressive behavioural scripts, normative beliefs supportive of aggression,
and schema, and anger; empirical evidence is available linking these important
cognitive and affective constructs to aggression.

2.8 Critique of the GAM and Directions to Address Gaps in Knowledge

Like all theories of aggression, the GAM demonstrates particular strengths
but there are also some potential limitations that require consideration. The following
section provides a detailed critique of the GAM and highlights specific immediate
avenues by which to address limitations in current knowledge. The GAM has been
proposed as a superior theoretical framework for understanding aggression for a
number of reasons. First, it explicitly organises and unifies a range of empirically
validated concepts, i.e., biological factors, personality traits, and social, cognitive,
memory and decision processes, to account for human aggression (Allen &
Anderson, in press); its development represents a significant advancement in the
field of aggression theory. Second, the model recognises that aggression is multiply
determined (i.e., various factors in the environment, as well as those that exert a
more prolonged influence, contribute to aggressive tendencies). Third, the GAM has
the potential to explain aggression that occurs due to different underlying
motivations (e.g. both instrumental and hostile aggression, and aggression motivated
by various ultimate goals) (Bushman & Anderson, 2001). Finally, the GAM was
developed with the intention of enhancing understanding of aggressive acts in order
to facilitate the design and delivery of interventions for chronically aggressive
individuals (Gilbert & Daffern, 2010). Overall, the GAM allows for a more
sophisticated, coherent and comprehensive understanding of the mechanisms by
which aggressive behaviours develop, and assists in clarifying the features that
increase aggression potential across individuals.
On the other hand, there are several possible shortcomings of the GAM that require attention. To begin, critics of the GAM suggest that because GAM research has (a) utilised convenience samples and populations with potentially lower rates of severe, overt aggression (e.g., students and children), (b) relied on less severe aggression variables (e.g., the delivery of non-painful noise bursts to a consenting competitor), rather than real life aggression that results in significant harm to another, and (c) largely focused on the influence of violent video games to aggression propensity, GAM supportive literature cannot be generalised to real world violent events (Ferguson & Dyck, 2012). It is important to note, however, that more recent investigations have established the validity of the GAM in delinquent youth (DeLisi, Vaughn, Gentile, Anderson, & Shook, 2013), adult offender (Gilbert et al., 2013b) and personality disordered offender populations (Gilbert et al., 2015) and have utilised alternative aggression variables such as self-reported life history of aggression (Gilbert et al., 2013b, 2015; Hosie, Gilbert, Simpson, & Daffern, 2014).

Although the GAM allows for the input of both distal (biological, environmental and personality), and proximate (person and situation) variables, critics suggest that there is seldom elaboration on how these variables actually operate within the model to influence aggression potential. Rather, the influence of these variables are described in general terms, and therefore it is unclear how they translate into aggressive behaviour (Ferguson & Dyck, 2012). Moreover, the role of personality within the GAM is highly confounded because its conceptualisation is embedded within the language of social cognition (Ferguson & Dyck, 2012). That is, according to the GAM, personality is conceived as the sum of an individuals' knowledge structures (i.e., scripts, beliefs, and schemas). Not only is such a conceptualisation problematic because it makes it difficult to isolate the degree of
influence of personality in and of itself, but it also diverges significantly from conceptualisations of personality within clinical settings and overlooks the extensive body of literature linking established personality traits and some PDs to aggression (Bettencourt et al., 2006; Blackburn, Logan, Donnelly, & Renwick, 2003; Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Gilbert et al., 2015; Jones, Miller, & Lynam, 2011; Miller, Lynam, & Leukefeld, 2003; Miller, Zeichner, & Wilson, 2012).

Some scholars contest the GAM's assumption that aggression is largely a process of cognition (Ferguson & Dyck, 2012). They argue that within the model disproportionate attention is given to the role of aggression-related knowledge structures (i.e., scripts, normative belief and maladaptive schema) to the detriment of other evolutionary, environmental, biological and personality inputs (Ferguson & Dyck, 2012). Although there is a paucity of research regarding the importance of specific evolutionary, environmental and biological factors in increasing aggression potential, as compared to GAM components, one recent investigation found that when higher-order Five Factor Model (FFM; Costa & McCrae, 1992) personality domains and GAM variables were collectively examined in relation to aggression history, the GAM variables (i.e., scripts, normative beliefs and anger) were the only significant predictors (Hosie et al., 2014). Although some (e.g., Hosie et al., 2014) may conclude that this investigation bolsters support for the GAM's strong focus on cognitive constructs, such a contention disregards literature highlighting the need to conduct more specific, facet-level analyses of personality traits, given that facet-level analyses typically demonstrate greater predictive ability than domain-level analyses (Dowgwillo, Ménard, Krueger, & Pincus, 2016; Paunonen & Ashton, 2001; Samuel & Widiger, 2008). Given the FFM is accompanied by one of the largest empirical bases, it is reasonable that Hosie and colleagues (2014) chose to draw upon this
model and the related NEO-Five Factor Inventory (Costa & McCrae, 1992) to explore personality domain associations with aggression. However, the use of general trait models and measures represent one common criticism of personality and aggression research because such approaches fail to include the maladaptive personality item content necessary to adequately capture personality pathology likely related to a higher risk of aggression (De Fruyt et al., 2013). Based on these shortcomings in extant research, it is argued that the role of personality within the GAM has not yet been adequately explored. The recent development of an empirically-based model of maladaptive personality traits within the DSM-5 represents a promising avenue by which to accomplish this task. The DSM-5 trait model is represented by five broad domains of maladaptive personality trait variation, including Negative Affect, Detachment, Antagonism, Disinhibition and Psychoticism, and comprises 25 specific personality trait facets (American Psychiatric Association, 2013). Research has shown that the DSM-5 trait model is associated with general (e.g., FFM; Costa & McCrae, 1990) and pathological (e.g., the Personality Psychopathology Five (PSY-5); Harkness & McNulty, 1994) personality trait models that demonstrate established relationships with aggression, and more recently particular DSM-5 domains and facets have been linked to intimate partner violence (Dowgwillo et al., 2016). The nature of the relationship between DSM-5 PD traits and aggression, and the associated research and clinical implications, will be explored in the following chapter (Chapter Three) of this thesis. Importantly, not only does the new DSM-5 trait system undoubtedly focus on the assessment of maladaptive personality domains and facets, but it also maps directly onto the DSM-5 (the manual most relevant to clinical and forensic psychology practice). Ultimately, by drawing upon the new DSM-5 maladaptive personality
model, in conjunction with GAM constructs, it is anticipated that the role of personality within the GAM may be better clarified.

Although the GAM emphasises the importance of maladaptive cognition related to aggression, the EMS framework is limited because it does not take into account manifestations of related emotional states or the enactment of related maladaptive coping strategies (Bernstein, Arntz, & de Vos, 2007; Chakhssi et al., 2012; Lobbestael, van Vreeswijk, & Arntz, 2007). With regards to manifestations of related emotional states, practitioners and research scholars recognise that certain individuals, particularly those with personality pathology (a population particularly important to the study of aggression), activate many different EMS at the same time, which causes them to switch rapidly between emotional states (Lobbestael et al., 2007). For example, individuals with severe Borderline PD (BPD) may appear calm and collected in some situations, and then all of sudden erupt into an extreme rage or become severely depressed (Lobbestael et al., 2007). Given schemas are conceptualised as stable underpinnings of personality, these rapid changes in feelings and the resulting behaviour, reflective of emotional instability, cannot be fully accounted for by the EMS model (Lobbestael et al., 2007). Consequently, for certain high risk individuals it may be difficult to identify and isolate specific EMSs involved in increasing aggression potential. With regards to the enactment of maladaptive coping strategies, ST recognises that people rely on different coping responses depending upon which EMSs have been activated (Bernstein et al., 2007; Young et al., 2003). According to ST, coping responses may be characteristic of three different coping styles, namely schema overcompensation (e.g., aggressive, hostile, dominant, recognition-seeking, manipulative, passive-aggressive or obsessive responses), schema avoidance (e.g., social or psychological withdrawal,
addictive self-soothing, compulsive or stimulation-seeking responses) or schema surrender (e.g., compliant or dependent responses). However, the EMS construct alone does not take into account the influence of associated coping strategies conductive to aggression. In order to account for fluctuating shifts in emotional states and an individuals' reliance on various behavioural coping responses, Young and colleagues (2003) extended the ST framework through the conceptualisation of schema modes. Schema modes are comprised of clusters of EMSs and coping responses that are active for a particular individual at any given moment; some modes will be primarily comprised of EMS, while others will mainly consist of coping responses (Lobbestael et al., 2007). Schema modes are triggered in response to life situations that evoke painful memories. As a result, they produce intense negative emotional experiences. In an attempt to cope with these negative emotions an individual may enact rigid, maladaptive coping strategies that impact the individuals' behaviour. As an individual shifts from one schema mode to another, thoughts, emotions and behaviours that were previously dormant become activated. Young and colleagues (2003) originally identified 10 schema modes that covered five mode domains, and more recently this list has been updated to include 14 modes (Young et al., 2014; Young, 2014a). Others (e.g. Bamelis, Renner, Heidkamp, & Arntz, 2011; Bernstein et al., 2007; Lobbestael, van Vreeswijk, & Arntz, 2008) have also proposed and reported evidence for additional schema modes. Specifically, in order to make ST applicable to forensic PD populations, Young's original list of schema modes was expanded to include Over Compensatory modes, which comprise emotional states and coping responses reflective of deception, predatory behaviour, intimidation and aggression (Bernstein et al., 2007). Table 2.2 provides a list of modes and mode domains.
Table 2.2  
*Schema Modes and Associated Domains*

<table>
<thead>
<tr>
<th>Domain/Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child Modes</strong></td>
<td></td>
</tr>
<tr>
<td>Vulnerable Child*</td>
<td>Feels vulnerable and overwhelmed with painful feelings</td>
</tr>
<tr>
<td>Angry Child*</td>
<td>Feels and expresses excessive anger in response to perceived or real mistreatment, abandonment, or frustration</td>
</tr>
<tr>
<td>Enraged Child*</td>
<td>Feels and acts enraged for similar reasons as Angry Child, but loses control and attacks/destroys objects and humans</td>
</tr>
<tr>
<td>Impulsive Child*</td>
<td>Acts impulsively to get needs met</td>
</tr>
<tr>
<td>Undisciplined Child*</td>
<td>Acts like a spoiled child who can’t tolerate the frustration of limits and discipline</td>
</tr>
<tr>
<td>Contented Child*</td>
<td>Feels at peace, loved, contented, connected, satisfied, fulfilled and protected</td>
</tr>
<tr>
<td><strong>Dysfunctional Coping Modes</strong></td>
<td></td>
</tr>
<tr>
<td>Detached Protector*</td>
<td>Uses emotional detachment to protect self from painful feelings</td>
</tr>
<tr>
<td>Detached Self-Soother*</td>
<td>Engages in repetitive, ‘addictive,’ or compulsive behaviours, or self-stimulating acts to calm/soothe self</td>
</tr>
<tr>
<td>Compliant Surrender*</td>
<td>Surrenders to the real or perceived demands of others in an anxious attempt to avoid pain or to get needs met</td>
</tr>
<tr>
<td><strong>Maladaptive Parent Modes</strong></td>
<td></td>
</tr>
<tr>
<td>Punitive Parent*</td>
<td>Critical/punishing internalised voice that directs harsh criticism towards the self inducing feelings of shame/guilt</td>
</tr>
<tr>
<td>Demanding Parent*</td>
<td>Expects impossibly high demands toward the self</td>
</tr>
<tr>
<td><strong>Healthy Mode</strong></td>
<td></td>
</tr>
<tr>
<td>Healthy Adult*</td>
<td>Can view situations and one’s self, and make decisions in healthy, balanced, and realistic ways</td>
</tr>
<tr>
<td><strong>Over-Compensatory Modes</strong></td>
<td></td>
</tr>
<tr>
<td>Self-Aggrandizer*</td>
<td>Feels superior and entitled and acts in a superficial, self-important, and egotistical manner</td>
</tr>
<tr>
<td>Bully and Attack*</td>
<td>Uses threats, intimidation, aggression, or coercion to get needs and desires met or to feel a sense of sadistic pleasure</td>
</tr>
<tr>
<td>Conning &amp; Manipulative+</td>
<td>Cons, lies, or manipulates in order to achieve a specific goal</td>
</tr>
<tr>
<td>Predator+</td>
<td>Focuses on eliminating a threat, rival, obstacle, or enemy in a cold, ruthless, and calculating manner</td>
</tr>
<tr>
<td>Obsessive-Compulsive</td>
<td>Ruminates, exercises control and uses order, repetition, or rituals to protect oneself from real or perceived threat</td>
</tr>
<tr>
<td>Over-Controller+</td>
<td>Focuses attention on locating and uncovering a hidden (perceived) threat</td>
</tr>
<tr>
<td>Paranoid Over-Controller+</td>
<td></td>
</tr>
</tbody>
</table>

Note: Modes marked with an * are measured by the current Schema Mode Inventory (Young et al., 2014)

*Adapted from Young (2014a). +Adapted from Bernstein, Arntz, & de Vos (2007).
Importantly, the introduction of modes to the schema framework does not imply the addition of new content-related material, instead it provides a more comprehensive schema unit that integrates relevant cognitive, emotional and behavioural processes; each of which are highly relevant to understanding aggression.

Recent research demonstrates support for the utility of schema modes in explaining aggression propensity. Specifically, it has been found that schema modes play a prominent role in events leading up to and culminating in violent criminal behaviour. Using an adapted version of the Mode Observation Scale (MOS; Bernstein, de Vos, & Van den Broek, 2009), schema mode progression was examined in 95 forensic in-patients with a DSM cluster B PD diagnosis (Keulen-de Vos et al., 2016). The study found that in the events preceding criminal behaviour three schema modes, namely the Vulnerable Child, Lonely Child and Detached Self-Soother, were most frequently active. With regards to the Vulnerable Child and Lonely Child modes, these results are consistent with previous reactive aggression research on emotional triggers. For instance, higher levels of trait vulnerability, anxiety, depression and self-consciousness (Miller & Lynam, 2006), extreme negative emotional disturbance (Fontaine, 2007), and affective psychiatric symptoms (e.g., anxiety, guilt, depression, and somatic symptoms; Vitacco et al., 2008) have all been linked to reactive forms of aggression. As such, it appears that schema modes that produce increases in painful, unpleasant and vulnerable feelings (e.g., anxiety, depression, abandonment, shame or loneliness) play a crucial role in the lead up to aggressive and violent criminal behaviours. As indicated by the presence of the Detached Self-Soother mode, participants were more likely to engage in repetitive, ‘addictive,’ or compulsive behaviours (e.g., alcohol or drug abuse) in an attempt to
calm, soothe or distance the self from painful feelings. Consistent with extant empirical research (e.g., Norstrom & Pape, 2010), these types of behaviours may limit patients' cognitive resources, leading to the disinhibition of aggressive impulses and an increased propensity for violent behaviour. As events leading up to the crimes progressed, five schema modes, namely Angry Child, Impulsive Child, Bully and Attack, Predator and Paranoid Overcontroller, were often triggered. These findings suggest that during the enactment of crime patients' emotional states are characterised by high rates of anger and impulsivity (i.e., Angry Child and Impulsive Child) eventually leading to engagement in criminal behaviours characterised by reactive (i.e., Bully and Attack mode) and instrumental aggression (i.e., Predator and Paranoid Overcontroller modes). Taken as a whole, the progression from painful, inner-directed emotions to states that involve anger, impulsivity, and aggression is consistent with accounts (e.g., cognitive neoassociation theory) which suggest that aggressive behaviour is enacted in response to, and potentially to compensate for, other contrary, negative emotional states (e.g., those involving feelings of weakness, fear, humiliation or helplessness) (Berkowitz, 1989, 1990, 1993b; Bernstein et al., 2007; Keulen-de Vos, Bernstein, & Arntz, 2014; Keulen-de Vos et al., 2016). Within the same study, Keulen-de Vos and colleagues (2016) also prospectively assessed rates of institutional incidents and found that the Vulnerable Child, Angry Child and Overcompensatory schema modes were predictive of institutional violence.

Although not a key component of the GAM, the manner in which schema modes increase aggression potential may be conceptualised within the context of the GAM. To illustrate, consider the following example with regards to the Angry Child mode. As noted, the GAM focuses on distal (biological and environmental modifiers and personality) and proximate (e.g., person and situational inputs, internal state and
CHAPTER TWO: AGGRESSION

appraisal and decision making processes) causes and processes relevant to aggression. At the distal level, particular EMSs (e.g., Mistrust, Abandonment) and habitual coping responses (e.g., counterattack) associated with the Angry Child mode exert their influence over a long period of time and thus may innately predispose an individual to higher levels of aggression across a variety of situations. When these anger related cognitions and coping tendencies are triggered in a given situation (i.e., at the proximate, person input level), they interact with provoking situational variables (e.g., being bumped into by somebody in a crowded bar) to evoke intense emotional experiences (e.g., the present internal state (routes) of the GAM), which in turn, primes and activates additional anger related cognitions (aggressive scripts, normative beliefs, schema), affect (anger) and physiological arousal. This heightened, anger-related internal state subsequently limits an individual's ability to engage in cognitively controlled re-appraisal. As a result, anger-biased immediate appraisals prevail, leading to reliance on habitual coping styles (e.g., schema overcompensation) and enactment of aggressive, hostile or dominant coping responses. Ultimately, in any given situation, schema modes appear to reflect the 'state' that an individual enters when (a) predisposing aggression-related cognitive and coping instigators are in operation with situational variables, (b) an aggression-related present internal state has been activated, and (b) appraisal and decision making systems have been compromised.

It is not clear why such a conceptualisation has not been previously presented, especially since consideration of EMS and schema modes has been an avenue within clinical practice that has gained increasing attention with regards to clarifying patterns of thinking, feeling and behaviour that underlie PD (a population of considerable clinical significance for understanding aggression) (Lobbestael,
Arntz, & Sieswerda, 2005). While schema modes have been a focus of clinical work and clinical conceptualisations of personality difficulties, the integration of schema mode work into aggression research may have been hindered due to researchers being less familiar with the concept of schema modes. Nevertheless, there is promising evidence in support of the schema mode-aggression relationship, and from a theoretical perspective, schema modes are meaningfully related to other aggression research on emotional triggers, compensatory and disinhibitory behaviours and hostile and instrumental aggression. Overall, given schema modes represent an extension of EMS, consideration of modes within the GAM framework may assist in further refining and strengthening the theoretical model. Inclusion of schema modes within the GAM has the potential to (a) lead to a more nuanced and substantiated understanding of the problematic cognitions, emotional states and frequently engaged coping mechanisms that lead to aggressive behaviour, and (b) provide researchers and practitioners with a framework to describe the 'state' that one enters when aggression is imminent. Further research is warranted to determine whether EMS or schema modes are the most productive unit of analysis within the GAM to understand aggression propensity.

2.9 Interim Summary

In light of methodological limitations (e.g., Ferguson & Dyck, 2012), further examination of the GAM in aggression prone populations (e.g., offenders) and the use of more real-life aggression prone variables will likely strengthen the literature base in support of the GAM. In line with recent research (e.g., Hosie et al., 2014), the GAM may also benefit from further research exploring the role of personality, in conjunction with GAM-delineated knowledge structures, in increasing aggression.
potential. Further, building upon the critical role of cognitive schema, future research should seek to determine whether the introduction of schema modes to the GAM leads to an improved understanding of the uncomfortable cognitive and affective states and coping responses conducive to aggression. Overall, the GAM is contemporary, flexible and adequately broad in scope to be able to account for the heterogeneity of aggressive behaviour. However, this breadth leaves room for expansion with respect to GAM components that are not yet fully incorporated. By incorporating novel, clinically meaningful concepts and models into the most contemporary aggression framework, essential components and processes of the GAM that are not yet fully understood can be refined, and links between theory and practice can be strengthened.
3.1 Preamble to Review Paper One

The role and conceptualisation of personality within the GAM has not been fully explored. As noted, one promising avenue by which to overcome such a limitation, and thus further elucidate the role of personality within the GAM, is via the use of the new DSM-5 dimensional maladaptive personality trait model. Before empirical investigations can examine DSM-5 traits and GAM constructs collectively, it is necessary to consider the way in which DSM-5 domains and facets may be meaningfully related to aggression. Given the DSM-5 trait model has only recently been developed, empirical evidence exploring these associations is not yet available. The paper presented in this chapter presents a novel approach to elucidating DSM-5 personality trait-aggression associations by drawing upon established aggression and personality and PD-aggression literature and linking this evidence to DSM-5 domains and facets. The paper begins with a brief conceptual focus on aggression and related constructs, followed by a review of studies in various populations that have documented an association between PD and aggression. Conceptual and methodological issues that compromise this literature are reviewed. The paper then outlines the DSM-5 dimensional-categorical model of PD, and integrates established personality and aggression literature with the newly proposed PD model to provide evidence for the link between the dimensional maladaptive PD domains and traits and aggression. Finally, research and clinical and policy implications of this review are considered.

Review Paper One, titled ‘Elucidating the Relationship Between Personality Disorder Traits and Aggression Using the New DSM-5 Dimensional-Categorical
Model for Personality Disorder’ has been accepted for publication in the journal of Psychology of Violence. This is a multidisciplinary peer-reviewed journal that publishes original quantitative and qualitative research on violence and extreme aggression across a variety of research fields, including psychology, public health, neuroscience, sociology, medicine, and other related behavioural and social sciences. The current impact factor of this journal is 2.790 (Thomson Reuters, 2016). The format of this manuscript is consistent with the requirements of Psychology of Violence. For ease of reading, manuscript pagination has been replaced with thesis pagination. However, sections of this article have not been numbered.
3.2 Author Indication Form for Review Paper One

Swinburne Research

Authorship Indication Form
For PhD (including associated papers) candidates

NOTE
This Authorship Indication form is a statement detailing the percentage of the contribution of each author in each associated 'paper'. This form must be signed by each co-author and the Principal Coordinating Supervisor. This form must be added to the publication of your final thesis as an appendix. Please fill out a separate form for each associated paper to be included in your thesis.

DECLARATION
We hereby declare our contribution to the publication of the 'paper' entitled:
ELUCIDATING THE RELATIONSHIP BETWEEN PERSONALITY DISORDER TRAITS AND AGGRESSION USING THE NEW DSM-5 DIMENSIONAL-CATEGORICAL MODEL FOR PERSONALITY DISORDER

First Author
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Brief description of your contribution to the 'paper': Support in conceptualising research design

Third Author
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Date: 6/5/2017
Brief description of your contribution to the 'paper': General supervisory input, review and editing of paper drafts.

Fourth Author
Name: [Signature]
Percentage of contribution: NOT APPLICABLE
Date: [Signature]
Brief description of your contribution to the 'paper':

Principal Coordinating Supervisor: Name: [Signature]
Date: 31/5/17

In the case of more than four authors please attach another sheet with the names, signatures and contribution of the authors.
CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

Elucidating the Relationship Between Personality Disorder Traits and Aggression Using the New DSM-5 Dimensional-Categorical Model for Personality Disorder

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This manuscript has not been previously published and it has not been submitted simultaneously for publication elsewhere.
CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

Abstract

Objectives: Several Personality Disorders (PD) and PD traits are associated with an increased propensity for aggression. However, these associations are complex and knowledge in the field has been hindered by problems in the conceptualization and measurement of PD and related traits. This review considers the newly proposed Diagnostic and Statistical Manual of Mental Disorders, Edition 5 (DSM-5) dimensional-categorical model of PD in an attempt to clarify the nature of the relationship between PD traits and aggression. This has not yet been explored.

Method: A review of extant personality/PD and aggression literature was conducted.

Results: The strongest associations likely exist between aggression and the DSM-5 domains of Antagonism and Negative Affectivity and for the following additional facets: Grandiosity, Attention-Seeking and Separation Insecurity. Conclusions: This review and conceptualization provides a focus for future researchers to empirically elucidate the relationship between PD traits and aggression and for clinicians to more systematically assess and formulate relevant constructs to determine aggression potential in people with maladaptive PD traits, thereby enhancing aggression reduction treatment efforts.

Keywords: Aggression; DSM-5; Maladaptive Personality Disorder Traits; Domains; Facets.
CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

Elucidating the Relationship Between Personality Disorder Traits and Aggression Using the New DSM-5 Dimensional-Categorical Model for Personality Disorder

Personality Disorder (PD) represents a significant clinical risk for aggression and violence (Duggan & Howard, 2009; Fountoulakis, Leucht, & Kaprinis, 2008); consideration of PD forms a critical component of several structured violence risk assessment instruments, with diagnosis conferring an increase in risk. Unfortunately, significant limitations in extant conceptualizations of PD hinder a more refined understanding of the link between PD and aggression. In light of concerns regarding the conceptualization and diagnosis of PD, a new dimensional-categorical system has been presented (American Psychiatric Association, 2013). This review offers a novel approach to elucidating the PD trait-aggression relationship. It begins with a brief overview of relevant PD-aggression literature, before noting how existing conceptualizations of the PD-aggression relationship are compromised by the current (section II) Diagnostic and Statistical Manual of Mental Disorders, Edition 5 (DSM-5; American Psychiatric Association, 2013) PD classification system. It then briefly describes the new model of PD classification (section III), and draws upon established aggression and general personality and psychopathy literature in an effort to identify the likely associations between the newly proposed PD traits and aggressive behavior. The conceptualization offered in this review provides a focus for future researchers to further delineate the relationship between PD and aggression and for clinicians to more systematically assess relevant constructs to determine aggression potential and also to focus their aggression reduction efforts on relevant personality constructs. This analysis adds to the growing body of literature.
supporting the use of the new DSM-5 dimensional-categorical model for the assessment of PD in general, as well as in forensic contexts, and suggests that utilizing the new model, by means of the Personality Inventory for DSM-5 (PID-5), may be critical for violent offender assessment and treatment.

**Conceptual Focus**

Given confusion between aggression and the related constructs of anger, hostility and violence (Parrott & Giancola, 2007), it is necessary to define these constructs. *Anger* refers to an internal emotional state, whereas *hostility* refers to the negative cognitive evaluation of people and events. Both anger and hostility can give rise to *aggression* (Howells et al., 2008), which is defined as behavior intended to cause harm to another person who is motivated to avoid that harm. Aggression and *violence* are largely distinguished by the extent of physical harm inflicted. Anderson and Bushman (2002) define violence as aggression that has extreme harm as its end goal, while Blackburn (1993) terms violence as the forceful infliction of physical injury. *Violent offending* is a subcategory of violence, in which the act of violence contravenes the law. For this review, the term aggression will be used to describe this broad field. Where a particular author or study being reviewed has explicitly used the term violence or violent offending then the original term used is retained.

**The Personality Disorder-Aggression Relationship**

PDs are diagnosed at an elevated rate in offender populations (Blackburn & Coid, 1998). The prevalence of PD in the general population ranges from four to thirteen percent (Coid et al., 2006; Samuels et al., 2002; Torgersen, Kringlen, & Cramer, 2001); in secure forensic settings (prisons and secure mental health
services), prevalence rates range between 42 and 78 percent (Fazel & Danesh, 2002; Singleton, Meltzer, Gatward, Coid, & Deasy, 1998). Antisocial Personality Disorder (ASPD) is the most frequently reported PD diagnosis in these forensic samples, and has consistently been linked to violent offending (Timmerman & Emmelkamp, 2001). Moderate to high rates of Borderline Personality Disorder (BPD), Narcissistic Personality Disorder (NPD) and Paranoid Personality Disorder (PPD) also occur within forensic settings (Timmerman & Emmelkamp, 2001). Studies examining male prisoners convicted of serious violent offending or who had engaged in high rates of aggressive behaviors within institutional settings have found that the majority met criteria for at least one PD; prevalence rates of ASPD, BPD, NPD and PPD were 62%, 57%, 55% and 48% respectively (Blackburn & Coid, 1999) and 84%, 56%, 63% and 67% respectively (Coid, 2002). Both prisoners and forensic patients with PD are more likely to reoffend violently after release (Jamieson & Taylor, 2004), and the links between ASPD, BPD and Psychopathy and violent recidivism are established (Grann, Långström, Tengström, & Kullgren, 1999; Hiscoke, Långström, Ottosson, & Grann, 2003; Salekin, Rogers, & Sewell, 1996).

Further evidence of the relationship between PD and aggression has emerged from community studies. Cross-sectional studies have revealed that individuals who engage in violent offending (de Barros & de Pádua Serafim, 2008; Varley Thornton, Graham-Kevan, & Archer, 2010), aggression (Berman, Fallon, & Coccaro, 1998; Yang & Coid, 2007), and intimate partner violence (Ross & Babcock, 2009) are more likely to meet diagnostic criteria for PD. Johnson et al. (2000) demonstrated that individuals diagnosed with a cluster A (Paranoid, Schizoid, Schizotypal) or B (Antisocial, Borderline, Histrionic, Narcissistic) PD were three times more likely to engage in violence. Individuals seeking community treatment for PD have also been
shown to have increased aggression propensity (Critchfield, Levy, Clarkin, & Kernberg, 2008; Howard, Huband, Duggan, & Mannion, 2008).

**Limitations of the Extant Personality Disorder-Aggression Literature**

The polythetic, behaviorally-based nature of the current diagnostic model has often been criticized as it lacks a cohesive, prototypic hierarchy of characteristics. Further, because the model gives equal weight to criteria that may be less central to the PD they define (McGlashan et al., 2005) there is often high variability in the manifestation of PD subtypes. Inadequate coverage of the range of PD symptoms is also a significant limitation of the current model (Verheul & Widiger, 2004). Clinicians may provide a diagnosis of PD-Not Otherwise Specified (PD-NOS) when they determine that an individual has a PD that is not adequately represented by any one of the ten PD subtypes; PD-NOS is often the single most frequently used PD diagnostic category in clinical practice. The overlap between diagnostic criteria of the current PD subtypes also poses a significant problem (e.g., angry and aggressive behavior is a primary diagnostic feature for both ASPD and BPD, and hostile and antagonistic features are associated with seven other PD subtypes (American Psychiatric Association, 2013). As a result, it is difficult to conclude whether aggressive or violent behavior can be directly inferred by any of the specific PD diagnoses (Gilbert & Daffern, 2011). Additionally, whether aggressive behavior is associated with specific personality traits that manifest differently across the PD subtypes, or the result of overall personality pathology, is unknown. PD traits are now recognised as being etiologically co-occurring, rather than distinct, and consequently the unique relationship between each PD subtype and aggression is highly confounded (Gilbert & Daffern, 2011).
The most valid assessment method for PD is also uncertain (de Ruiter & Greeven, 2000; Tyrer et al., 2007). Semi-structured interviews and self-report questionnaires are most commonly used in forensic settings. However, both approaches have been criticized since defensive responding and lack of insight are characteristic of some PDs and because forensic populations often exhibit self-protective, deceptive and socially desirable responses during assessment (de Ruiter & Greeven, 2000). Overall, poor correspondence between self-report and interview methods pose significant challenges to the accurate and reliable measurement of PD (Clark, Livesley, & Morey, 1997). The available literature is further limited by (a) the use of small or unrepresentative samples, particularly a lack of research using female samples (Warren et al., 2002), (b) the use of aggression in the establishment of a PD diagnosis and as a dependent variable, because it confounds the association, and (c) a reliance on cross-sectional studies, which fail to assess personality dysfunction over time (Gilbert & Daffern, 2011). Additionally, studies are often confounded by focusing only on the PDs that are widely assumed to be associated with violence (e.g., ASPD and BPD) (Varley Thornton et al., 2010); research on other PDs is scarce (Emmelkamp & Kamphuis, 2007).

A Way Forward: The Dimensional-Categorical Model for Personality Disorder Diagnosis

A new hybrid dimensional-categorical system to classify and diagnose PD was presented in Section III of the DSM-5. Using the new methodology, clinicians can derive a categorical diagnosis of PD based on the severity of an individual’s specific impairments in personality functioning and particular patterns of dimensional, pathological personality traits (Krueger, Derringer, Markon, Watson, &
Skodol, 2012). Similar to prominent models of normal personality, the trait system encompasses five hierarchical domains of maladaptive personality trait variation, including Negative Affect, Disinhibition, Antagonism, Detachment, and Psychoticism, and is comprised of 25 specific personality trait facets chosen for their clinical relevance (American Psychiatric Association, 2013). Extensive reviews on the Section III PD model have been published elsewhere (e.g., Krueger & Markon, 2014). Krueger et al. (2012) developed the Personality Inventory for the DSM-5 (PID-5) to measure the five trait domains and corresponding dimensional personality facets. To date, the PID-5 has demonstrated acceptable to good psychometric properties (Fossati, Krueger, Markon, Borroni, & Maffei, 2013; Quilty, Ayearst, Chmielewski, Pollock, & Bagby, 2013), with the exception of discriminant validity, where findings have been mixed (Crego, Gore, Rojas, & Widiger, 2015; Crego & Widiger, 2016; Quilty et al., 2013; Yalch & Hopwood, 2016).

A key strength of this new model is that PDs can be understood as specific constellations of maladaptive traits, rather than discrete entities from each other and from normal personality (Hopwood et al., 2013). Years of iterative research into the hybrid model have contributed to the development and refinement of the key features associated with each PD subtype. Eliminating the confounding influence of overlapping criteria between subtypes will assist in determining whether a genuine disposition toward aggressive or violent acts can be inferred by specific PD traits and diagnoses.
Evidence for the link between the Dimensional-Categorical Model for Personality Disorder Diagnosis and Aggression

Domain Level Relationships

To increase the clarity of the present review, Table 1 provides a summary of the strength of the anticipated associations between aggression and DSM-5 domains and facets as based on the following literature. Costa and McCrae's (1990) extensively validated and replicated Five-Factor Model (FFM) of personality is arguably the predominant model of general personality functioning and therefore has one of the largest empirical literatures from which to draw evidence of the relationship between aggression and the new DSM-5 PD conceptualization. The FFM posits five major personality domains: Neuroticism (i.e., the tendency to experience unpleasant emotions easily such as depression, shame, anger), Agreeableness (i.e., the tendency to be compassionate, cooperative, trusting and helpful), Conscientiousness (i.e., the tendency to be organized, dependable and self-disciplined and possess the ability to delay gratification, persevere in the face of difficulty and consider the consequences of one's behavior before acting), Extraversion (i.e., the tendency to seek the company of others, experience positive emotions, and be assertive and sociable) and Openness to Experience (i.e., reflects intellectual curiosity, creativity and a preference for novelty and variety). Six facets represent each of the five domains. Meta-analytic reviews reveal that the strongest associations between aggression and FFM domains emerge for low Agreeableness (Jones et al., 2011, weighted mean $r = -.33$; Miller & Lynam, 2001, weighted mean $r = -.41$), low Conscientiousness (Jones et al., 2011, weighted mean $r = -.18$; Miller & Lynam, 2001, weighted mean $r = -.25$), and Neuroticism (Jones et al., 2011, weighted mean $r = .17$; Miller & Lynam, 2001, weighted mean $r = .12$). Given that research to
date has also found that DSM-5 Negative Affect appears analogous to FFM Neuroticism (e.g., De Fruyt et al., 2013, factor loading of .74; Watson, Stasik, Ro, & Clark, 2013, $r = .76$), DSM-5 Antagonism to low FFM Agreeableness (e.g., De Fruyt et al., 2013, factor loading of -.87; Watson et al., 2013, $r = -.72$), and DSM-5 Disinhibition to low FFM Conscientiousness (e.g., De Fruyt et al., 2013, factor loading of -.95; Watson et al., 2013, $r = -.74$), it seems plausible that similar associations between aggression and the DSM-5 domain counterparts would exist. That is, aggression should be related to higher levels of DSM-5 Neuroticism, Antagonism and Disinhibition. It is important to note, however, that for these three PID-5 domains, although correlations were strongest for the theoretically converging FFM domains, small to moderate cross-loadings with other FFM domains were also evident (e.g., PID-5 Disinhibition-FFM Antagonism, $r = -.34$, Watson et al., 2013). Considerably weaker, or non-significant, associations have been found between aggression and FFM Extraversion (Jones et al., 2011, weighted mean $r = -.03$; Miller & Lynam, 2001, weighted mean $r = .00$) and Openness to Experience (Jones et al., 2011, weighted mean $r = -.10$; Miller & Lynam, 2001, weighted mean $r = -.03$). Regarding the association between FFM Extraversion and its purported DSM-5 counterpart (PID-5 Detachment), De Fruyt et al. (2013) found a strong factor loading between the two domains (factor loading of -.88), while Watson and colleagues (2013) demonstrated that PID-5 Detachment correlated with, but did not show specificity to FFM Extraversion ($r = -.47$), as it was also substantially correlated with both FFM Neuroticism ($r = .47$) and FFM Agreeableness ($r = -.41$). Regarding FFM Openness to Experience, a strong factor loading has been identified with PID-5 Psychoticism (De Fruyt et al., 2013, factor loading of .53), however, weak and non-significant correlations have been reported for the association between FFM
Openness to Experience and PID-5 Psychoticism ($r = .15$), as well as the other four PID-5 domains (Watson et al., 2013, $r$ range: -.09 to .15). Given these findings, the likelihood of DSM-5 Psychoticism and Detachment demonstrating an association with aggression remains unclear.

Further evidence for the relationship between aggression and DSM-5 PD domains can be drawn from research on the Personality Psychopathology Five (PSY-5; Harkness & McNulty, 1994). Similar to the FFM, the PSY-5 captures five personality domains, including Aggressiveness (i.e., the tendency towards overt and instrumental aggression that typically includes a sense of grandiosity and a desire for power), Psychoticism (i.e., reflects the accuracy of an individual's inner representation of objective reality), Constraint (i.e., an individual's level of control over their own impulses, physical risk aversion, and traditionalism), Negative Emotionality (i.e., an individual's tendency to experience negative emotions) and Positive Emotionality (i.e., an individual's tendency to experience positive emotions and have enjoyment from social experiences). Sharpe and Desai (2001) showed that higher scores on the Aggression Questionnaire (AQ; Buss & Perry, 1992) were broadly associated with higher scores on PSY-5 Aggressiveness ($r = .60$), Negative Emotionality ($r = .52$), and Psychoticism ($r = .43$), and a lower score on Constraint ($r = -.31$). A weaker, although still significant, association was also observed between aggression and lower scores of Positive Emotionality ($r = -.25$). One study has investigated the convergence between PSY-5 and DSM-5 domains and found that, although small to moderate cross-loadings were evident amongst the domains, DSM-5 Disinhibition, Negative Affectivity, Detachment and Psychoticism were most highly correlated with their conceptually expected PSY-5 counterpart (Anderson et al., 2013). That is, DSM-5 Disinhibition was most strongly associated with PSY-5
Constraint ($r = .57$), DSM-5 Negative Affectivity with PSY-5 Negative Emotionality ($r = .66$), DSM-5 Detachment with low PSY-5 Positive Emotionality ($r = .44$), and finally Psychoticism domains were related in both personality models ($r = .53$). Based on these findings, and in line with FFM-aggression research previously described, this provides further support for an anticipated association between aggression and DSM-5 Negative Affect and Disinhibition. The association identified for PSY-5 Psychoticism and aggression provides tentative support for a similar association for DSM-5 Psychoticism. The small, albeit significant, association between low PSY-5 Positive Emotionality and aggression provides some support for a similar relationship between DSM-5 Detachment and aggression. However, it is important to note that lower levels of Positive Emotionality were most strongly correlated with the Hostility subscale of the AQ, therefore this relationship may actually be better captured by the DSM-5 Antagonism or Negative Affect domain as they encompasses the facet of Hostility. With regards to DSM-5 Antagonism, results demonstrated that this domain correlated equally with PSY-5 Aggressiveness and PSY-5 Disconstraint ($r = .44$). The authors suggest that, from a PSY-5 perspective, DSM-5 Antagonism may be best conceptualized at a general, higher-order level of disinhibition, whereby combinations of traits of Aggressiveness and Disconstraint are subsumed (Anderson et al., 2013). In any case, given both PSY-5 Aggressiveness and Disconstraint have been found to be correlated with aggression, it is expected that DSM-5 Antagonism would demonstrate at least a moderate association with aggression. Overall, it is promising that the literature on the psychopathologically-orientated scales of the PSY-5 can also be drawn upon to further identify the associations that may emerge between DSM-5 PD domains and aggression, and that a number of the findings are consistent with FFM-aggression research. Nevertheless,
given the poor discriminant validity that is evident in the abovementioned studies, until empirical data is available substantiating these assumptions, readers should interpret the proposed associations with caution.

**Facet Level Relationships**

It is important for researchers to parse domains and consider narrower facet level personality-aggression relationships since facets generally have greater predictive ability for various behaviours (Jones et al., 2011). In order to review the large number of potential DSM-5 facet-aggression associations, the 25 DSM-5 facets and corresponding personality literature have been grouped into their respective domains according to the structure outlined by Krueger and Colleagues (2012). In instances where DSM-5 facets draw upon the same literature base to explicate aggression associations, the facets are collectively reviewed within the relevant domain. In addition to reviewing the general personality-aggression literature, psychopathy-focused research will also be briefly reviewed; this literature is important since there is a large body of research focusing on psychopathy and its general personality correlates and the relationship between psychopathy and aggression.

**General Personality Literature**

*DSM-5 Antagonism Facets and Aggression.* Five facets comprise the DSM-5 Antagonism domain, and based on extant research of comparable personality constructs, each of these facets are expected to demonstrate a significant association with aggression.


**Grandiosity and Attention-seeking.** It is useful to draw upon narcissism literature when exploring relationships between aggression and DSM-5 facets of Grandiosity and Attention-Seeking (Bettencourt et al., 2006). Both meta-analytic (Bettencourt et al., 2006, mean $d$ range = .49 to .63) and experimental evidence (Bushman & Baumeister, 1998, $r = .37$; Bushman, Bonacci, van Dijk, & Baumeister, 2003, $r = .55$; Thomaes, Bushman, Stegge, & Olthof, 2008, $d = .89$; Wink, 1991, $r = .39$) has demonstrated a moderate to strong association between narcissism and aggression, particularly under conditions of provocation. In addition to desiring attention and admiration, narcissists typically have an inflated sense of self-worth, self-love and entitlement (Kernberg, 1995). They are characterized by unstable self-esteem, and are therefore extremely vulnerable to personal slights, criticism or insults and are likely to behave aggressively when threats to the self-concept occur (Baumeister et al., 1996; Bushman & Baumeister, 2002). Consequently, it seems plausible to suggest that, under provocation, higher levels of DSM-5 Grandiosity and Attention-Seeking may be considered risk factors for aggressive responding.

**Callousness.** FFM research provides support for an association between callousness and aggression. In a meta-analytic review, Jones and Colleagues (2011) found that low Altruism (i.e., insensitivity to others) was amongst the strongest correlates of aggression (mean $r = -.26$). Additional research with youth exhibiting symptoms of conduct disorder has found that those high in callous and unemotional (CU) traits demonstrated increased levels of aggression compared with those low in CU traits (Enebrink, Andershed, & Långström, 2005, effect size unpublished, significant at $p < .05$ level; Frick, Cornell, Barry, Bodin, & Dane, 2003, effect size unpublished, significant at $p < .05$ level). Among antisocial youth, CU traits may be important for designating a group with higher aggression propensity. CU traits also
appear stable from childhood or adolescence into adulthood (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2005, \( r = .60 \); Dadds, Fraser, Frost, & Hawes, 2005, \( r = .55 \); Obradović, Pardini, Long, & Loeber, 2007, teacher report: \( r = .27 \); parent report: \( r = .50 \)).

_Deceitfulness and Manipulativeness._ Although research exploring direct associations between aggression and deceitfulness and manipulativeness is scarce, investigations of FFM facets provide proxy support for links to aggression in these two DSM-5 facets. Evidence is available linking low levels of Straightforwardness (i.e., frankness in expression) to aggressive behaviour (Jones et al., 2011, mean \( r = - .25 \); Miller, Lynam, et al., 2003, \( r = -.29 \); Miller et al., 2012, \( r \) range = -.34 to -.52; ). FFM straightforwardness is considered prototypical of psychopathy (via both expert ratings (Miller, Lynam, Widiger, & Leukefeld, 2001) and meta-analytic reviews (Decuyper, De Pauw, De Fruyt, De Bolle, & De Clercq, 2009; O'Boyle, Forsyth, Banks, Story, & White, 2015)), and psychopathy is recognized as one of the strongest PD-based correlates of aggression (Neumann & Hare, 2008; Salekin et al., 1996). As such, the contribution of DSM-5 Deceitfulness and Manipulativeness to aggression potential may be best understood within the broader conceptualization of psychopathy, which will be considered later in this review.

**DSM-5 Negative Affect Facets and Aggression.** Seven facets are grouped under the DSM-5 Negative Affect domain. Four of these facets are expected to exhibit an association with aggression, however, based on extant research, considerable variability likely exists in the strength of these associations.

*Hostility.* A large body of empirical literature identifies hostility as a dynamic risk factor for aggression and violence (Witt, van Dorn, & Fazel, 2013), and
numerous FFM studies have demonstrated small to moderate correlations between the FFM Angry-Hostility facet and aggression (Jones et al., 2011, mean $r = .21$; Miller, Lynam, et al., 2003, $r = .35$; Miller et al., 2012, $r$ range = .19 to .46). Hostile individuals engage in aggressive behavior because they are more susceptible to hostile cognitions, i.e., attribution, perception and expectation biases, whereby they more readily perceive threat and hostile intent from others (Anderson & Bushman, 2002; Buss, 1961; Crick & Dodge, 1994). Such hostile interpretations are thought to be responsible for the activation of aggressive cognitions and the increased accessibility of aggressive concepts in memory (Anderson & Bushman, 2002). As a result, an individual is more likely to experience persistent anger and irritability, which allows the maintenance of aggressive intentions and behavior over time (Anderson & Bushman, 2002; Seager, 2005). Studies examining hostile attribution in individuals with a known propensity for violent behavior have consistently demonstrated that these individuals more readily perceive and react violently to perceptions of threat and hostility from others (Seager, 2005, $r$ range = .35 to .48). A relationship between DSM-5 Hostility and aggression is therefore anticipated.

**Separation Insecurity.** Empirical evidence has revealed significant correlations between fearful/anxious attachment and aggression (Critchfield et al., 2008, $r$ range = .30 to .49; Dutton, Saunders, Starzomski, & Bartholomew, 1994, $r$ range = .46 to .52). Attachment research suggests that adults who possess a fearful style of attachment are highly sensitive to relationship dynamics and consequently they often fear abandonment or rejection. As a result, these individuals may act aggressively in an attempt to control a significant other and avoid feared abandonment (Bartholomew & Horowitz, 1991; Bowlby, 1998; Florsheim, Henry, & Benjamin, 1996). In line with this premise, Dutton (2002) showed that aggression
CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

against romantic partners is motivated by a belief that the partner will abandon the abuser. Overall, given individuals high in separation insecurity are prone to perceive fear/anxiety in relationships, as evidenced in the DSM-5 definition of the facet, an association is posited for this DSM-5 facet and aggression.

*Emotional Lability.* It is plausible that emotion dysregulation (i.e., DSM-5 Emotional Lability) may be an important factor for understanding aggressive behavior. Empirical evidence supporting this contention comes from Dvorak and Colleagues (2013) who found that affective lability significantly correlated with aggressive behaviors ($r = .28$) and added significantly to the prediction of aggressive behaviour over and above impulsivity-traits. Moreover, an interaction effect between emotional lability and negative urgency (i.e., the tendency to engage in impulsive behavior when experiencing negative affect) was identified, whereby the association between affective lability and aggressiveness was stronger among those with higher negative urgency. Roberton et al. (2012) suggest that emotion dysregulation may influence aggressive behavior via two separate paths: 1. individuals with poor affect regulation may be prone to aggression in an attempt to regulate aversive emotional states (e.g., fear, anxiety, sadness), or 2. emotional lability may interfere with higher-level, effortful control resources, thereby reducing inhibitions against aggression.

*Submissiveness.* There is a limited evidence base from which to draw upon when examining the association between submissiveness and aggression. One study has demonstrated a significant association between FFM Assertiveness (i.e., social ascendance and forcefulness of expression) and aggression (Jones et al., 2011, mean $r = .06$), and given assertiveness and submissiveness have been shown to be negatively correlated ($r = -.36$; Gilbert & Allan, 1994), a negative association between DSM-5 Submissiveness and aggression may be postulated. Similar to the
facets of deceitfulness and manipulativeness, the role of submissiveness may be best conceptualized within the context of psychopathy; a notion supported by Decuyper and Colleague’s (2009) linking of FFM Assertiveness to psychopathy ($r = .16$).

**Anxiousness.** Non-significant anxiety-aggression associations are evident in extant FFM empirical data (Jones et al., 2011, mean $r = -.03$; Miller, Lynam, et al., 2003, $r = .07$; Miller et al., 2012, $r$ range = .00 to .23). Contrary evidence for the role of anxiety in aggressive behaviour will be reviewed in the following psychopathy-violence literature section.

**Perseveration and Restricted Affectivity.** There is currently a lack of research or very limited evidence for potential relationships between aggression and DSM-5 Perseveration and Restricted Affectivity. Additional empirical evidence for the perseveration-aggression relationship will be considered within the context of the psychopathy-aggression literature to follow.

**DSM-5 Disinhibition Facets and Aggression.** The DSM-5 domain of Disinhibition encompasses five facets, three of which are anticipated to exhibit an association with aggression. There is, however, considerable variability in the strength of these associations.

**Impulsivity.** Much research has consistently demonstrated that impulsivity is associated with violence (Derefinko, DeWall, Metze, Walsh, & Lynam, 2011; Lynam & Miller, 2004; Miller, Flory, Lynam, & Leukefeld, 2003; Seager, 2005), and that this association is particularly strong under conditions of provocation (Bettencourt et al., 2006, mean $d$ range = .49 to .63). Significant relationships between aggression and FFM impulsivity related facets exist, e.g., Impulsiveness (Jones et al., 2011, mean $r = .08$; Miller, Lynam, et al., 2003, $r = .20$; Miller et al.,
2012, $r$ range = .22 to .31), Self-Discipline (Jones et al., 2011, mean $r = -.06$) and Deliberation (Jones et al., 2011, mean $r = -.18$; Miller, Lynam, et al., 2003, $r = -.18$; Miller et al., 2012, $r$ range = -.42 to -.18). Similarly, young adults with a violence conviction have been found to score lower on the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982) Control facet (Caspi et al., 1997, $d = .73$).

Appraisal and decision-making processes play a pivotal role in the impulsivity-aggression relationship. In this manner, the relationship is conceptualized as being the result of inadequate self-restraint (Berkowitz, 2008). When an individual has insufficient time and cognitive capacity and the immediate appraisal of situational events deems the outcome satisfactory, impulsive action may occur (Anderson & Bushman, 2002; Anderson et al., 2007). Such action may be aggressive or non-aggressive depending on the content of the appraisal; however, aggressive individuals typically have high levels of anger and hostility, which coupled with their tendency to act quickly and without adequate consideration of consequences, exacerbates aggression potential (Dodge & Newman, 1981).

**Risk Taking.** Although the empirical evidence is limited, some research points to a potential relationship between DSM-5 Risk Taking and aggression. For example, Zuckerman and Kuhlman (2000) demonstrated a link between aggression-hostility and risky behaviors, with the strongest relationship emerging for drinking related risk-taking behaviors (rather than risk taking as a personality trait) for both males ($r = .35$) and females ($r = .38$). Caspi and Colleagues (1997) found that young adults with a violence conviction scored lower on the MPQ Harm Avoidance facet ($d = .39$). Furthermore, Miller and Colleagues (2012) have demonstrated a moderate association between FFM Excitement Seeking and reactive aggression ($r = .31$), however this relationship did not extend as strongly to proactive ($r = .22$) or
relational \((r = .08)\) forms of aggression. On the other hand, others (e.g., Jones et al. (2011)) have failed to identify significant associations between FFM Excitement Seeking and aggression (mean \(r = -.02\)), which highlights the need to separate subtypes of aggression when exploring associations with risk-taking.

**Irresponsibility.** Given FFM research has drawn links between the facet of Dutifulness (i.e., motivated by a sense of duty and obligation) and aggression (Jones et al., 2011, mean \(r = -.17\); Miller, Lynam, et al., 2003, \(r = -.20\); Miller et al., 2012, \(r\) range = -.01 to .06), a weak association between DSM-5 Irresponsibility and aggression is postulated. Additional findings are evident in the psychopathy-aggression literature, presented later in this review.

**Rigid Perfectionism.** Although research is limited, maladaptive forms of perfectionism have been shown to predict self-report anger, hostility and physical aggression in an undergraduate and adolescent sample (Chester, Merwin, & DeWall, 2015, trait anger \(r = .26\), hostility \(r = .45\) and physical aggression \(r = .25\); Öngen, 2010, trait anger \(r = .36\), hostility \(r = .49\) and physical aggression \(r = .36\)) and laboratory-based aggression in an undergraduate sample (Chester et al., 2015, \(r = .21\)). In line with the frustration-aggression hypothesis (Berkowitz, 1989; Dollard et al., 1939), it has been suggested that these relationships arise due to maladaptive perfectionists deeming aggression to be an effective means to alleviate negative affect and improve mood (Chester et al., 2015). It is important to note, however, that lack of Rigid Perfectionism is included within the DSM-5 PD model as a facet of the Disinhibition domain, therefore whether these associations would be replicable for the low levels of the facet is unknown. In table 1, the anticipated association presented represents the evidence reviewed for aggression and high levels of
CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

maladaptive perfectionism, rather than lack of Rigid Perfectionism (as specified within the DSM-5).

_Distractibility_. Based on the limited or lack of literature available, associations between aggression and DSM-5 Distractibility are not yet supported.

**DSM-5 Detachment Facets and Aggression.** Five facets are grouped into the DSM-5 Detachment domain; each of these are expected to demonstrate small to moderate associations with aggression.

_Intimacy Avoidance_. Although evidence for the link between intimacy avoidance and aggression is limited, Critchfield et al. (2008) found that BPD patients who experience an avoidant attachment style in their romantic or intimate relationships exhibit higher rates of aggressive behaviours ($r$ range = .21 to .27). The authors suggest that patients with BPD with higher levels of anxiety and avoidance are more likely to hold a view of others that makes them perceive provocation (e.g., when a partner is critical or distant), and as such they are more likely to lash out aggressively when they feel provoked. On the contrary, FFM research on the facet of Gregariousness (i.e., preference for the company of others) has demonstrated non-significant associations with aggression (Jones et al., 2011, mean $r = -.02$; Miller et al., 2012, $r$ range = .22 to .31). Although Gregariousness taps into an individuals' tendency to seek our relations with others, it is not specific to intimate relationships per se. Consequently, FFM Gregariousness may tap into broader content than that of DSM-5 Intimacy Avoidance, and this may account for the non-significant findings.

_Suspiciousness_. Evidence has emerged linking paranoid/suspicious attitudes or related types of beliefs and biases to aggressive behavior. However, these associations vary according to the ways in which the suspicious or paranoid
perceptions and attributions are defined, the types of aggression under study and the affective contexts in which suspicious beliefs manifest (Bailey & Ostrov, 2008; Bjørkly, 2002; De Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Krakowski, Czobor, and Chou (1999) demonstrated that persistently violent psychiatric patients exhibited greater levels of hostility-suspiciousness (effect size unpublished, significant effect at $p < .001$) compared to non-violent patients and patients who showed resolution of assaults. Given that suspiciousness and hostility became more pronounced overtime in the persistently violent group (effect size unpublished, significant effect at $p < .01$), the authors suggest that these constructs may represent chronic symptoms in these patients, i.e., the suspicious beliefs and attitudes they generate may be held with stronger conviction and may therefore exert greater influence over behaviour. As such, suspiciousness and hostility may constitute risk factors for violence. Others (e.g., Haggård-Grann, Hallqvist, Långström, & Möller, 2006) have shown that the aggression risk increase related to paranoid thoughts is small and non-significant (relative risk (RR) range = 0.9 to 1.4) in a sample of criminal offenders undergoing psychiatric or risk evaluations, however for those participants with severe forms of bipolar disorder, schizophrenia, or other psychosis, the relative risk is greater (RR = 3.6). Research in non-clinical samples has identified links between suspiciousness and aggression. For example, suspicions of infidelity have been moderately associated with risk for intimate partner violence among men (Gartner, Dawson, & Crawford, 1999; Kaighobadi, Starratt, Shackelford, & Popp, 2008, $\beta = .16$), and a suspicious cognitive schema has been linked to male sexual aggression (Malamuth & Brown, 1994, $r$ range = .28 to .29). Overall, the evidence points to a relationship between aggression and paranoid ideas and perceptions expressed on a continuum ranging from cognitive personality.
style (i.e., schema) and referential thinking to more severe symptoms of psychosis. Taken together, these findings provide support for a link between DSM-5 Suspiciousness and aggression, as well as a potential interacting relationship with Hostility.

*Depressivity.* FFM studies have identified modest relationships between depression and aggression (Jones et al., 2011, mean $r = .11$; Miller, Lynam, et al., 2003, $r = .22$; Miller et al., 2012, $r$ range = .12 to .30), which may be explained by a common ruminative tendency. It is well established that depressed individuals are prone to ruminate (Segerstrom, Tsao, Alden, & Craske, 2000); similarly, individuals who engage in high levels of rumination are more likely to behave aggressively because they maintain and exacerbate their feelings of anger and hostility for prolonged periods of time (Caprara, 1986; Caprara et al., 1987). Alternatively, a variety of other theorists argue that negative mood sets the stage for aggressive behaviour. For example, Berkowitz (1989) established the concept of aversively stimulated aggression, whereby negative mood is considered so aversive that it actually stimulates irritable and aggressive responses. Crick and Dodge (1994) propose that negative mood impacts social information processes, which can lead to more hostile attribution biases and subsequently aggressive behaviour. Huesmann (1998) suggests that negative mood states limit the search for appropriate behavioural scripts, consequently resulting in more impulsive aggression. Finally, Anderson and Bushman (2002) argue that affective arousal (e.g., anger, fear, depression) can activate an individual's aggression related knowledge structures. That is, depression may serve as a cue for aggression related cognitive schemas, normative beliefs and behavioral scripts, which can increase dominant behavioral tendencies such as aggression. Finally, an association between negative urgency and
aggression has been identified (Dvorak, Pearson, & Kuvaas, 2013, $r = .12$; Miller et al., 2012, mean $r = .43$). Not only does this provide additional support for a relationship between impulsivity-like traits and aggressive behavior, but it also highlights the importance of taking into account the impact of negative affective states such as anger, sadness or fear (Anderson & Bushman, 2002; Cyders & Smith, 2008). In this context, it is possible that DSM-5 facets related to Negative Affect (i.e., Anxiousness, Depressivity or Hostility) may serve as moderating variables in the impulsivity-aggression relationship.

Anhedonia and Withdrawal. Significant associations exist between aggression and social anhedonia (Fanning, Berman, & Guillot, 2012, $r$ range = .20 to .43; Fanning, Berman, Mohn, & McCloskey, 2011, $r$ range = .20 to .22) and low MPQ Social Closeness (Caspi et al., 1997, $d = .69$), and social anhedonia has been found to uniquely predict provoked aggressive behavior (Fanning et al., 2012, $\beta = 0.20$). At first glance, these associations may appear contradictory, given that socially anhedonic individuals and individuals low on social closeness have a tendency to withdraw from social contact, which likely results in fewer opportunities for aggression. However, these individuals may possess characteristics that increase their risk of acting aggressively in provocative situations (Fanning et al., 2012). For instance, socially anhedonic individuals exhibit deficits in social skills, which may lead them to rely on more dysfunctional methods of interacting. Further, these individuals typically lack motivation to preserve relationships, therefore the prospect of damaging social relationships may not deter aggressive behaviour. Consequently, it seems plausible to suggest that similar relationships may be found between aggression and DSM-5 Anhedonia and Withdrawal.
DSM-5 Psychoticism Facets and Aggression. The DSM-5 Psychoticism domain is comprised of three facets, all of which may be expected to demonstrate small to moderate correlations with aggression.

Eccentricity, Unusual Beliefs and Experiences and Perceptual Dysregulation. Fanning and Colleagues (2011; 2012) examined the sub-clinical psychosis related constructs of Perceptual Aberrations (i.e., hallucination-like experiences) and Magical Ideation (i.e., "magical" or illogical thinking) in relation to aggression. These constructs reportedly represent personality traits that are stable and indicative of a heightened risk for developing psychosis. Although results vary depending on the measurement of aggression, both Perceptual Aberration and Magical Ideation tend to be positively correlated with aggression (Fanning et al., 2012, Perceptual Aberration: \( r \) range = .05 to .38; Magical Ideation: \( r \) range = .10 to .41; Fanning et al., 2011, Perceptual Aberration: \( r \) range = .18 to .32; Magical Ideation: \( r \) range = .20 to .27). Given these two constructs appear to tap similar content to that of DSM-5 Eccentricity, Unusual Beliefs and Experiences and Perceptual Dysregulation, it is possible that similar aggression associations may exist for the three Psychoticism related DSM-5 facets.

The Psychopathy-Violence Relationship

Although not recognised as a formal PD within the DSM-5, psychopathy has been acknowledged in Section III of the manual via inclusion of a psychopathic specifier within the ASPD diagnostic criteria. Given psychopathy has consistently been associated with severe and violent antisocial behavior in adults in forensic and psychiatric settings (Salekin et al., 1996, mean \( d = .79 \) and .53 for forensic and psychiatric samples, respectively), as well as community samples (Neumann & Hare,
2008, $r$ range = .07 to .56), it is important to the PD-aggression relationship. Psychopathy and PD can be conceptualized in terms of common underlying personality dimensions. For instance, psychopathy can be understood with reference to the FFM (Blackburn & Coid, 1998), primarily as a maladaptive expression of low Agreeableness (Decuyper et al., 2009, $r = -.55$; Miller et al., 2001, $r$ range = -.67 to -.70; O'Boyle et al., 2015, $r = -.42$), low Conscientiousness (Decuyper et al., 2009, $r = -.34$; Miller et al., 2001, $r$ range = -.05 to -.29, ; O'Boyle et al., 2015, $r = -.31$) and high Extraversion (Miller et al., 2001, $r$ range = .34 to .38). Drawing upon the psychopathy-violence literature therefore provides additional insights into the potential relationships that may emerge for DSM-5 facet level relationships with aggression.

To begin, it is important to note that the precise definition and boundaries of psychopathy, and the most appropriate methods for assessing it are still debated. In an attempt to clarify and reconcile various alternative conceptions of psychopathy and provide a framework for understanding commonalities and differences among existing assessment methods and extant empirical findings, Patrick, Fowles, and Krueger (2009) proposed the dimensional framework of the Triarchic Model of Psychopathy. The Triarchic model comprises three broad dimensions: Disinhibition (impulsivity, alienation, irresponsibility, carelessness, and antisocial/rule-breaking tendencies), Meanness (deficient empathy, remorselessness, disdain for and lack of close attachments with others, rebelliousness, excitement seeking, deceitfulness, exploitativeness, and empowerment through cruelty), and Boldness (socially adaptive characteristics, including dominance, persuasiveness, stress immunity, and wellbeing, along with maladaptive tendencies, such as grandiosity, manipulativeness, dishonesty, risk taking, and emotional insensitivity), which are operationalized by
the Triarchic Psychopathy Measure (TriPM; Patrick, 2010). In line with PD literature, evidence exists linking the Triarchic conceptualization of psychopathy to the FFM, suggesting that the Triarchic model can be viewed as being nested within a broader trait framework (Miller, Lamkin, Maples-Keller, & Lynam, 2016; Poy, Segarra, Esteller, López, & Moltó, 2014). It is important to note, however, that contention exists as to whether the Boldness domain is necessary in the conceptualization of psychopathy (Drislane, Patrick, & Arsal, 2014; Miller & Lynam, 2012); nevertheless until further research emerges settling this debate, Boldness will continue to form a part of the Triarchic model and as such will be considered within this review.

Empirical evidence for the link between the three Triarchic domains and aggression is mixed (Drislane et al., 2014; Fanti, Kyranides, Drislane, Colins, & Andershed, 2016; Gatner, Douglas, & Hart, 2016). Overall, however, TriPM Meanness appears to demonstrate mostly moderate to strong correlations with aggression ($r$ range = .13 to .55) and is recurrently predictive of aggressive behaviour. TriPM Disinhibition demonstrates primarily small to moderate associations with aggression ($r$ range = .14 to .47) and has been found to predict aggression, although this relationship is inconsistent. Finally, the relationship between aggression and TriPM Boldness is modest ($r$ range = .04 to .28), with studies revealing non-significant to weak correlations and limited predictive utility.

To relate these findings back to DSM-5 personality trait relationships with aggression, it is important to draw upon Strickland, Drislane, Lucy, Krueger, and Patrick (2013) who investigated the extent to which TriPM dimensions could be assessed using DSM-5 PD traits. When grouped within their respective higher-order domains, Callousness ($r = .76$), Hostility ($r = .51$), Irresponsibility ($r = .49$), Risk
Taking ($r = .48$), Suspiciousness ($r = .38$), Perseveration ($r = .34$), and Intimacy Avoidance ($r = .34$) significantly predicted TriPM Meanness. Irresponsibility ($r = .72$), Impulsivity ($r = .61$), Deceitfulness ($r = .57$), Callousness ($r = .54$), Hostility ($r = .52$), Perceptual Dysregulation ($r = .52$), Depressivity ($r = .49$), Suspiciousness ($r = .47$), Anxiousness ($r = .33$), and Restricted Affectivity ($r = .32$) significantly predicted TriPM Disinhibition. Finally, Risk Taking ($r = .57$), Manipulativeness ($r = .40$), Unusual Beliefs and Experiences ($r = .13$), Deceitfulness ($r = .11$), Anxiousness ($r = -.55$), Anhedonia ($r = -.44$), Attention-Seeking ($r = .38$), Submissiveness ($r = - .36$), and Distractibility ($r = -.19$) significantly predicted TriPM Boldness. Given the links between the Triarchic model of psychopathy and aggression as described above, we anticipate that relationships will emerge between aggression and those DSM-5 personality facets associated with Triarchic Meanness and Disinhibition. Although these assumptions should be interpreted with caution given the poor discriminant validity that is evident within this and other studies, the findings are largely consistent with the facet-aggression associations described earlier in this review, which therefore provides supplementary support for the link between aggression and DSM-5 facets. These findings also highlight two additional DSM-5 facets (i.e., Perseveration and Anxiousness) that may be important to consider when studying aggressive behaviour. Given the lack of support for the Triarchic Boldness-aggression relationship, no further support can be gathered for those DSM-5 facets that contribute uniquely to the TriPM Boldness domain.

**Limitations**

Although this review serves as an interim guide for researchers and clinicians to elucidate the relationship between DSM-5 PD traits and aggression, empirical
evidence supporting the anticipated associations is not yet available. A significant proportion of the research reviewed focuses on personality-aggression associations within non-clinical populations. Consequently, it is unclear whether these same relationships will be replicated within clinical and forensic populations. Finally, given the poor discriminant validity of the DSM-5 PD traits, it is difficult to exclusively align DSM-5 maladaptive domains and facets with conceptually relevant extant trait counterparts. As such, some ambiguity regarding the strength of the anticipated DSM-5 trait-aggression associations exists.

**Research Implications**

Although the PID-5 has been available since 2013 there has been no study pertaining to associations between its domains and facets with aggression. Without such research, forensic assessors may be uncertain regarding how best to interpret PID-5 assessment results in relation to aggression propensity and treatment need. As such, prior to empirical data becoming available, this review serves as an interim guide for forensic researchers and practitioners to begin thinking about the influence of DSM-5 PD domains and facets on aggressive behavior. In order to advance PD trait-aggression conceptualizations, future research utilizing the PID-5 should be conducted in samples where high rates of PDs and aggressive behaviours exist (e.g., male and female forensic populations). Within a forensic sample, researchers may focus their efforts on exploring a) all domain and facet associations with aggression, or b) the unique contribution of domains and facets within each designated PD subtype that demonstrates a relationship with aggression (i.e., ASPD, BPD and NPD). Such research may help to empirically validate the hypothesized relationships between aggression and the dimensional PD model domains and facets presented.
here. Moreover, given there is on-going debate regarding the utility and compatibility of the separate typal and dimensional classifications within the new model (Livesley, 2012), such investigations may assist in demonstrating which classification method is most relevant to aggression risk assessment.

The PID-5 has demonstrated largely acceptable to good psychometric properties in community and undergraduate samples (Fossati et al., 2013; Quilty et al., 2013). However, there is a pressing need to validate the PID-5 in forensic populations. The potentially problematic discriminant validity of the tool may mean that it is difficult to identify the specific domains and facets that will be related to aggression. The DSM-5 PD model includes a measure of severity of general personality impairment (Criterion A), as well as severity ratings for the domains and facets, and some would argue that severity is the most important aspect in terms of clinical intervention (Crawford, Koldobsky, Mulder, & Tyrer, 2011; Verheul, 2012). Although space limitations preclude further discussion on this topic, further research is warranted to determine (a) which elements of self and interpersonal functioning (Criterion A) are most important in relation to aggression risk and (b) what role severity ratings play in linking a trait domain or facet to aggression.

Extant personality-aggression research is largely dominated by self-report measurement methods. However, there are inherent difficulties associated with self-report measures in forensic contexts, e.g., deception, underreporting or lack of insight of maladaptive traits, psychopathology and previous aggressive behaviour (de Ruiter & Greeven, 2000). Future studies may therefore benefit from employing a range of methodologies with various corroborating sources (e.g., client, family member, partner, friend, primary clinician, or case manager) to accurately assess an individuals' personality structure and tendency to engage in aggressive acts (Miller &
Lynam, 2015; Samuel, 2015; Samuel, Suzuki, & Griffin, 2016). At present, a variety of PID-5 related instruments are available to facilitate accurate assessment of maladaptive personality traits. Measures published by the American Psychiatric Association include the PID-5 (220 items), the PID-5-Brief Form (PID-5-BF, 25 items), and the PID-5-Informant Form (PID-5-IRF, 220 items). In addition, a reduced set of PID-5 items (100 items) has been found to reliably, validly and efficiently measure the five domains and 25 facets (Maples et al., 2015). Moreover, DSM-5 PD traits may be reliably and validly assessed via interview ratings (Few et al., 2013), which is relevant given potential problems of self-report. It is important to note, however, that in general research settings, individuals high on psychopathic and narcissistic traits are relatively willing to endorse relevant psychopathology as their self-reports demonstrate substantial agreement with informants (Miller, Jones, & Lynam, 2011; Miller, Rausher, Hyatt, Maples, & Zeichner, 2014) and neither are associated with underreporting (Ray et al., 2013; Sleep, Sellbom, Campbell, & Miller, 2016). A variety of interview (e.g., Life History of Aggression structured interview schedule, Coccaro, Berman, & Kavoussi, 1997), self-report (e.g., Buss Aggression Questionnaire, Buss & Perry, 1992; Life History of Aggression self-rated survey, Coccaro et al., 1997) and observation (e.g., Modified Overt Aggression Scale, Kay, Wolkenfeld, & Murrill, 1988; Staff Observation Aggression Scale, Palmstierna & Wistedt, 1987) measures are available to assist in the assessment of aggression. Police data, prisoner or inpatient incident reports and official criminal records may be utilized to measure aggression. Utilizing multiple assessment modalities with separate sources may provide a stronger empirical base upon which to study PD trait-aggression relationships.
Finally, the most contemporary social-cognitive theory of aggression, the General Aggression Model (GAM; Anderson & Bushman, 2002), emphasizes the importance of particular aggression-related constructs, including aggressive scripts, normative beliefs supportive of aggression, maladaptive cognition and anger, to aggression potential (Anderson & Bushman, 2002; Anderson & Carnagey, 2004). In order to successfully amalgamate the DSM-5 PD model with aggression research, future studies may examine the unique contribution of relevant DSM-5 personality domains and facets, alongside these aggression specific constructs. Determining whether the effects of DSM-5 personality domains and traits remain significant when aggression-specific constructs are also considered may assist in determining the focus of assessment of aggressive individuals. More specifically, such research will highlight the specific maladaptive personality traits and cognitive and emotional mechanisms relevant to violence risk assessment. Interventions may then be aimed at targeting these constructs.

Clinical and Policy Implications

Within a psycho-legal framework, the dimensional PD trait system may provide useful information for risk assessment, formulation and the development of therapeutic and risk management interventions.

Assessment

One specific goal of the legal system is the development of appropriate risk plans to manage and reduce aggression likelihood; and many current approaches to violence risk assessment (e.g., the Historical Clinical Risk Management -20: Version 3 (HCR-20: V3; Douglas, Hart, Webster, & Belfrage, 2013)) specifically include
personality pathology as a key clinical risk indicator. Although it seems unlikely that the new DSM-5 PD model will replace the use of existing risk assessment measures, it may be particularly useful to capture PD-related risk factor domains currently underrepresented in widely used risk assessment schemes. This is important given that many risk measures and treatments are linked. In particular, Klepfisz, Daffern, and Day (2016) suggest that assessment of impulsivity and self-regulation deficits are minimal in current risk assessment schemes, yet impulsivity and self-regulation deficits have been noted as common treatment targets in violent offender rehabilitation programs (Polaschek, 2006).

**Formulation**

The new PD trait model has the potential to add significantly to the process of case formulation. Formulation refers to the act of understanding the underlying mechanism of an individual's presenting problem, and is now recognised as the key link between assessment and treatment/management of violence risk. Given the multitude of personality traits that may underlie aggressive behaviour, it is important for clinicians to consider how DSM-5 personality traits operate to impact aggression. Within the context of the GAM, DSM-5 maladaptive personality traits represent a distal risk factor (i.e., a predisposing tendency) that increases an individuals' personal preparedness to aggress overtime and across situations. When maladaptive personality traits are present and active in a current social situation, they interact with situational variables to serve as proximate (i.e., precipitating) risk factors for aggression by attracting individuals to environments that are consistent with their personality and conducive to aggression (Anderson & Bushman, 2002; Roberts, Wood, & Caspi, 2008). Take for example, a client who scores high on the DSM-5
trait of Separation Insecurity and is aggressive towards intimate partners. Based on the trait present (and information gathered during thorough assessment), we may speculate that this client is frequently drawn to casual intimate relationships, where partners are unable or unwilling to make long-term commitments. These types of casual relationships facilitate expression of the Separation Insecurity trait by allowing for fears of rejection and abandonment to be realized. Consequently, we begin to formulate that this client engages in aggression in an attempt to control the non-committed partner from leaving and avoid negative thoughts and feelings associated with rejection and abandonment. Maladaptive personality traits may also precipitate aggression by (a) exerting influence over cognitive, affective and physiological factors known to increase the likelihood of aggression, and (b) compromising appraisal and decision making processes (Anderson & Bushman, 2002). For instance, consider an aggressive client who endorses high levels of DSM-5 Hostility. The client may be susceptible to hostile attribution biases, frequently experiencing feelings of irritability and anger upon which they act aggressively (Anderson & Bushman, 2002). In order to fully examine the theorized proximate and precipitating mechanisms, experimental manipulation of independent and mediating variables is needed (Spencer, Zanna, & Fong, 2005). Future investigations could accomplish this task using prospective, repeated measures designs (e.g., laboratory-based methods or daily diary recording methods). Finally, given the stability of personality traits, the DSM-5 model serves as a useful framework for clinicians to identify the underlying personality and related psychological processes that maintain (i.e., perpetuate) aggression potential over the long-term.

The new DSM-5 trait model may also assist in clarifying the function (i.e., purpose) of aggressive behavior. A great deal of extant literature suggests that
aggression function falls into two distinct categories, i.e., anger expression (reactive) and goal-directed/tangible (proactive) (Blackburn, 1993; Little, Henrich, Jones, & Hawley, 2003; Parrott & Giancola, 2007), however this dichotomy has frequently been criticized due to its reductionistic nature (Bushman & Anderson, 2001). As such, use of the DSM-5 trait approach may allow for a more fine-grained examination of the functions that are satisfied by aggressive behaviour for a specific client. For example, an individual high in DSM-5 Emotional Lability may behave aggressively for the purpose of regulating aversive emotional states, while an individual high in DSM-5 Callousness may engage in aggressive behaviours for the purpose of experiencing satisfaction of suffering of others. On the other hand, an individual high in DSM-5 Grandiosity may engage in aggressive behaviours to maintain a positive self image or restore a loss of self-esteem or status. Ultimately, the DSM-5 trait approach has the potential to highlight the specific "why" behind the aggressive behaviour, and suggests that the function of the behaviour may be strongly driven by primary PD traits. Consideration of multiple DSM-5 PD facets may account for the presence of mixed motives of some aggressive behaviours (Parrott & Giancola, 2007).

Overall, we argue that in order to enhance formulation, clinicians need to move beyond a simple listing of PD as a risk factor and should instead produce a detailed, comprehensive explanation of the specific underlying trait features of PD that contribute to an individual's increased potential for violence; a process by which the DSM-5 PD model is able to assist with.
CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

Intervention

Comprehensive assessment and formulation based, in part, on the dimensional trait model of PD can serve as the springboard to the development of sensitive, targeted and proportionate interventions aimed at reducing violence risk. According to the results of this review there may be a large number of personality traits that contribute to aggression and which may be the target of treatment. The new PD model, and the PID-5 in particular, may assist clinicians in (a) identifying personality traits that require attention and (b) developing appropriate treatments that may remediate these problems.

Although standardized treatments are often helpful when treating a disorder or problem behaviour, when working individually, clinicians are often most concerned with delivering tailored, person-specific interventions. However, given the complex nature of PD and aggression, it can often be difficult to know where to begin. In using the PID-5, each PD facet is essentially rated on a severity index, with higher scores indicating greater impairment/treatment need. The new model may therefore improve treatment planning by assisting clinicians to prioritize personality treatment targets with violent individuals (i.e., identifying facets that lead to significant impairment and aggressive behaviors and thus require immediate intervention, compared to those that are important, yet deemed to be less pressing). Of course, this approach is not to be used in isolation, but may serve as an initiating guide at an individual, client specific level to begin to work with PD facets that lead to aggressive behaviors, alongside multi-item structured professional judgement instruments that also enable elucidation of dynamic risk factors.
CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

Conclusion

A large body of literature has accumulated that suggests certain PDs and PD traits are associated with an increased propensity for aggression. However, the acquisition of knowledge in this area has been hindered by significant shortcomings in the conceptualization and measurement of PD, meaning that considerable uncertainty exists in terms of how PD-traits influence aggression. This review has described the new DSM-5 hybrid dimensional-categorical model of PD, and drawn on established personality/PD and aggression literature to elucidate the likely relationships between DSM-5 PD domains and facets and aggression. Given the various associations identified, it is imperative for future investigations to focus their efforts on empirically testing DSM-5 PD domain and facet relationships with aggression. It is posited that the new model will assist with the development of a more valid and theoretically robust research foundation upon which to analyze the PD trait-aggression relationship. It is also considered especially important for future practical work in forensic contexts as it may serve as a systematic framework to assess the presence and relevance of PD traits and diagnoses to violence potential, better identify and understand the underlying personality mechanisms involved in aggressive behaviors and enhance treatment efforts aimed at aggressive individuals with PD.

Author Note

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CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

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CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION

References


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


113


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


CHAPTER THREE: MALADAPTIVE PERSONALITY & AGGRESSION


Table 1. The strength of the anticipated associations between aggression and DSM-5 domains and facets

<table>
<thead>
<tr>
<th>DSM-5 Domains</th>
<th>DSM-5 Facets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grandiosity</td>
</tr>
<tr>
<td><strong>Effect size</strong></td>
<td>Moderate to Strong</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>Hostility</td>
</tr>
<tr>
<td><strong>Effect size</strong></td>
<td>Weak to Strong</td>
</tr>
<tr>
<td><strong>Disinhibition</strong></td>
<td>Impulsivity</td>
</tr>
<tr>
<td><strong>Effect size</strong></td>
<td>Weak to Strong</td>
</tr>
<tr>
<td><strong>Detachment</strong></td>
<td>Intimacy Avoidance</td>
</tr>
<tr>
<td><strong>Effect size</strong></td>
<td>Weak</td>
</tr>
<tr>
<td><strong>Psychoticism</strong></td>
<td>Eccentricity</td>
</tr>
<tr>
<td><strong>Effect size</strong></td>
<td>Weak to moderate</td>
</tr>
</tbody>
</table>

Note: The 25 DSM-5 facets and corresponding personality literature have been grouped into their respective domains according to the structure outlined by Krueger and Colleagues (2012). Effect size ratings based on Pearson's Correlation (weak r = .10, moderate r = .30 and strong r = .50) and Cohen's d (weak d = .20, moderate d = .50 and strong d = .80). Insufficient evidence = currently a lack of research or very limited evidence to support an association. * = initial evidence available from psychopathy-violence literature. + represents the evidence reviewed for aggression and high levels of maladaptive perfectionism, rather than lack of Rigid Perfectionism (as specified within the DSM-5).
3.3 Additional Literature Published Since the Submission of Review Paper One and Acceptance of Empirical Study One

3.3.1 DSM-5 Maladaptive Personality Traits and Aggression

Since both the literature review paper (Dunne, Gilbert, & Daffern, in press-a) and Empirical Study One (Dunne, Gilbert, & Daffern, in press-b) were submitted for publication, one additional study has been published that is worthy of inclusion and review within the present thesis. This study utilised the PID-5 to examine the relationship between DSM-5 maladaptive personality domains and facets and intimate partner violence in an undergraduate student sample (Dowgwill et al., 2016). Results demonstrated that for males and females, PID-5 domains and facets were differentially associated with intimate partner violence. Specifically, for males the PID-5 domains of Detachment and Disinhibition were associated with, and accounted for 10.60% of variance in, intimate partner violence, while PID-5 facets of Irresponsibility, Depressivity, Unusual Beliefs and Experiences, (low) Anxiousness, and (low) Risk Taking were associated with, and accounted for 16.10% of variance in, intimate partner violence. For females, PID-5 domains of Detachment and Antagonism, and facets of Callousness, Intimacy Avoidance, Unusual Beliefs and Experiences, and (low) Withdrawal were associated with intimate partner violence. For females, PID-5 domains accounted for 5.80% of variance, while facets explained 10.10%. These findings provide initial empirical support for certain DSM-5 domain and facet associations with aggression identified within the literature review, however, it is important to note, that given this study was conducted with undergraduate participants it is unclear whether these results will be generalisable to offender populations. As such, further empirical investigations should examine gender differences in DSM-5 trait-aggression relationships in aggressive offender
populations. Finally, the study highlights that PID-5 facet-level analyses demonstrate greater predictive validity than domain-level analyses with regards to aggression potential.
Chapter Four: Overview of the Present Empirical Research

4.1 The Present Empirical Research

This research overcomes major methodological limitations identified in existing GAM and personality literature and addresses some gaps in current GAM knowledge with regards to the operation of cognitive constructs, personality variables, and emotional and coping states. Specifically, this thesis examines the link between DSM-5 maladaptive personality disorder domains and facets to offenders' histories of aggression and the importance of EMS and schema modes to the prediction of offenders' histories of aggression. Further, it integrates the empirical findings of the first two studies to examine whether the addition of DSM-5 maladaptive personality traits and ST schema modes improves the prediction of offenders' histories of aggression, over and above GAM-delineated constructs. The methodological approach employed in this research involves the use of self-report measures to capture information on each of the relevant constructs identified.

The specific objectives and research questions that will be addressed by the three respective studies included in this thesis are outlined below. Collectively, these studies serve to address the three overarching research aims, as described in Chapter One (Section 1.2). General hypotheses to be tested are presented in each of the studies.

4.1.1 Empirical Study One

Addressing thesis aim one, and contributing crucial knowledge towards thesis aim three, the aim of the first empirical study is to ascertain the strength of the
relationships between DSM-5 domains and facets to histories of aggression in an offender sample. The following specific research questions will be addressed:

1. To what extent do DSM-5 domains demonstrate associations with aggression?
2. Regarding DSM-5 domain level analyses, given various scoring approaches are available within the literature, does the APA-three facets only or Krueger et al. scoring approach lead to stronger domain-aggression associations?
3. To what extent do DSM-5 facets demonstrate associations with aggression?

4.1.2 Empirical Study Two

Designed to address thesis aim two, and contribute essential information to thesis aim three, the objective of the second empirical study is to empirically examine the role of EMS and schema modes to histories of aggression in an offender population. The following specific research questions will be addressed:

1. To what extent do the Mistrust, Entitlement and Insufficient Self-Control schemas demonstrate associations with aggression?
2. To what extent do schema modes demonstrate associations with aggression?
3. Does the presence of schema modes improve the prediction of history of aggression over and above EMS alone?

4.1.3 Empirical Study Three

Finally, designed to address thesis aim three, the overarching objective of the third empirical study is to determine whether the addition of DSM-5 maladaptive personality traits and schema modes, improves the prediction of history of
aggression in a sample of offenders, beyond GAM-delineated aggressive scripts, normative beliefs supportive of aggression and trait anger. The following specific research questions will be addressed:

1. To what extent are GAM constructs, DSM-5 maladaptive personality facets, and schema modes associated?
2. To what extent are GAM constructs, DSM-5 maladaptive personality facets and schema modes associated with offenders' histories of aggression?
3. Does the addition of DSM-5 maladaptive personality facets and schema modes improve the prediction of aggression history over and above GAM constructs alone?
PART III: METHODOLOGY AND ASSESSMENT PROCEDURE
Chapter Five: Extended Research Methodology

5.1 Overview

This chapter provides an overview of the research design and methods employed in this thesis. The empirical studies (Chapters Six, Seven and Eight) employed a common methodology in which the various constructs of interest were examined with respect to the aggressive behaviour of a sample of offenders. Although each of the three empirical studies includes a description of the methods used, this chapter provides additional detail not included in each manuscript due to space limitations imposed by the respective journals. On occasion, however, and for ease of reading, details that are highly specific to the individual studies are provided in context within the empirical papers. This chapter begins with a description of the overall research design and recruitment site, followed by a summary of the ethical considerations pertaining to data collection. A detailed explanation of the recruitment and data collection procedure is presented, along with a description of the self report assessment measures utilised within this research. The chapter concludes with a summary of the characteristics of the sample, and a synopsis of the approach to data preparation and statistical analysis.

5.2 Research Design

To investigate the relationship between several theoretically prescribed cognitive variables, maladaptive personality traits and emotional and coping states to the aggressive behaviour of offenders the present research utilised a retrospective, cross-sectional design.
5.3 Site Identification

Participants were recruited from the Metropolitan Remand Centre (MRC). MRC accommodates adult men, aged 18 and above, who have been remanded or sentenced by a Victorian Court. In consultation with the Department of Justice, MRC was selected on the basis of it being one of the largest public prisons in Victoria (capacity of 1006 beds), and given the high proportion of remandees, was expected to have a high turnover of prisoners eligible for study participation.

5.4 Ethical Considerations

Prior to the commencement of data collection, the project received full ethics approval from the Department of Justice Human Research Ethics Committee and the Swinburne Human Research Ethics Committee (see Appendix A for ethical approval documents).

The following section describes matters pertaining to data collection for this research and the necessary steps undertaken to ensure conformity to ethical standards. Individuals were informed, via both verbal and written communication, that participation in the research was entirely voluntary, and that whether or not they chose to participate would have no effect on their criminal matters or care and management at MRC. Participants were informed that while completing the surveys they were free to withdraw from the study at any time. It was explained that once the surveys were returned to the student researcher for the final time, because no identifying information was recorded on the survey documents and the consent forms were kept separate to ensure participants surveys remained de-identified, that withdrawal from the study would not be possible.
Prisoners were informed that participation was confidential in the sense that the information they provided would not be provided to Corrections Victoria or other agencies. Prior to commencing the survey procedure, the limits to confidentiality were outlined to participants. Regarding risk to self or other people, provisions were established whereby if a participant disclosed information suggesting that they may be at risk of causing imminent harm to themselves or to other people, or was observed to become significantly distressed during the course of the assessment period, the doctoral student would seek permission to discuss these issues with the prisoners' case manager and/or additional custodial staff. Participants were informed that the questionnaires and consent forms would be kept in secure storage and only the research team would have continued access to such information. Finally, it was explained to participants that only aggregate data would be reported from the information obtained, and that there would be no possibility that a specific individual could be identified within publications.

5.5 Procedure

5.5.1 Recruitment Procedure

Recruitment took place at MRC from August 2014 to April 2015. The recruitment methodology and procedure was developed with the direction of MRC Offending Behaviour Program staff, and the eligibility criteria were constructed so as to be as broad as possible, whereby individuals were considered to be eligible for the research as long as they were: a) aged over 18 years, and b) able to speak English without the aid of an interpreter. These procedures attempted to minimise any biases in participant selection. Participants were recruited by posters (see Appendix B) and flyers (see Appendix C) placed in the common areas in 11 of the remand centre units.
(eight of these units were general population and the remaining three were protection units). Participants expressed an interest in participating in the research by completing the form attached to the flyer and placing it in a secure envelope. The enveloped was returned to the doctoral researcher at the Offending Behaviour Program office via internal mail. Once this information was received, the doctoral researcher approached each potential participant on their unit to further explain the project and answer questions. If the prisoner was still interested in participating, a day and time was organised for completion of the surveys. Participants were also recruited through a brief presentation at the remand centre orientation for which all new prisoners are required to attend. The presentation described the project and its requirements. If prisoners were interested in participating they were invited to approach the student researcher at the end of the presentation and a day and time was then organised for survey completion.

5.5.2 Data Collection Procedure

On survey completion day, the doctoral researcher attended each of the units to confirm with each prisoner that they were scheduled to complete the study that day. If they were still amendable to participating, prisoners were called to the Education area at the remand centre that afternoon. A private group room was allocated by MRC custodial staff and a maximum of five participants could complete the study at any one time. Upon arrival, each participant was provided with the explanatory statement (see Appendix D), consent form (see Appendix E) and a pen. Once the documents were read, signed and returned to the researcher, participants were provided with the survey packet to complete. The survey battery included measures relating to the following domains: 1) demographic characteristics
(demographic questionnaire), 2) maladaptive personality traits (Personality Inventory for the DSM-5 (PID-5); Krueger, Derringer, Markon, Watson, & Skodol, 2013b), 3) schema modes (Schema Mode Inventory, Version 1.1 (SMI); Young et al., 2014), 4) trait anger (State-Trait Anger Expression Inventory-2-Trait Anger Subscale (STAXI-2-T-Ang); Spielberger, 1999), 5) maladaptive cognitions (Young Schema Questionnaire-Short Form, Version 3 (YSQ-S3); Young, 2014d), 6) past aggression (Life History of Aggression-Self-Report-Aggression Subscale (LHA-S-A); Coccaro, Berman, & Kavoussi, 1995), 7) normative beliefs supportive of aggression (Measures of Criminal Attitudes and Associates-Attitudes to Violence Subscale (MCAA-AV); Mills & Kroner, 2001), 8) aggressive behavioural scripts (Schedule of Imagined Violence-Self-Report (SIV-S); Grisso et al., 2000), and 9) socially desirable responding (Impression Management Subscale of the Paulhus Deception Scale (IM-PDS); Paulhus, 1999). This sequencing of the survey instruments was motivated by several factors. First, the PID-5 was the longest of the survey measures, therefore it was placed at the beginning of the battery to maximise the likelihood that this information could be obtained (i.e., in case individuals tired and were deterred from completing the survey because of its length). Second, the ordering of the aggression-related variables was designed in such a way as to encourage individuals to be as candid as possible with regard to their aggressive scripts, a construct that is not routinely assessed during mental health or forensic assessments. Specifically, the assessment of scripts followed the measurement of anger, beliefs supportive of aggression and past aggression, aspects that individuals were likely to be more familiar with discussing.

Throughout the session, participants were able to ask questions or take breaks when required. Survey completion time ranged from 45 minutes to three hours, with
an average of approximately 1.5 hours. After completion, participants returned the surveys and pen to the student researcher. Each participant was thanked for their time, provided with a certificate of participation (see Appendix F) and requested to return to their unit. Participants who decided not to, or who, due to prison operations, were unable to, complete the surveys during the one session, were offered the opportunity to return to complete the survey battery at a later date. For those participants who indicated their willingness to return to complete the surveys, their name, CRN (i.e., prison identification number) and unit was written on a removable label and attached to the survey packet. The survey was left on the remand centre premises and the participant was followed up during the student researchers next visit. If they declined to return for survey completion, the session was then terminated and the participant was not included in the study.

5.6 Measures

In the following section, a description of each measure and relevant psychometric properties is provided, along with a rationale for the particular method of assessment.

5.6.1 Demographic Information

To characterise the sample, a self report measure was administered, whereby information pertaining to participants age and ethnicity was obtained.

5.6.2 Assessment of Past Aggression

First developed by Brown, Goodwin, Ballenger, Goyer, and Major (1979) and then revised by Coccaro and colleagues (1997), the Life History of Aggression
(LHA) structured interview schedule assesses the frequency of aggressive acts a person has engaged in since adolescence. It consists of three subscales, including Aggression (LHA-A; which measures overt displays of aggressive behaviour), Consequences and Antisocial Behaviour (which measures the extent to which the person has experienced significant social consequences due to aggressive behaviours and/or engaged in antisocial behaviours) and Self-Directed Aggression (which measures aggressive events directed toward the self). Coccaro and colleagues (1995) adapted the LHA-A subscale of the interview scheme into a five-item self-report questionnaire (LHA-S-A), and this was utilised within the present research to measure the number of overt aggressive acts (i.e., verbal, indirect, nonspecific fighting, physical assault and temper tantrums) that participants had engaged in since age 13. A copy of the measure is located in Appendix G. The decision was taken to use the LHA-S-A to quantify participants histories of aggression as the scale is quick to complete (5 minutes) and it represents a conceptually 'pure' measure of retrospective, overt aggression (McCloskey & Coccaro, 2003). The items are rated on a six-point scale, where: 0 = never happened, 1 = only happened "once" (e.g., one time), 2 = happened "a couple" or "a few" (e.g., 2-3) times, 3 = happened "several" (e.g., 4-9 times), 4 = happened "many" (e.g., 10+) times, and 5 = happened "so many" times that I couldn't give a number. Item scores are summed to produce an overall scale score (range = 0 to 25), with higher scores reflecting a greater history of aggression.

Psychometric data is not currently available for the LHA-S-A. However, the LHA-S-A correlates strongly with the interview version (E. F. Coccaro, personal communication, May 11, 2014), and therefore the statistical properties for the LHA-A are presented below. The LHA-A has demonstrated good test-retest reliability
(\( r = .80 \)) and internal reliability (\( \alpha = .87 \)). Within the present research, the LHA-S-A showed comparable internal reliability (\( \alpha = .87 \)). The LHA-A has demonstrated moderate to strong correlations with other trait-based measures of aggression (Coccaro et al., 1997, \( r = .69 \)), and scores have been found to be significantly related to official criminal records (\( r = .29 \)), the Cormier-Lang System for Quantifying Criminal History-Violence Offences Index (CL-V; Quinsey, Harris, Rice, & Cormier, 2006, \( r = .69 \)) and the Violence Rating Scale (VRS; Robertson, Taylor, & Gunn, 1987, \( r = .42 \)) (Gilbert, Daffern, Talevski, & Ogloff, 2013a).

5.6.3 Maladaptive Personality Traits

Participants' maladaptive personality traits were assessed using the Personality Inventory for the DSM-5 (PID-5; Krueger et al., 2013b). The PID-5 is a 220-item self-report assessment tool that operationalises the maladaptive personality traits of the newly proposed hybrid dimensional categorical trait model in Section III of the DSM-5. The PID-5 encompasses a hierarchical personality trait structure, which includes five broad domains of Negative Affectivity (vs. Emotional Stability), Detachment (vs. Extraversion), Antagonism (vs. Agreeableness), Disinhibition (vs. Conscientiousness), and Psychoticism (vs. Lucidity), and comprises 25 specific personality trait facets chosen for their clinical relevance (American Psychiatric Association, 2013). The personality facets identified exist on a spectrum with two opposing poles. Table 5.1 lists the domains and facets of the DSM-5 maladaptive personality trait system, along with their definitions. A copy of the PID-5 is located in Appendix H.
### Table 5.1

**DSM-5 (Section III) Personality Disorder Domains and Facets**

<table>
<thead>
<tr>
<th>Domains/Facets</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negative Affectivity</strong></td>
<td>Frequent and intense experiences of a wide range of negative emotions and their behavioural and interpersonal manifestations</td>
</tr>
<tr>
<td>Emotional Lability</td>
<td>Instability of emotional experiences and mood</td>
</tr>
<tr>
<td>Anxiousness</td>
<td>Feelings of nervousness, tenseness, or panic in reaction to diverse situations; frequent worry, fear and apprehensiveness</td>
</tr>
<tr>
<td>Separation</td>
<td>Fears of being alone due to rejection by, and/or separation from, significant others; lack of confidence in ability to care for oneself</td>
</tr>
<tr>
<td>Insecurity</td>
<td>Adaptation of one's behaviour to the actual or perceived interests and desires of others at the expense of one's' own interests and needs</td>
</tr>
<tr>
<td>Hostility</td>
<td>Persistent/frequent feelings of anger or irritability in response to minor slights and insults; mean, nasty, or vengeful behaviour</td>
</tr>
<tr>
<td>Perseveration</td>
<td>Persistence at tasks or a particular way of doing things long after the behaviour has ceased to be functional or effective</td>
</tr>
<tr>
<td>Depressivity</td>
<td>Feelings of being down, miserable, or hopeless; pervasive shame or guilt, inferior self-worth; thoughts of suicide/suicidal behaviour</td>
</tr>
<tr>
<td>Suspiciousness</td>
<td>Sensitivity to signs of interpersonal mistreatment or persecution by others; doubts about loyalty and fidelity of others</td>
</tr>
<tr>
<td>Restricted Affectivity</td>
<td>Constricted emotional experience and expression; indifference and aloofness in typically engaging situations</td>
</tr>
<tr>
<td>Detachment</td>
<td>Avoidance and withdrawal from social-emotional, interpersonal interactions and restricted affective experience and expression</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>Preference for being alone; reticence in social situations; lack of initiation and avoidance of social contacts and activity</td>
</tr>
<tr>
<td>Intimacy Avoidance</td>
<td>Avoidance of close or romantic relationships, interpersonal attachments, and intimate sexual relationships</td>
</tr>
<tr>
<td>Anhedonia</td>
<td>Lack of enjoyment from engaging in life's experiences; deficits in the capacity to feel pleasure and take interest in things</td>
</tr>
<tr>
<td>Deprivosity</td>
<td>See Negative Affectivity</td>
</tr>
<tr>
<td>Restricted Affectivity</td>
<td>See Negative Affectivity</td>
</tr>
<tr>
<td>Suspiciousness</td>
<td>See Negative Affectivity</td>
</tr>
<tr>
<td>Antagonism</td>
<td>Opposing and/or hostile behaviours that put the individual at odds with other people</td>
</tr>
<tr>
<td>Manipulativeness</td>
<td>Use of underhanded tactics, seduction, charm, glibness, or ingratiation to influence or control others or to achieve one's needs</td>
</tr>
<tr>
<td>Deceitfulness</td>
<td>Dishonesty and fraudulence; misrepresentation of self; embellishment or fabrication when relating events</td>
</tr>
<tr>
<td>Grandiosity</td>
<td>A belief that one is superior to others and deserves special treatment; self-centeredness; sense of entitlement; condescension toward others</td>
</tr>
<tr>
<td>Attention Seeking</td>
<td>Engagement in behaviour designed to attract notice and to make oneself the focus of others' attention and admiration</td>
</tr>
<tr>
<td>Domains/Facets</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Antagonism (cont.)</td>
<td></td>
</tr>
<tr>
<td>Callousness</td>
<td>Lack of concern for others feelings or problems; lack of guilt/remorse about negative or harmful effects of one's actions on others</td>
</tr>
<tr>
<td>Hostility</td>
<td>See Negative Affectivity</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>Orientation toward immediate gratification; impulsive behaviour; disregard for past learning or consideration of future consequences</td>
</tr>
<tr>
<td>Irresponsibility</td>
<td>Disregard for, and failure to honour obligations, commitments, agreements and promises; carelessness with others' property</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>Acting on the spur of the moment; lack of consideration of outcomes; difficulty following plans; a sense of urgency and self-harming behaviour under emotional distress</td>
</tr>
<tr>
<td>Distractibility</td>
<td>Difficulty concentrating and focusing on tasks; easily diverted attention; difficulty maintaining goal focused behaviour</td>
</tr>
<tr>
<td>Risk Taking</td>
<td>Engagement in dangerous, risky, and self-damaging activities; lack of concern for consequences and denial of one's limitations and the reality of personal danger; reckless pursuit of goals</td>
</tr>
<tr>
<td>Rigid Perfectionism (lack of)</td>
<td>Rigid insistence and preoccupation with everything being flawless and perfect; believing that there is only one right way to do things</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>Exhibiting a wide range of culturally incongruent odd, eccentric, or unusual behaviours and cognitions</td>
</tr>
<tr>
<td>Unusual Beliefs and Experiences</td>
<td>The belief that one has unusual abilities (e.g., mind reading) and unusual experiences of reality (e.g., hallucination-like experiences)</td>
</tr>
<tr>
<td>Eccentricity</td>
<td>Odd or bizarre behaviour, appearance, and/or speech; having strange/unpredictable thoughts; saying unusual/inappropriate things</td>
</tr>
<tr>
<td>Cognitive and Perceptual Dysregulation</td>
<td>Depersonalisation, derealisation, and dissociative experiences; mixed sleep-wake state experiences; thought-control experiences</td>
</tr>
</tbody>
</table>

Note: Adapted from American Psychiatric Association (2013).

The PID-5 is rated on a four-point Likert scale, which reflects how well each item describes the participant. A rating of 0 suggests that the item is *Very False or Often False* for the participant, a rating of 1 is *Sometimes or Somewhat false* for the participant, a rating of 2 is *Sometimes or Somewhat True* for the participant and a rating of 3 is *Very True or Often True* for the participant. With regards to scoring the measure, 16 of the items are reverse coded prior to entering into scale score computations. Each trait facet consists of 4 to 14 items, which are summed and then divided by the number of items in the facet to produce the average total facet score.
The averaged score allows the researcher to think of the individual's personality dysfunction relative to observed norms (Krueger et al., 2012). Several approaches to calculating PID-5 domain total scores exist. The first (i.e., the Krueger et al. algorithm) enables an assessor to calculate a domain total score by grouping the trait facets into each of the domains that they relate to most strongly, as identified within the PID-5 development study (Krueger et al., 2012). The second (i.e. the APA-three facets only) approach requires an assessor to calculate domain scores by using only the three facets that contribute exclusively, and most strongly, to the domain, as identified within the original PID-5 development study (Krueger et al., 2013b). Finally, domain scores may be calculated whereby all facets in the domain, as specified in the DSM-5, are included in the total domain score (i.e. the APA-all facets approach) (American Psychiatric Association, 2013); although of note this approach results in the overlap of content of four facets (i.e., Hostility, Depressivity, Suspiciousness and Restricted Affectivity) across three domains. Groupings of DSM-5 facets included in the three different domain-level scoring algorithms can be found in Chapter Six, Table 1. To date, the three different scoring algorithms have been utilised separately in various empirical studies (Anderson et al., 2015; Anderson et al., 2013; Jopp & South, 2015; Strickland et al., 2013; Watson et al., 2013; Wright et al., 2015). In the present research, where domain scores are considered, both the APA-three facets only and Krueger et al. scoring algorithms are utilised to produce two sets of total domain scores. The decision was taken not to include the APA-all facets scoring approach due to the well-recognised shortcomings of overlapping domain content in PD research (Gilbert & Daffern, 2011). Regarding the Krueger et al. approach, given (lack of) Restricted Affectivity and (lack of) Rigid Perfectionism are listed as facets of Negative Affect and Disinhibition, respectively,
these two facets were reverse-coded and then combined with their other PID-5 Negative Affect and Disinhibition facets to create overall Negative Affect and Disinhibition domain scores (Krueger et al., 2012). For both domains and facets, higher average scores indicate greater dysfunction. For missing items, in accordance with the recommended scoring procedures, scores were prorated (Krueger et al., 2013b). When more than 25 percent of the items within a trait were left unanswered, the corresponding facet score and, if applicable, the domain score were unable to be computed.

When utilising the APA-three facets only algorithm in a community sample, Cronbach's alphas at the domain level demonstrated excellent internal consistencies: Negative Affect ($\alpha = .94$), Detachment ($\alpha = .95$), Antagonism ($\alpha = .93$), Disinhibition ($\alpha = .94$) and Psychoticism ($\alpha = .96$) (Noser et al., 2015). When employing the Krueger et al. algorithm in an undergraduate sample, Cronbach's alpha for the PID-5 domains were .89 (Disinhibition), .93 (Detachment and Negative Affect), and .94 (Antagonism and Psychoticism) (Anderson, Sellbom, Wygant, Salekin, & Krueger, 2014). At the facet level, internal consistencies were acceptable with 24 of the 25 facet Cronbach's alphas ranging from .70 (Irresponsibility) to .94 (Eccentricity); Suspiciousness ($\alpha = .58$) was the only facet to fall below the conventional cutoff of .70 (Anderson et al., 2014). The PID-5 demonstrates acceptable to excellent convergent validity (Hopwood et al., 2013; Thomas et al., 2013; Wright et al., 2012; Yalch & Hopwood, 2016), while discriminant validity findings have been mixed (Crego et al., 2015; Crego & Widiger, 2016; Quilty et al., 2013; Yalch & Hopwood, 2016). In the present sample, when utilising the APA-three facets only scoring approach, four domains demonstrated acceptable internal reliability ($\alpha$ range = .79 to .85), while one domain (Detachment) fell below the
conventional cutoff of .70 ($\alpha = .67$). When utilising the Krueger et al. scoring algorithm, four domains demonstrated good internal reliability ($\alpha$ range = .73 to .85), while the Disinhibition domain demonstrated unacceptable internal reliability ($\alpha = .46$). Twenty-three of the facets demonstrated good to excellent internal reliability ($\alpha$ range = .74 to 94), while the Cronbach's alpha for two facets, Irresponsibility ($\alpha = .69$) and Suspiciousness ($\alpha = .61$), fell below the conventional cutoff of .70.

Given the DSM-5 PD model has been included in Section III of the manual to encourage and promote further research into its utility, the PID-5 was incorporated in the current research with the aim of extending its clinical application to the assessment of the aggressive behaviour of offenders. Additionally, a key criticism of extant PD-aggression research relates to the application of models and measures that do not include enough maladaptive personality item content to adequately describe personality pathology (De Fruyt et al., 2013). Incorporating the dimensional, pathological personality trait system of the PID-5 has the ability to more accurately define the features of personality pathology related to aggression, and thus has the potential to provide a more valid and theoretically coherent approach to assist in determining whether an actual disposition toward aggressive or violent acts can be inferred by specific PD traits and diagnoses.

### 5.6.4 Aggression-Related Knowledge Structures

#### 5.6.4.1 Aggressive Script Rehearsal

The Schedule of Imagined Violence (SIV; Grisso et al., 2000) is a structured set of eight interview questions designed to measure the nature of an individuals' self-reported violent cognitions (i.e., the presence, recency, frequency, chronicity,
diversity, seriousness of reported violent thoughts, the target and proximity to the
target). The SIV was originally developed as one of several tools designed to
investigate the prevalence of, and risk factors for, community violence committed by
people discharged from psychiatric inpatient facilities (Steadman et al., 1998).
Studies utilising the SIV have found that the degree of aggressive script rehearsal
reported by participants is positively related to aggressive and violent behaviour
(Gilbert et al., 2013b, 2015; Grisso et al., 2000; Podubinski et al., 2017).

Within the present research, and with the developer’s permission, the
interview based SIV scheme was adapted into a self-report format (SIV-S) and
several amendments were made to item content and structure (see Appendix I for a
copy of the amended SIV-S). Given the authors were exclusively interested in the
frequency of participant scripts, as employed by Gilbert and colleagues (2013b), the
SIV-S frequency item (SIV-S-F) was selected to denote participants’ previous levels
of engagement in aggressive script rehearsal. From a theoretical perspective, the
frequency of script rehearsal was proposed to represent both the level of accessibility
of aggressive scripts and the extent to which these scripts were entrenched (Gilbert,
2011). The original frequency item of the SIV ("How often have you had these
daydreams or thoughts in the past two months") was modified to read ("How often
do you have thoughts about hurting or injuring other people each week?"). Although
information was also collected pertaining to how often participants had thoughts
about hurting or injuring other people each month, the timeframe of one week was
selected to represent the SIV-S-F item as it was considered a more feasible period of
time for participants to accurately recall the frequency of their script rehearsal.
Additionally, the Likert response scale (i.e., Several times a day; Once a day;
Several times a week; Once a week; A few times a month (less than once a week);
Two or three times in the past month; About once in the past two months; and Don't know) was removed, and participants were requested to rate their responses on a continuous scale (range = 0 to 100). The scale response was utilised in an attempt to develop a more sensitive measure of script rehearsal, which would allow the variable to remain continuous (as opposed to prior studies (e.g., Gilbert et al., 2013b) which have dichotomised the variable into SIV positive and SIV negative) so as to not reduce statistical power. There is currently insufficient evidence to draw inferences about the violence potential associated with the remainder of the SIV items (Gilbert, 2011), and as such, these items were not utilised within the present research.

5.6.4.2 Normative Beliefs Supportive of Aggression

The Measures of Criminal Attitudes and Associates assesses four dimensions of antisocial attitudes, i.e., Attitudes to Violence (MCAA-AV), Entitlement, Antisocial Intent and Attitudes Towards Associates, that are theoretically relevant to criminal behaviour. Additionally, it assesses a respondent's exposure to criminal peers, i.e., number, nature and extent of contact (Mills & Kroner, 2001; Mills et al., 2002). Given the MCAA-AV has an established relationship with violent offending (Mills et al., 2004), this subscale was used within the present research to measure participants level of endorsement of attitudes that are supportive of violence.

The MCAA-AV includes 12 items (e.g., "It’s understandable to hit someone who insults you" and "People who get beat up usually had it coming") that are rated as either "Agree" or "Disagree." A total score is produced by summing the number of "Agree" items (range = 0 to 12), with higher scores reflecting a greater tendency to endorse violence-supportive attitudes, use violence for instrumental purposes, and tolerate violent behaviour (Mills & Kroner, 2001).
The MCAA-AV has demonstrated good internal consistency ($\alpha = .78$) and test-retest reliability (ICC = .74) with incarcerated offenders (Mills & Kroner, 2001), and shows predictive validity for violent recidivism in offenders (Mills et al., 2004). In the present research, the MCAA-AV demonstrated good internal reliability ($\alpha = .89$).

5.6.5 Aggression-Related Cognitions and Emotional and Coping States

5.6.5.1 Maladaptive Cognitions

The Young Schema Questionnaire-Short Form, Version 3 (YSQ-S3; Young, 2014d) was used to assess participants' EMS. The YSQ-S3 assesses 18 EMS subscales (15 of the EMS are grouped into four broad clusters while three remain unclassified due to insufficient evidence of how they cluster with the other EMSs). The YSQ-S3 comprises 90 items and participants self-report responses are rated on a six-point Likert scale ranging from 1 (completely untrue of me) to 6 (describes me perfectly). The present research adopted a scoring procedure commonly applied in extant research (Gilbert et al., 2013b; Jovev & Jackson, 2004), whereby an average EMS score is calculated by dividing the scale sum score by the number of items that refer to the particular EMS (range = 1 to 6), with higher scores indicating greater relevance of the EMS to the respondent. In accordance with the procedure used for the PID-5, missing item scores were prorated. The EMS total scores were unable to be computed when more than 25 percent of the items within the scale were missing.

In a community offender population, 14 out of 18 EMS displayed acceptable to excellent internal reliability ($\alpha$ range = .72 to .94), while four EMS, namely Unrelenting Standards ($\alpha = .61$), Enmeshment ($\alpha = .63$), Entitlement ($\alpha = .65$) and Dependence ($\alpha = .69$) fell below the conventional cutoff of .70 (Gilbert et al.,
CHAPTER FIVE: EXTENDED METHODOLOGY

2013b). In the current research, good internal reliability was demonstrated for the YSQ-S3, whereby 16 EMS had alphas ranging between .70 and .86. Two EMS, Entitlement and Practical Incompetence, had Cronbach's alphas of .66 and .65, respectively. Although additional psychometric properties have yet to be examined in offender populations, the YSQ-S3 has been examined in both clinical and non-clinical participants. Good discriminant validity regarding group differences, as well as conceptually relevant convergence between the 18 EMS and measures of psychopathology, has been verified (Bach, Simonsen, Christoffersen, & Kriston, 2015; Calvete, Orue, & González-Diez, 2013; Saariaho, Saariaho, Karila, & Joukamaa, 2009). Moreover, test-retest reliability (Calvete et al., 2013) and schema specificity of particular psychiatric disorders (Voderholzer et al., 2014) has been found.

5.6.5.2 Schema Modes

In the present research, schema modes were assessed using the Schema Mode Inventory, Version 1.1 (SMI; Young et al., 2014). The SMI contains 124 items that are associated with 14 schema modes, and participants are required to rate themselves on a six-point Likert scale ranging from 1 (never) to 6 (always). The present research adopted the scoring procedure as outlined by Kellogg and Young (2014), whereby the item scores for each schema mode were summed and then divided by the number of items in the subscale to produce a mean score for each schema mode (range = 1 to 6). Higher scores indicated greater relevance of the schema mode to the respondent. In line with procedures used for the PID-5, missing item scores were prorated, however, when more than 25 percent of the items within a subscale were left unanswered, the schema mode total score could not be calculated.
The decision was taken to use the SMI Version 1.1 in the present study as it is the most recent version published by the Schema Therapy Institute. Although psychometric properties of the SMI Version 1.1 are yet to be published, statistical properties of alternate versions are available. In an offender population, an adapted version of the SMI (80 items) demonstrated good to excellent internal consistency, with Cronbach's alpha ranging from .69 to .90 (Keulen-de Vos, 2013). Similar internal reliabilities have been found in combined clinical and non-clinical population using another alternate version of the SMI (118 items) (Bach, Lee, Mortensen, & Simonsen, 2016, $\alpha = .74$ to .96; Lobbestael, van Vreeswijk, Spinhoven, Schouten, & Arntz, 2010, $\alpha = .79$ to .96). The alternate version of the SMI (118 items) has also demonstrated adequate test-retest reliability of the separate modes, with intraclass correlations (ICC) ranging from .65 to .92, and convergent and divergent validity has been supported (Lobbestael et al., 2010). In the present research, the SMI (Version 1.1, 124 items) demonstrated good to excellent internal reliability, whereby all 14 schema modes displayed Cronbach's alphas above .71.

5.6.6 Trait Anger

The State Trait Anger Expression Inventory-Second Edition (STAXI-2) is a self-report questionnaire that assesses three components of anger, including State Anger, Trait Anger and Anger Expression. The Trait Anger Subscale (STAXI-2-T-Ang) was used within the present research to assess respondents' disposition to experience angry feelings and their tendency to respond with anger across a range of situations. The subscale does not contain inferences about whether a person expresses or suppresses their anger (i.e., a behavioural component). Items are rated on a four-point scale, where: 1 = Almost Never, 2 = Sometimes, 3 = Often and 4 =
Almost Always. Items are summed to produce a total score, which is subsequently converted into a T-score (range = 29 to 90), and higher scores represent greater levels of trait anger.

The STAXI-2-T-Ang has shown good internal consistency in both normal adults ($\alpha = .84$ to .86) and psychiatric patients ($\alpha = .87$), good test-retest reliability ($r = .78$ to .82) (Spielberger, 1999), and strong convergent validity ($r = .75$) (Culhane & Morera, 2010). Within a forensic community sample, the STAXI-2-T-Ang scale has been shown to reliability predict aggression (Gilbert et al., 2013b). In the present sample, the STAXI-2-T-Ang demonstrated excellent internal reliability ($\alpha = .91$). The STAXI-2 has been validated for use in forensic populations (Kroner & Reddon, 1992).

5.6.7 Socially Desirable Responding

The Paulhus Deception Scale (PDS; Paulhus, 1999) is a self-report measure designed to identify distortions in responding. It is comprised of two subscales, including Self-Deceptive Enhancement and Impression Management. For the present research, the Impression Management Subscale (IM-PDS) was used to assess participants' tendency to present an overly inflated self-description. Considerable debate continues to exist as to whether this function of responding should be controlled for within offender populations. Specifically, some have suggested that removal of social desirability may undermine the measurement of the construct of interest, thereby reducing the relationship between the predictor and outcome variable from significant to non-significant (Mills & Kroner, 2005), while others suggest that socially desirable responding functions more as a personality trait rather than as a moderator of validity (Mills, Loza, & Kroner, 2003). In any case, socially
desirable responding has been recognised as a potential difficulty in forensic contexts (Baker & Beech, 2004), e.g., a negative relationship between impression management and endorsement of antisocial attitudes has been identified for some offenders (Mills & Kroner, 2006), and has therefore been included within the present research.

The IM-PDS contains 20 items (e.g., "I sometimes tell lies if I have to" and "I don't gossip about other peoples' business") and participants rate their responses on a scale ranging from 1 (not true) to 5 (very true). Item responses are summed to produce a total IM-PDS score, which is subsequently converted into a T-score (range = 29 to 90). Higher scores reflect a greater tendency to present an inflated self-description. The IM-PDS demonstrates good internal consistency with prison entrants ($\alpha = .86$) and correlates strongly with other measures of socially desirable responding (e.g., the Eysenck Personality Inventory, Lie Scale) (Paulhus, 1999). In the present sample, the IM-PDS demonstrated acceptable internal reliability ($\alpha = .70$).

5.7 Characteristics of the Sample

The sample comprised two hundred and eight male prisoners, aged between 18 and 60 years ($M = 34.99, SD = 9.35$). The ethnic background of the sample was 71.60% Australian, 6.30% Australian Aboriginal, 4.50% European, 4.40% Asian, 2.90% Maori and 10.30% mixed or other ethnicities.
5.8 Data Preparation and Approach to Statistical Analysis

Raw data consisted of total scores for the PID-5 domains (five based on the APA-three facets only algorithm and five based on the Krueger et al. algorithm), 25 PID-5 facets, 14 schema modes, 18 EMS, STAXI-2-T-Ang, MCAA-AV, SIV-S-F, LHA-S-A, IM-PDS, age and ethnicity. A total of 236 participants volunteered to participate in the present research, however 28 participants were excluded at the outset of data analysis due to a substantial proportion of the surveys not being completed. Surveys were typically incomplete because a participate either (a) opted not to complete the entire battery or (b) were unable to complete the entire battery due to relocating to another prison after the initial session.

Statistical analyses were undertaken using the statistical package IBM SPSS Statistics Version 23.0 (SPSS 23.0) and the hypotheses were addressed using descriptive statistics and univariate and multivariable parametric tests. The approach to the analyses were similar across studies. Preliminary examinations of the data were undertaken to check for accuracy and missing values. A random check of 21 participants’ entered data and an examination of the range of values for each of the variables showed data entry to be accurate. Less than five percent of items were missing from the dataset and a non-significant Little's MCAR test, \( \chi^2(1733) = 1660.48, p = .89 \), revealed that data were missing completely at random (Little, 1988). The decision was therefore taken to impute missing data using the expectation maximization algorithm, which provides unbiased parameter estimates and improves statistical power of analyses (Enders, 2001). Missing data were imputed using Missing Values Analysis in SPSS 23.0.

Nine univariate outliers were detected (one on the PID-5 Intimacy Avoidance facet, one on the YSQ-S3 Practical Incompetence EMS, one on the SMI Self-
Aggrandizer schema mode, two on the SMI Bully and Attack schema mode, and four on the SIV-S-F), as suggested by a z-score greater than 3.29. As the outliers were deemed to be a legitimate part of the sample and, given that in a large sample size some scores in excess of 3.29 are expected, the decision was taken to retain the outliers and change the scores to one unit larger than the next most extreme score in the distribution (Tabachnick & Fidell, 2013). Follow up analyses showed no further univariate outliers on eight of the predictor variables (i.e., no z-scores greater than 3.29), however additional univariate outliers were revealed on the SIV-S-F. In order to reduce the impact of univariate outliers and improve normality, linearity and homoscedasticity, the SIV-S-F was logarithmically transformed (SIV-S-F(Log)).

For all continuous variables, histograms were plotted and skew and kurtosis statistics were examined to determine the distribution of scores, and Bivariate scatterplots were plotted to ensure linearity. These data checks did not reveal any failures associated with these assumptions. Means, standard deviations and ranges were calculated for all continuous variables, and frequencies and percentages were calculated for the categorical variable. Cronbach's alpha coefficient (α) was examined for each scale, whereby the threshold of .70 or above was used to denote good internal reliability (Tabachnick & Fidell, 2013). Cronbach's alpha coefficients are presented in each of the empirical studies (Chapters Six, Seven and Eight).

Prior to conducting multivariable analyses, partial correlation analyses were conducted to examine the strength of the associations between the criterion variable, i.e., participants' involvement in aggression over the lifetime, and the set of predictor variables, namely, maladaptive personality domains and facets, schema modes, aggression-related knowledge structures, maladaptive cognitions, and anger, while controlling for the influence of age and impression management. In order to account
for the maximum amount of variance in aggression, while also avoiding the problems associated with having large numbers of predictors, only those variables that demonstrated significant partial correlations with aggression history were included within multilevel modelling analyses.

Age and impression management were included as covariates in all regression analyses. Separate hierarchical linear regression analyses were used to determine the extent to which levels of past aggressive behaviour were predicted by (a) maladaptive personality traits (Empirical Study One), and (b) EMS and schema modes (Empirical Study Two). The personality traits and schema variables found to have a unique relationship with aggression in the first two studies were then incorporated into the final study regression model, alongside GAM-delineated variables, to determine the relative importance of each of the constructs to aggression history (Empirical Study Three). Prior to finalising each of the hierarchical multiple regression models the multivariable assumptions were tested. This involved examination of (a) standardised residual plots (i.e., studentised residuals against the unstandardised predicted values) to check for linearity and homoscedasticity, (b) partial regression plots (i.e., criterion variable against predictor variables) to further check for linearity, (c) predictor inter-correlations and Tolerance values to check for multicollinearity, (d) Mahalanobis Distance values to reveal any outliers, (e) studentised residual, Cook's Distance, standardised DFBeta for the constant and Leverage values to check for influential cases, and (f) a histogram and normal P-P Plot of the standardised residuals to check for normally distributed residuals. These analyses and remedies for any failures of the assumptions, specific to each of the regression models included within the present research, are described in Chapters Six, Seven and Eight.
Chapter Six. The Relationship Between DSM-5 Personality Disorder Domains and Facets and Aggression (Empirical Study One)

6.1 Preamble to Empirical Study One

This chapter presents the first empirical study of this thesis. As highlighted in Chapter Two, in order to overcome conceptual and methodological issues evident in the literature concerning the role of personality within the GAM, it is argued that the DSM-5 maladaptive personality trait model should be incorporated into future GAM-personality investigations. This would serve to fully explicate the role of personality within the GAM and bridge clinical assessment and treatment efforts with theoretical understandings of violence. Given the limited DSM-5 personality-aggression empirical research base upon which to draw on, and the large number of potential DSM-5 domain and facet associations with aggression identified in Chapter Three (Review Paper One), a critical first step toward this integrative process is the empirical examination of DSM-5 domain and facet associations with aggression in an offender population. As such, the present study was designed to assist in addressing this gap in the literature. The theoretical and clinical implications of the findings are discussed. In exploring these relationships, Empirical Study One serves to address the first overarching thesis aim, and contribute important knowledge to the third overarching thesis aim.

Empirical Study One, titled 'Investigating the Relationship between DSM-5 Personality Disorder Domains and Facets and Aggression in an Offender Population using the Personality Inventory for the DSM-5' has been accepted for publication in the Journal of Personality Disorders. This is a peer-reviewed journal that publishes original articles that describe research relating to diagnosis and treatment of clinically significant personality disorders. The current impact factor of...
this journal is 3.515 (Thomson Reuters, 2016). The format of this manuscript is consistent with the requirements of the *Journal of Personality Disorders*. Given this article has been accepted for publication, please refer to Appendix J for copyright permission. For ease of reading, manuscript pagination has been replaced with thesis pagination. However, sections of this article have not been numbered.
6.2 Author Indication Form for Empirical Study One

Swinburne Research

Authorship Indication Form

For PhD (including associated papers) candidates

NOTE

This Authorship Indication form is a statement detailing the percentage of the contribution of each author in each associated ‘paper’. This form must be signed by each co-author and the Principal Coordinating Supervisor. This form must be added to the publication of your final thesis as an appendix. Please fill out a separate form for each associated paper to be included in your thesis.

DECLARATION

We hereby declare our contribution to the publication of the ‘paper’ entitled: INVESTIGATING THE RELATIONSHIP BETWEEN PERSONALITY DISORDER DOMAINS AND FACETS AND AGGRESSION IN AN OFFENDER POPULATION USING THE PERSONALITY INVENTORY FOR THE DSM-5.

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In the case of more than four authors please attach another sheet with the names, signatures and contribution of the authors.
CHAPTER SIX: EMPIRICAL STUDY ONE

Investigating the relationship between DSM-5 Personality Disorder Domains and Facets and Aggression in an Offender Population using the Personality Inventory for the DSM-5

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Abstract

This study explored associations between aggression and the Personality Inventory for the DSM-5 (PID-5) domains and facets in 208 male offenders.

Regression analyses revealed no significant domain-level relationships using either the APA-three facets only (2013) or Krueger et al. (2012) scoring algorithms. The PID-5 facets of Hostility and Risk Taking were significantly associated with aggression. These findings highlight the importance of a facet level analysis when exploring the PD-aggression relationship. We call attention to how this knowledge can contribute to clinical-forensic practice and note limitations associated with only employing PID-5 domain level scoring approaches. More research is required to determine whether a universally accepted scoring approach can be adopted and promoted alongside future versions of the PID-5.

Keywords: Aggression; DSM-5; Personality Disorder Traits; Domains; Facets.
Investigating the Relationship between DSM-5 Personality Disorder Domains and Facets and Aggression in an Offender Population using the Personality Inventory for the DSM-5

Personality Disorder (PD) constitutes an increased risk for aggression and violence (Blackburn et al., 2003; Coid et al., 2006). Prevalence rates of PD in the general population range between four and 13 percent (Coid et al., 2006; Torgersen et al., 2001), although within prisons and secure mental health facilities, prevalence rates range between 42 and 78 percent (Fazel & Danesh, 2002; Singleton et al., 1998). The PDs most frequently diagnosed in forensic settings and reported to be associated with increased levels of aggression include Antisocial Personality Disorder (ASPD), Borderline Personality Disorder (BPD), Narcissistic Personality Disorder (NPD), Paranoid Personality Disorder (PPD) and Psychopathy (Bernstein et al., 2007; Blackburn & Coid, 1999; Coid, 2002; Grann et al., 1999; Hiscoke et al., 2003; Neumann & Hare, 2008; Tardiff, Marzuk, Leon, & Portera, 1997). Although psychopathy is not specified within the current PD classification system (Section II) of the Diagnostic and Statistical Manual of Mental Disorders-Version 5 (DSM-5; American Psychiatric Association, 2013), it is included as a specifier for ASPD in the new dimensional-categorical framework (Section III). It is also a PD of considerable research and clinical focus within forensic settings; its association with aggression and violence is established.

While an association between PD and aggressive tendencies is apparent, specific PD-aggression relationships vary in both magnitude and direction (Berman et al., 1998), and empirical investigations have produced conflicting results. A range of inherent limitations in the extant literature contribute to the diverse findings. For
instance, the nature of the DSM PD diagnostic classification system has frequently been criticized because it (a) lacks a cohesive, prototypic hierarchy of characteristics, (b) gives equal weight to behaviorally-based criteria that may be less central to the PD they define (McGlashan et al., 2005), (c) results in high rates of comorbidity due to significant overlap between PD subtype diagnostic criteria (Gilbert & Daffern, 2011), and (d) provides inadequate coverage of the range of PD symptoms (Ve Rheul & Widiger, 2004). Additional shortcomings in the literature relate to methodological issues in the measurement of both PD and aggression (Warren et al., 2002). Overall, these limitations significantly hamper the precise characterization of the PD-aggression relationship and limit our understanding of the relevance of the purported associations for clinical purposes.

**An Extended Personality Disorder Framework in DSM-5**

With the aim of addressing some of the difficulties associated with the current PD classification system, the American Psychiatric Association (APA) included an extension of the PD framework in section III of the DSM-5. This included the addition of a new diagnostic model of PD to encourage and promote research on the ways in which this new approach could be used to assess personality in general, and diagnose PD in clinical practice (American Psychiatric Association, 2013). The emerging model calls for PDs to be diagnosed on the basis of impairments in identity, self-direction, empathy and/or intimacy (Criterion A) and includes a dimensional trait-based system for characterizing personality pathology (Criterion B). As a basis for operationalizing the trait based model, Krueger and Colleagues developed the *Personality Inventory for the DSM-5* (PID-5; Krueger et al., 2013b) to assess the 25 lower-order facets that empirically delineate five broad
domains of personality pathology: Negative Affect, Detachment, Antagonism, Disinhibition and Psychoticism. We direct the reader to p.779 of the DSM-5 for a detailed description of the dimensional-categorical PD domains and facets.

Several approaches to calculating PID-5 domain total scores exist. The first enables an assessor to calculate a domain total score by grouping the trait facets into each of the domains that they relate to most strongly (Krueger et al., 2012). The second (i.e. the APA-three facets only) approach requires an assessor to calculate domain scores by using only the three facets that contribute exclusively, and most strongly, to the domain (American Psychiatric Association, 2013). Finally, domain scores may be calculated whereby all facets in the domain, as specified in the DSM-5, are included in the total domain score (i.e. the APA-all facets approach) (Krueger et al., 2013b); although of note this approach results in the overlap of content of four facets (i.e., Hostility, Depressivity, Suspiciousness and Restricted Affectivity) across domains. Table 1 details the facets that comprise each of the domains when utilizing the different scoring approaches. To date, the three different scoring algorithms have been utilized separately in various empirical studies (Anderson et al., 2015; Anderson et al., 2013; Jopp & South, 2015; Strickland et al., 2013; Watson et al., 2013; Wright et al., 2015).

A primary advantage of the new model is that PD can be conceptualized in terms of specific constellations of maladaptive traits, rather than being distinct constructs from each other and from normal personality (Hopwood et al., 2013). Particularly important for aggression research, the new model has refined the key features associated with each PD subtype (e.g., Hostility is now a diagnostic trait of ASPD and BPD only). Breaking down the rigidity of the current model and eliminating the confounding influence of overlapping criteria between subtypes
(dependent upon the scoring algorithm utilized) may assist in determining whether an actual disposition toward aggressive or violent acts can be inferred by specific PD traits.

**Extant Personality/PD Evidence in Support of DSM-5 Personality Disorder Domain-Aggression Associations**

By drawing on extant personality/PD and aggression literature, evidence emerges to support associations between DSM-5 PD domains and facets and aggression (Dunne et al., in press-a). Five Factor Model (FFM; Costa & McCrae, 1990) research has found that aggression is most strongly related to low Agreeableness (Jones et al., 2011, weighted mean $r = -.33$; Miller & Lynam, 2001, weighted mean $r = -.41$), low Conscientiousness (Jones et al., 2011, weighted mean $r = -.18$; Miller & Lynam, 2001, weighted mean $r = -.25$), and Neuroticism (Jones et al., 2011, weighted mean $r = .17$; Miller & Lynam, 2001, weighted mean $r = .12$). Similarly, Personality Psychopathology Five (PSY-5; Harkness & McNulty, 1994) research has found that PSY-5 Aggressiveness ($r = .60$), Negative Emotionality ($r = .52$) and low Constraint ($r = -.31$) are associated with higher levels of aggression (Sharpe & Desai, 2001). From the studies that have examined the convergence between the FFM and DSM-5 domains (based on the APA-all facets scoring algorithm) (Watson et al., 2013) and the PSY-5 and DSM-5 domains (based on a similar scoring algorithm to Krueger and Colleagues (2012), but Suspiciousness was included in the Negative Affect domain and Restricted Affectivity was encompassed within the Detachment domain) (Anderson et al., 2013) evidence has emerged linking DSM-5 Antagonism, Disinhibition and Negative Affect to their FFM and PSY-5 counterparts. As such, it seems plausible that these three DSM-5 domains
will exhibit associations with aggression. Regarding FFM Extraversion (Jones et al., 2011, weighted mean \( r = -.03 \); Miller & Lynam, 2001, weighted mean \( r = .00 \)) and Openness to Experience (Jones et al., 2011, weighted mean \( r = -.10 \); Miller & Lynam, 2001, weighted mean \( r = -.03 \)), studies have revealed weak or non-significant associations with aggression. In contrast, PSY-5 Psychoticism \( (r = .43) \) has demonstrated a moderate association with aggression, and a weaker, albeit still significant, relationship has been observed between aggression and low Positive Emotionality \( (r = -.25) \). Given PSY-5 Psychoticism and low Positive Emotionality have demonstrated convergence with DSM-5 Psychoticism and Detachment, respectively (Anderson et al., 2013), but inconsistent findings have resulted for the association between FFM Openness to Experience and DSM-5 Psychoticism and FFM Extraversion and DSM-5 Detachment (Watson et al., 2013), it is unclear whether extant aggression associations are generalizable to these two DSM-5 domains (Dunne et al., in press-a). Consequently, based on domain level research, the likelihood of DSM-5 Psychoticism and Detachment demonstrating an association with aggression remains unclear.

**Extant Personality/PD Evidence in Support of DSM-5 Personality Disorder**

**Facet-Aggression Associations**

In addition to identifying personality domain level relationships with aggression, it is important for researchers to consider and work with narrower facets given that facets generally have greater predictive ability (Paunonen & Ashton, 2001). Furthermore, working with lower-order, more narrow traits can allow for a parsing of the broader domain level findings (Jones et al., 2011). Table 1 highlights the DSM-5 facets that are anticipated to demonstrate associations with aggression as
based on research on equivalent or similar facets from alternate personality inventories; the empirical evidence is discussed below.

A large body of empirical literature identifies hostility as a significant predictor for aggression potential (Anderson & Bushman, 2002; Blackburn, 2002). Both meta-analytic reviews and empirical studies on the FFM demonstrate small to moderate correlations between aggression and the Angry-Hostility facet (Jones et al., 2011, mean $r = .21$; Miller, Lynam, et al., 2003, $r = .35$; Miller et al., 2012, $r$ range = .19 to .46). Seager (2005) found that persistently violent offenders who endorsed hostile schemas were more likely to respond violently to perceptions of threat and hostility from others ($r$ range = .35 to .48).

Likewise, moderate to strong evidence exists to support an association between narcissism and aggression, with this association strongest under provocative situations (Bettencourt et al., 2006, mean $d$ range = .49 to .63; Bushman & Baumeister, 1998, $r = .37$; Bushman et al., 2003, $r = .55$; Thomaes et al., 2008, $d = .89$; Wink, 1991, $r = .39$). Given that narcissists are characterized by a strong desire for attention and admiration (i.e., DSM-5 Attention-Seeking) and high levels of grandiosity and entitlement (i.e., DSM-5 Grandiosity), it seems plausible to suggest that, under provocation, higher levels of these two DSM-5 facets may be considered important risk factors for aggressive responding.

Impulsivity is recognized as a risk factor for aggression, particularly within the context of provocation (Bettencourt et al., 2006, mean $d$ range = .49 to .63). Empirical evidence shows significant relationships between aggression and FFM Impulsivity (Jones et al., 2011, mean $r = .08$; Miller, Lynam, et al., 2003, $r = .20$; Miller et al., 2012, $r$ range = .22 to .31), as well as related FFM traits of low Self Discipline (Jones et al., 2011, mean $r = -.06$) and low Deliberation (Jones et al.,
Longitudinal research using the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982) has revealed that young adults with a violence conviction exhibit lower levels of reflection, caution, carefulness, level-headedness and planfulness (Caspi et al., 1997, \(d = .73\)). Risk taking related traits have been found to be related to aggression. For example, Caspi and Colleagues (1997) have demonstrated that young adults with a conviction for violent behavior score lower on the MPQ Harm Avoidance trait (i.e., they seek excitement and danger; enjoy participating in dangerous adventures, activities or emergencies and risking serious bodily injury) (\(d = .39\)). Miller et al. (2012) found that the Excitement Seeking trait of the FFM was associated with reactive forms of aggression (\(r = .31\)); while in a meta-analytic review, Wilson and Scarpa (2011) found that Sensation Seeking was positively related to aggression (mean \(d = .19\)). Given that these personality traits appear to capture similar content as DSM-5 Risk Taking, a similar aggression relationship may be postulated.

Although research looking at direct associations between irresponsibility and aggression is scarce, FFM Dutifulness (i.e., motivated by a sense of duty and obligation) has demonstrated weak, albeit significant, correlations with aggression (Jones et al., 2011, mean \(r = -.17\); Miller, Lynam, et al., 2003, \(r = -.20\); Miller et al., 2012, \(r\) range = -.01 to .06). As such, it is anticipated that a similar association may exist between DSM-5 Irresponsibility and aggression.

FFM research provides proxy support for links between aggression and the DSM-5 facets of Deceitfulness and Manipulativeness. Specifically, Straightforwardness (i.e., frankness in expression) has demonstrated significant negative correlations with aggressive behaviour (Jones et al., 2011, mean \(r = -.25\);
Miller, Lynam, et al., 2003, r = -.29; Miller et al., 2012, r range = -.34 to -.52; ). With regards to callousness, Jones and Colleagues (2011) meta-analytic review found that low Altruism (i.e., insensitivity to others) was amongst the strongest correlates of aggression (mean r = -.26). Other research, has also found support for a relationship between Callous and Unemotional (CU) traits and aggression (Enebrink et al., 2005, effect size unpublished, significant at p <.05 level; Frick et al., 2003, effect size unpublished, significant at p <.05 level), and it has been suggested that CU traits may characterize a subset of individuals who show more stable and aggressive patterns of behavior over the lifespan. It is therefore postulated that DSM-5 Deceitfulness, Manipulativeness and Callousness may demonstrate positive associations with aggression.

Attachment research is also considered relevant to understanding the link between certain PD facets and aggression potential. For instance, empirical evidence is available linking fearful/anxious attachment to an increased likelihood of aggressive behaviour (Critchfield et al., 2008, r range = .30 to .49; Dutton et al., 1994, r range = .46 to .52). Likewise, BPD patients who experience an avoidant attachment style in their intimate relationships have been shown to hold a view of others that makes them more likely to perceive provocation or threat in a relationship (e.g., when a partner is distant) and are consequently more likely to act aggressively (Critchfield et al., 2008, r = .21 to .30). Given that individuals high in DSM-5 Separation Insecurity and Intimacy Avoidance are prone to perceive anxiety/fear and threat in relationships, an association is possible for these two DSM-5 facets and aggression.

Evidence exists linking paranoid and suspicious attitudes and beliefs to aggressive behaviour in community (Gartner et al., 1999; Kaighobadi et al., 2008, β
= .16; Malamuth & Brown, 1994, r range = .28 to .29) and inpatient populations (Krakowski et al., 1999, effect size unpublished, significant effect at p < .001). Research in an offender sample has found less compelling evidence for a link between paranoid thoughts and aggression (Haggård-Grann et al., 2006, relative risk (RR) range = 0.9 to 1.4). However, when these investigators focused only on offenders experiencing severe forms of mental illness (e.g., bipolar disorder, schizophrenia, or other psychosis), paranoid thoughts were more strongly related to an increased risk for aggression (RR = 3.6).

Although the research is limited, other subclinical psychosis related constructs of Perceptual Aberrations (i.e., hallucination-like experiences; r range = .05 to .38), Magical Ideation (i.e., "magical" or illogical thinking; r range = .10 to .41) and Social Anhedonia (i.e., schizoid indifference to other people; r range = .20 to 43) have been associated with aggressive tendencies (Fanning et al., 2012; Fanning et al., 2011). Given the similarity in content between Perceptual Aberrations and Magical Ideation to DSM-5 Unusual Beliefs and Experiences, ECCentricity and Cognitive and Perceptual Dysregulation, a relationship between these three DSM-5 facets and aggression may exist. Social Anhedonia has been linked to aggression under provocation (Fanning et al., 2012, β = 0.20); and Caspi and Colleagues (1997) found that young adults with a violence conviction exhibited lower scores on the MPQ trait of Social Closeness (i.e., they are considered less sociable; do not take pleasure in or value close ties) (d = .69). DSM-5 Anhedonia and Withdrawal may therefore demonstrate similar associations with aggression.

With regards to DSM-5 Submissiveness, one study has found support for an association between FFM Assertiveness (i.e., social ascendancy and forcefulness of expression) and aggression (Jones et al., 2011, mean r = .06). Importantly, given
assertiveness and submissiveness have been found to be negatively correlated \((r = - .36; \text{Gilbert} \& \text{Allan}, 1994)\), a weak, negative association between DSM-5 Submissiveness and aggression may be anticipated.

Maladaptive forms of perfectionism have been shown to predict self-report anger, hostility and physical aggression in an undergraduate and adolescent sample (Chester et al., 2015, trait anger \(r = .26\), hostility \(r = .45\) and physical aggression \(r = .25\); Öngen, 2010, trait anger \(r = .36\), hostility \(r = .49\) and physical aggression \(r = .36\)) and laboratory-based aggression in an undergraduate sample (Chester et al., 2015, \(r = .21\)). In line with the frustration-aggression hypothesis (Berkowitz, 1989; Dollard et al., 1939), these relationships are suggested to arise due to maladaptive perfectionists deeming aggression to be an effective means to alleviate negative affect and improve mood (Chester et al., 2015). Lack of Rigid Perfectionism is included within the DSM-5 PD model as a facet of the Disinhibition domain, therefore whether these associations would be replicable for low levels of or a lack of the facet is unknown. In any case, in table 1, the possible association presented represents the evidence reviewed for aggression and high levels of maladaptive perfectionism, rather than lack of Rigid Perfectionism (as specified within the DSM-5).

The subjective experience of negative emotions and one's ability to regulate emotions are additional factors that may contribute to an individual's potential for aggressive behaviour. FFM research reveals modest, albeit significant, associations between Depression and aggression (Jones et al., 2011, mean \(r = .11\); Miller, Lynam, et al., 2003, \(r = .22\); Miller et al., 2012, \(r \text{ range } = .12 \text{ to } .30\)). Furthermore, research points to a link between aggression and Negative Urgency (i.e., the tendency to behave rashly in response to negative emotional states), which highlights the need to
consider the influence of depressive states on impulsive aggressive behaviour.

Regarding emotional regulation, Dvorak et al. (2013) found that higher levels of Emotional Lability were related to an increased likelihood of engaging in aggressive acts ($r = .28$). In contrast, FFM research has produced non-significant anxiety-aggression associations (Jones et al., 2011, mean $r = -.03$; Miller, Lynam, et al., 2003, $r = .07$; Miller et al., 2012, $r$ range = .00 to .23).

**Extant Psychopathy Evidence in Support of DSM-5 Personality Disorder Facet-Aggression Associations**

Given its established link to aggression (Neumann & Hare, 2008, range = .07 to .56; Salekin et al., 1996, mean $d$ range = .53 to .79) and FFM personality dimensions (e.g., Agreeableness ($r$ range = -.55 to -.70), Conscientiousness ($r = -.05$ to -.34) and Extraversion ($r = .34$ to .38), Decuyper et al., 2009; Miller et al., 2001), the construct of psychopathy and research exploring facets of psychopathy and their relationship to aggression are relevant to explorations of the relationship between DSM-5 PD facets and aggression (Dunne et al., in press-a). Specifically, we draw upon research from one of the most comprehensive frameworks of psychopathy, the Triarchic Model of Psychopathy (Patrick et al., 2009), which encompasses three dimensions: Disinhibition (i.e., impulsivity, alienation, irresponsibility, carelessness, and antisocial/rule-breaking tendencies), Meanness (i.e., deficient empathy, remorselessness, disdain for and lack of close attachments with others, rebelliousness, excitement seeking, deceitfulness, exploitativeness, and empowerment through cruelty) and Boldness (i.e., socially adaptive characteristics of dominance, persuasiveness, stress immunity, and wellbeing, along with maladaptive tendencies, such as grandiosity, manipulativeness, dishonesty, risk
taking, and emotional insensitivity). Strickland et al. (2013) investigated the extent to which facets from the DSM-5 dimensional PD model could effectively capture the three dimensions of psychopathy, as assessed by the Triarchic Psychopathy Measure (TriPM; Patrick, 2010). Results demonstrated that DSM-5 Callousness ($r = .76$), Hostility ($r = .51$), Irresponsibility ($r = .49$), Risk Taking ($r = .48$), Suspiciousness ($r = .38$), Perseveration ($r = .34$), and Intimacy Avoidance ($r = .34$) significantly predicted TriPM Meanness, and DSM-5 Irresponsibility ($r = .72$), Impulsivity ($r = .61$), Deceitfulness ($r = .57$), Callousness ($r = .54$), Hostility ($r = .52$), Perceptual Dysregulation ($r = .52$), Depressivity ($r = .49$), Suspiciousness ($r = .47$), Anxiousness ($r = .33$), and Restricted Affectivity ($r = .32$) significantly predicted TriPM Disinhibition. Given both of these TriPM Dimensions have demonstrated predictive utility with regards to aggressive behaviour (Drislane et al., 2014; Fanti et al., 2016; Gatner et al., 2016), these findings provide further evidence for a link between aggression and those DSM-5 personality facets associated with Triarchic Meanness and Disinhibition. Preliminary support for a link between three additional DSM-5 facets (i.e., Perseveration, Restricted Affectivity and Anxiousness) and aggression is also evident based on the TriPM Psychopathy-aggression literature. Although DSM-5 Risk Taking ($r = .57$), Manipulativeness ($r = .40$), Unusual Beliefs and Experiences ($r = .13$), Deceitfulness ($r = .11$), Anxiousness ($r = -.55$), Anhedonia ($r = -.44$), Attention-Seeking ($r = .38$), Submissiveness ($r = -.36$), and Distractibility ($r = -.19$) have been found to be significantly related to TriPM Boldness, the relationship between aggression and TriPM Boldness has not been adequately supported (Drislane et al., 2014; Fanti et al., 2016; Gatner et al., 2016). Consequently, contentions regarding the relationships between aggression and DSM-5 facets associated with TriPM Boldness cannot be made based on Triarchic model
literature. It is important to note, however, that the above propositions should be interpreted with caution given the poor discriminant validity that is evident within this and other studies.

**Summary**

Overall, a review of the empirical literature suggests that aggression potential may be associated with several DSM-5 PD facets, including Hostility, Attention Seeking, Grandiosity, Impulsivity, Risk taking, Irresponsibility, Deceitfulness, Manipulativeness, Callousness, Separation Insecurity, Intimacy Avoidance, Suspiciousness, Anhedonia, Withdrawal, Submissiveness, Depressivity, Emotional Lability, Unusual Beliefs and Experiences, Eccentricity and Cognitive and Perceptual Dysregulation. Based exclusively on psychopathy-aggression literature, limited evidence is also available to support aggression associations with DSM-5 Anxiousness and Perseveration. Finally, a lack of or very limited evidence exists for relationships between aggression and DSM-5 Distractibility, Rigid Perfectionism and Restricted Affectivity. This myriad of findings generates uncertainty regarding the relevance of DSM-5 PD profiles when considering aggression potential. It also highlights the complexity of aggression research and the difficulties clinicians encounter in determining which personality characteristics to assess and target in treatment.

**The Present Study**

The present study sought to empirically investigate associations between the newly proposed DSM-5 PD domains and facets and aggression in a sample of offenders using the PID-5. Regarding domain level associations, given various scoring approaches are available within the literature, both the APA-three facets only
and Krueger et al. scoring approaches were utilized to determine which approach lead to stronger domain-aggression associations. The decision was taken not to include the APA-all facets scoring approach due to the well-recognized shortcomings of overlapping domain content in PD research (Gilbert & Daffern, 2011). Based on extant personality/PD and psychopathy research, and the facet content included in each of the two scoring algorithms, it was hypothesized that Negative Affect, Disinhibition, Detachment, and Psychoticism would demonstrate positive associations with aggression in both scoring algorithms. For the Antagonism domain, it was hypothesized that when utilizing the Krueger et al. scoring algorithm a positive association would emerge with aggression, however this association was expected to be weaker when employing the APA-three facets only approach due to the fact that this approach excludes two facets (i.e., Attention-Seeking and Callousness) that have established associations with aggression.

Given previous inconsistent findings and the fact that this is the first investigation to examine DSM-5 PD facet associations with aggression, the decision was taken to include all facets in the preliminary analyses for exploratory purposes. Given the large number of potential facet-aggression associations, it was hypothesized that those facets with an established moderate or higher association with aggression would be related to higher levels of past aggression.

**Method**

**Participants**

The sample comprised 208 male prisoners from a large remand centre in Melbourne, Australia. Participants were aged between 18 and 60 years, with a mean age of 34.99 years (SD = 9.35). The sample was primarily of Australian (n = 149,
71.60%) background, with the largest minority being Australian Aboriginal ($n = 13$, 6.30%). The remaining participants were of other or mixed ethnicities. People who were unable to speak English without the aid of an interpreter or who were illiterate were not eligible to participate in the study.

**Measures**

**History of aggression.** Participants' histories of aggression were assessed using the Life History of Aggression-Self-Report-Aggression Scale (LHA-S-A; Coccaro et al., 1995). The LHA-S-A uses a self-rated survey format to determine the number of overt aggressive acts (i.e. verbal, indirect, nonspecific fighting, physical assault and temper tantrums) that an individual has engaged in since age 13. The items are rated on a six-point scale ranging from 0 (never happened) to 5 (happened "so many" times that I could not give a number) and summed to produce an overall scale (range = 0 to 25). No psychometric data is currently available for the LHA-S-A, however the LHA-S-A correlates highly with the interview version of the measure, the LHA-A (Coccaro et al., 1997) (E. F. Coccaro, personal communication, May 11, 2014). Previously reported psychometric properties for the LHA-A suggest good test-retest reliability ($r = .80$) and internal reliability ($\alpha = .87$), and moderate to strong correlations with other trait-based measures of aggression (Coccaro et al., 1997). Gilbert et al. (2013a) reported that LHA-A scores were related to official criminal records, the Cormier-Lang System for Quantifying Criminal History-Violence Offences Index (CL-V; Quinsey et al., 2006) and the Violence Rating Scale (VRS; Robertson et al., 1987).
**Personality domains and facets.** Participants were assessed using the *Personality Inventory for the DSM-5* (PID-5; Krueger et al., 2013b). The PID-5 is a 220-item self-report questionnaire that assesses the five broad trait domains of Negative Affect, Detachment, Antagonism, Disinhibition and Psychoticism. The PID-5 includes 25 personality trait facets, varying in length from 4 to 14 items, which are rated on a four-point scale ranging from 0 (*very false or often false*) to 3 (*very true or often true*). Both the APA-three facets only (2013) and Krueger et al. (2012) scoring algorithms were utilized to produce two sets of total domain scores. Regarding the Krueger et al. approach, given (lack of) Restricted Affectivity and (lack of) Rigid Perfectionism are listed as facets of Negative Affect and Disinhibition, respectively, these two facets were reverse-coded and then combined with their other PID-5 Negative Affect and Disinhibition facets to create overall Negative Affect and Disinhibition domain scores (Krueger et al., 2012). PID-5 domains and facets have demonstrated largely acceptable to good psychometric properties. When utilizing the APA-three facets only algorithm in a community sample, Cronbach's alphas at the domain level have demonstrated excellent internal consistencies: Negative Affect ($\alpha = .94$), Detachment ($\alpha = .95$), Antagonism ($\alpha = .93$), Disinhibition ($\alpha = .94$) and Psychoticism ($\alpha = .96$) (Noser et al., 2015). When employing the Krueger et al. algorithm in an undergraduate sample, Cronbach's alpha for the PID-5 domain scale scores were .89 (Disinhibition), .93 (Detachment and Negative Affect), and .94 (Antagonism and Psychoticism) (Anderson et al., 2014). At the facet level, internal consistencies were acceptable with 24 of the 25 facet Cronbach's alpha scores ranging from .70 (Irresponsibility) to .94 (Eccentricity); Suspiciousness ($\alpha = .58$) was the only facet to fall below the conventional cutoff of .70 (Anderson et al., 2014). Discriminant validity findings
Socially desirable responding. Participant's inclination to engage in socially desirable responding was assessed with the Impression Management (IM) Subscale of the Paulhus Deception Scale (PDS; Paulhus, 1999). The IM-PDS is a 20-item subscale that identifies distortions in self-responding associated with the tendency to present an overly inflated self-description. Respondents are required to rate themselves on a five-point scale, ranging from 1 (not true) to 5 (very true). Item responses are summed to produce a total IM-PDS score, which is subsequently converted into a T-score (range = 29 to 90). Although considerable debate continues to exist within the field (Mills & Kroner, 2005; Mills et al., 2003), socially desirable responding has been recognized as a potential difficulty in forensic contexts (Baker & Beech, 2004), thus the IM-PDS is deemed appropriate for use in offender populations (Lanyon & Carle, 2007). The IM scale demonstrates excellent internal consistency and correlates highly with other measures of socially desirable responding (Paulhus, 1999).

Procedure

This research was conducted as a single-centre study, and was approved by the Victorian Department of Justice Human Research Ethics Committee and the Swinburne University of Technology Human Research Ethics Committee. Participants were recruited voluntarily at an orientation session for which all new prisoners were required to attend and by posters and flyer forms placed in the common areas in 11 of the remand centre units. All participants provided written
informed consent. Study measures were completed in groups of up to five remandees under the supervision of a doctoral trained student. After completing the survey battery participants were offered a certificate of participation.

**Statistical Analyses and Data Preparation**

Raw data consisted of total scores for the PID-5 domains (5 based on the APA-three facets only algorithm and 5 based on the Krueger et al. algorithm), 25 PID-5 facets, LHA-S-A, IM-PDS, age and ethnicity. Data was analyzed using IBM SPSS Statistics Version 23 (SPSS 23.0) and the hypotheses were addressed using descriptive statistics and univariate and multivariable parametric tests. Partial correlation analyses were conducted to determine if a relationship existed between the PID-5 domain (APA-three facets only and Krueger et al.) and facet scores and aggression, while controlling for age and IM-PDS. The domains (APA-three facets only and Krueger et al.) and facets identified as significant in the correlation analyses were then incorporated into separate hierarchical multiple regression analyses to examine the extent to which the PD variables predicted history of aggression. Age and IM-PDS were included as covariates in the regression models since they were related to both the independent and dependent variables.

Prior to analysis, all data were examined for accuracy, missing values, and outliers. A random check of 21 participants’ entered data showed data entry to be accurate. Less than five percent of items were missing from the dataset. A non-significant Little's MCAR test, $\chi^2(1733) = 1660.48, p = .89$, revealed that the data were missing completely at random (Little, 1988). When data are missing completely at random and only a very small portion of data are missing (e.g., less than five percent overall), a single imputation using the expectation maximization
(EM) algorithm provides unbiased parameter estimates and improves statistical power of analyses (Enders, 2001). Missing data were imputed using Missing Values Analysis in SPSS 23.0. One participant was identified as having a univariate outlier response on the PID-5 Intimacy Avoidance facet, as suggested by a z-score greater than 3.29. As the outlier was deemed to be a legitimate part of the sample and, given that with a large sample size a few scores in excess of 3.29 are expected, the decision was taken to retain the outlier and change the score to one unit larger than the next most extreme score in the distribution (Tabachnick & Fidell, 2013).

**Results**

Table 2 describes the means, standard deviations, ranges and internal reliability statistics for the PD domains (APA-three facets only and Krueger et al.) and facets, LHA-S-A and IM-PDS. All variables demonstrated acceptable internal reliabilities, except for the Disinhibition domain based on the Krueger et al. scoring algorithm (i.e., (K)Disinhibition), whereby Cronbach's alpha fell within the unacceptable range. As this is the first study to incorporate the two scoring algorithms in a forensic sample, the decision was taken to retain the domain in further analyses, however (K)Disinhibition results must be interpreted with caution and may not generalize.

Regarding domain level associations, when utilizing the APA-three facets only scoring algorithm, (A)Disinhibition ($r = .25$), (A)Psychoticism ($r = .20$), (A)Detachment ($r = .17$), and (A)Negative Affect ($r = .16$), were significantly associated with LHA-S-A. No significant association was found between Antagonism and LHA-S-A ($r = .08$). When employing the Krueger et al. scoring algorithm, all five domains demonstrated a significant association with LHA-S-A:
Prior to finalizing the two domain level hierarchical multiple regression models assumptions were tested. No multivariate outlier responses were detected, as suggested by no Mahalanobis Distance values greater than 22.46 (APA-three facets only based domains) and 24.32 (Krueger et al. based domains), and the assumptions of linearity, normally distributed residuals and homoscedasticity were met.

Regarding the APA-three facets only based regression model, Age and IM-PDS were entered at Step 1, explaining 22.00% of the variance in LHA-S-A, $F(2, 205) = 28.87$, $p < .001$. The addition of the four PD domains in Step 2 significantly increased the explanation of variance in LHA-S-A, $R^2$ change = .053, $F$ change (4, 201) = 3.63, $p = .007$, with the final model explaining 27.20% of the variance in LHA-S-A, $F(6, 201) = 12.54$, $p < .001$. In the final model, IM-PDS ($\beta = -.35$, $p < .001$) was the only variable to uniquely predict higher aggression scores. None of the PD domains uniquely predicted LHA-S-A: (A)Negative Affect ($\beta = -.01$, $p = .954$), (A)Detachment ($\beta = .02$, $p = .822$), (A)Disinhibition ($\beta = .17$, $p = .052$), and (A)Psychoticism ($\beta = .09$, $p = .089$).

Regarding the Krueger et al. based regression model, again Age and IM-PDS were entered at Step 1, explaining 22.00% of the variance in LHA-S-A, $F(2, 205) = 28.87$, $p < .001$. The addition of the five PD domains in Step 2 significantly increased the explanation of variance in LHA-S-A, $R^2$ change = .072, $F$ change (5, 200) = 4.07, $p = .002$, with the final model explaining 29.20% of the variance in LHA-S-A, $F(7, 200) = 11.78$, $p < .001$. As with the APA-three facets only based model, in the final model, the PD domains did not significantly predict LHA-S-A: (K)Negative Affect ($\beta = .16$, $p = .062$), (K)Detachment ($\beta = -.03$, $p = .716$),
(K)Disinhibition ($\beta = .14, p = .068$), (K)Psychoticism ($\beta = .03, p = .697$) and (K)Antagonism ($\beta = .08, p = .318$). IM-PDS ($\beta = -.31, p < .001$) was the only significant coefficient.

Regarding facet level associations, 14 out of the 25 facets demonstrated a significant correlation with LHA-S-A. Results of the two-tailed partial correlation analyses for significant DSM-5 facets and LHA-S-A are presented in Table 3. No significant associations were found between LHA-S-A and Anhedonia ($r = .04$), Anxiousness ($r = .08$), Attention Seeking ($r = .10$), Deceitfulness ($r = .03$), Depressivity ($r = .11$), Distractibility ($r = .12$), Grandiosity ($r = .05$), Manipulativeness ($r = .10$), Restricted Affectivity (lack of) ($r = -.06$), Separation Insecurity ($r = .08$), and Submissiveness ($r = .06$).

Prior to conducting the hierarchical multiple regression, three cases were identified as multivariate outliers, as indicated by Mahalanobis Distance values greater than 37.70. Examination of the studentized residuals showed that 97.60% of cases had values within ±1.96, and 99.95% of cases had values within ±2.58 and ±3.29. All values for Cook’s Distance and standardized DFBeta for the constant were less than 1 and all Leverage values were less than 0.20, suggesting no influential cases. To further determine whether any cases were having an undue influence on the hierarchical multiple regression, the analysis was first conducted with the full sample ($n = 208$), and then again with one case with a standardized residual greater than three and three cases with Mahalanobis distance values greater than 37.70 removed ($n = 204$). The removal of the four cases demonstrated a negligible effect on $R^2$ and the coefficients, therefore the decision was taken to retain the full sample for the analysis. Due to issues of multicollinearity one significant facet (Unusual Beliefs and Experiences) was removed from further analyses. Additional preliminary
analyses did not reveal any failures associated with the assumptions of linearity, normally distributed residuals and homoscedasticity.

The unstandardized beta coefficients, standard errors, and Beta values of the hierarchical multiple regression are displayed in Table 4. Age and IM-PDS were entered at Step 1, explaining 22.00% of the variance in LHA-S-A, $F(2, 205) = 28.87$, $p < .001$. The addition of the 13 PD facets in Step 2 significantly increased the explanation of variance in LHA-S-A, $R^2$ change = .214, $F$ change (13, 192) = 5.58, $p < .001$. The final model explained 43.40% of the variance in LHA-S-A, $F(15, 192) = 9.80$, $p < .001$. In the final model, IM-PDS, Hostility and Risk Taking were statistically significant.

**Discussion**

The aim of this study was to explore domain and facet level relationships of the DSM-5 dimensional-categorical model of PD to aggression histories using the new PID-5. Given various domain level scoring approaches have been employed within the literature, both the APA-three facets only and Krueger et al. scoring approaches were utilized to determine whether one algorithm led to stronger domain-aggression associations. Based on previous personality and PD and aggression literature and the composition of facets within the two domain scoring algorithms, it was hypothesized that Negative Affect, Disinhibition, Psychoticism and Detachment would demonstrate positive associations with aggression in both scoring algorithms. It was anticipated that Antagonism would demonstrate a stronger positive association with aggression when employing the Krueger et al. scoring approach, compared to the APA-three facets only scoring approach. Given this is the first study to examine PID-5 facet-aggression associations and extant findings are mixed, the
decision was taken to include all PD facets in univariate correlation analyses and then incorporate those significant facets into the multivariable analyses. Nevertheless, it was hypothesized that PD facets with an established moderate or greater association with aggression (as based on research on equivalent or similar facets from alternate personality inventories) would be associated with higher levels of past aggression in the present sample.

In line with the initial hypothesis, DSM-5 domains of Negative Affect, Disinhibition, Psychoticism and Detachment demonstrated modest positive correlations with aggression (after adjusting for age and impression management) using both the APA-three facets only and Krueger et al. scoring algorithms. Conversely, Antagonism demonstrated a weak, positive association with aggression when employing the Krueger et al. algorithm, while the APA-three facets only approach resulted in a non-significant correlation. With the exception of the latter finding, these results (although somewhat weaker) appear more in line with extant PSY-5 domain-aggression associations (Sharpe & Desai, 2001) as compared to FFM domain-aggression associations (Jones et al., 2011; Miller & Lynam, 2001).

Regarding the non-significant Antagonism association, the method by which the APA-three facets only algorithm operationalizes the Antagonism domain likely accounts for this insignificant effect. That is, when calculating the Antagonism total score with the APA-three facets only scoring algorithm, only the three facets primarily indexing the domain are utilized (i.e., Manipulativeness, Deceitfulness and Grandiosity) (Krueger et al., 2012). Facets (i.e., Callousness and Attention-Seeking) that are considered critical to the domain of Antagonism and that have an established association with aggression (Bettencourt et al., 2006; Enebrink et al., 2005; Frick et al., 2003) are disregarded in the APA-three facets only scoring approach. In general,
although the Krueger et al. scoring algorithm achieved slightly stronger domain-aggression associations than the APA-three facets only scoring approach, when the effects of the domains (APA-three facets only and Krueger et al.) were examined in separate hierarchical regressions, no significant relationships with aggression were identified. The absence of positive regression results for both scoring approaches suggests that, at the group level, domain-level analysis is an inadequate approach to elucidate the underlying mechanisms involved in increasing aggression potential in offenders. As such, facet level analyses were conducted to parse the broader domain level findings.

Consistent with previous research, higher levels of Hostility and Risk Taking predicted aggression. Aggression theorists suggest that individuals engage in aggressive behaviour because they are more inclined to perceive, interpret and judge events in their social and physical environment in a hostile, malevolent and threatening manner (Anderson & Bushman, 2002; Blackburn, 2002). Such hostile perceptions and interpretations lead to the activation and application of aggression related knowledge structures (e.g., schemas, scripts and normative beliefs) stored in memory, which in turn leads to persistent anger and irritability and the maintenance of aggressive behavior over time (Anderson & Bushman, 2002).

The relationship between aggression and risk taking is not well conceptualized. Prior research has tended to focus on the relationship between aggression and related personality traits of sensation-seeking, excitement seeking and harm avoidance; and although these related traits appear to overlap with risk taking, they are not equivalent. Risk taking appears to be more specific to aggression potential than a general impulsive or sensation seeking tendency. Based on the extant literature, it seems plausible that appraisal and decision-making processes play a
pivotal role in the relationship between risk taking and aggression. High risk takers estimate risks as lower than that of low risk takers, even in activities they have not experienced (Zuckerman & Kuhlman, 2000). This may lead to denial of the reality of personal danger and unrealistic expectations about personal limitations. Further, high risk takers focus more on the immediate consequences of their behaviour, which they perceive as beneficial, while disregarding or discounting the future consequences of their behaviour to the self or others. These tendencies, coupled with a disposition towards persistent hostile thinking and perceiving, may lead to an increased preparedness to act aggressively without regard for the dangers to themselves or others or long term adverse consequences. In line with Joireman, Anderson, and Strathman (2003), we speculate that high levels of risk taking may activate similar aggression related knowledge structures in memory as the facet of Hostility; a suggestion that is partially supported by the moderate Hostility-Risk Taking association in this study.

Limitations

The primary limitation of this study was its cross-sectional design, which prohibits causal attribution and prevents examination of the stability of PD domain and facet associations with aggression overtime. Further, aggression and PD domain and facet assessments were based solely on self-report. Although empirical findings generally support the effectiveness of self-report inventories for indexing personality pathology (Hopwood et al., 2008) and aggression (Gilbert et al., 2013a), further research is needed to corroborate the current findings reported using alternative measurement methods, such as face-to-face interview supplemented by file review and official criminal records. A further limitation relates to the method used to
quantify participants’ aggression histories. Given participants retrospectively reported their involvement in aggression since age 13, the self-reported frequency of their aggression may have been affected by participants’ ability to recall these events. The PID-5 has not yet been validated in forensic contexts, beyond the results presented here. When interpreting the results, it is important to note that the PID-5 has demonstrated poorer discriminant validity within the present research and other studies. Additionally, the Disinhibition domain based on the Krueger et al. scoring algorithm demonstrated unacceptable internal reliability; a finding the authors suspect may be related to the reverse coding of the Rigid Perfectionism item. As a result, readers should take note that the (K)Disinhibition results presented must be interpreted with caution. Additionally, the restricted nature of the offender population may have attenuated PD trait and aggression associations. Undoubtedly, studies in larger and more diverse samples internationally would establish the generalizability of the current findings. Finally, it is important for readers to be aware that although socially desirable responding has been recognized as a potential difficulty in forensic contexts (Baker & Beech, 2004), considerable debate continues to exist as to whether this function of responding should be controlled for within offender populations. Specifically, some have suggested that removal of social desirability may undermine the measurement of the construct of interest, thereby reducing the relationship between the predictor and outcome variable from significant to non-significant (Mills & Kroner, 2005), while others suggest that socially desirable responding functions more as a personality trait of its own than as a moderator of validity (Mills et al., 2003).
Implications

Notwithstanding the limitations described above, several important implications are noteworthy. Given the controversy surrounding the development of the Section III PD model (Krueger & Markon, 2014), it is unsurprising that different methods for scoring the PID-5 domains have emerged. One concern for clinical practice is that the APA-three facets only is the only scoring approach that accompanies the PID-5; clinicians may be unfamiliar with the emergence and testing of alternative methods. Although this does not appear to be an issue within the context of understanding aggression propensity, the domains that are generated by different scoring methods may have very different associations with other clinical and forensic problems. As such, it would be advisable that future research determines the most effective approach for calculating domain scores so that a universally agreed upon algorithm may be incorporated and promoted alongside future versions of the PID-5.

It is also noteworthy that the domain scoring algorithm that accompanies the PID-5-Brief Form (PID-5-BF; Krueger, Derringer, Markon, Watson, & Skodol, 2013a), a 25-item self-report questionnaire that assesses the same five broad trait domains of the new PD model, is based upon what appears to be a different scoring algorithm than that of the Krueger et al. and the APA-three facets only algorithms, which draws attention to the inconsistency in the scoring approaches promoted alongside the two tools. For instance, within the PID-5-BF the Negative Affect domain is comprised of five items, which tap DSM-5 Anxiousness, Hostility, Emotional Lability, Separation Insecurity and Perseveration. This domain therefore fails to incorporate the facets of Emotional Lability and Submissiveness included in the Krueger et al algorithm, and includes two additional facets (i.e., Hostility and...
Perseveration) not included in the APA-three facets only approach. Importantly, without scoring consistency, application of the new PD domains as operationalized by the PID-5 APA-three facets only, APA-all facets and Krueger et al. algorithms or the PID-5-BF may produce findings that conflict with prior personality and PD research, and consequently may obscure the PD-aggression relationship further.

The present study highlights that, even when utilizing two different scoring approaches, DSM-5 domain level analysis is not a useful means to understand and assess aggression propensity. It is therefore important to consider how facet level analysis contributes to our knowledge and understanding of current (section II) PD diagnosis and the relationship between these diagnoses and aggression. In examining the current PD classification system, it is evident that the diagnostic criteria of the four PDs most frequently diagnosed in forensic settings are underpinned by features of hostility and risk taking. For example, ASPD items refer to a pattern of irritability and aggressiveness as indicated by repeated engagement in physical fights or assaults (reflective of hostility), reckless disregard for personal safety and the safety of others (reflective of risk taking), and impulsivity or failure to plan ahead (reflective of risk taking in that this items encompasses a lack of consideration for future consequences). BPD diagnostic items emphasize hostility in the form of inappropriate, intense anger or difficulty controlling anger. Episodic hostility is also evident in relation to chronic relationship instability, whereby a pattern of alternating between extreme idealization and devaluation exists. Risk taking tendencies are evident in the form of impulsive behaviours that are potentially self-damaging (e.g., reckless driving, substance abuse). The primary description of PPD (i.e., "a pervasive distrust and suspiciousness of others such that their motives are interpreted as malevolent") provides a clear reflection of underlying hostility. This is evident in
a number of the diagnostic criteria in the form of expectations of being exploited, harmed, deceived, and concerns about malicious actions from others, interpreting benign remarks or events as demeaning or threatening, and perceiving attacks to character or reputation and responding quickly with anger or counterattacks. Finally, NPD criteria is underpinned by a hostile disposition (e.g., a tendency to respond with irritability and anger when their needs are not met or catered to; disdainful attitudes towards others). Overall, the present study highlights that both hostile and risk taking traits manifest across ASPD, BPD, PPD and NPD. This therefore provides support for the contention that hostile and risk taking traits serve as underlying mechanisms for aggression propensity in the four PDs that have an established relationship with aggression.

Although this study demonstrates that DSM-5 Hostility and Risk Taking are clinically useful for understanding aggression at the group level, this does not mean that the remaining 23 DSM-5 facets are irrelevant to the assessment of aggression potential. In fact, at an individual level, the DSM-5 facet assessment may serve as an important framework to conceptualize the function and origin of a specific client’s aggressive behavior. For example, an aggressive client who scores high on Emotional Lability may experience poor affect regulation and therefore be prone to aggression in an attempt to regulate aversive emotional states (e.g., fear, anxiety, sadness) (Roberton et al., 2012). Alternatively, a client high on Separation Insecurity may act aggressively in an attempt to control a significant other and avoid feared abandonment (Bartholomew & Horowitz, 1991). Therapeutic interventions may then be tailored to address each of the facets considered to be an underlying driving mechanism for aggression for the particular client (Dunne et al., in press-a).
It is important to note that the PID-5-BF is unlikely to be clinically useful for clinicians working to understand aggression propensity. The PID-5-BF includes one Hostility item (e.g., "I get irritated easily by all sorts of things") that contributes to the Negative Affect domain and one Risk Taking item (e.g., "People would describe me as reckless") that contributes to the Disinhibition domain. As a result of its limited hostility and risk taking content, it seems unlikely that the PID-5-BF would be useful to assess aggression in a clinical context, although further research should test this proposition.

Many contemporary group based violent treatment programs focus exclusively on anger management skills, and problem solving, interpersonal, social or parenting skills (Howells & Day, 2002). Within such programs, hostile cognitions and attitudes are often explicitly targeted, while relatively few programs focus specifically on reducing risk taking tendencies. This study highlights that this may be an important avenue for which to strengthen existing violence treatment programs. Given the key features of risk taking (i.e., deficits in risk appraisal, lack of consideration of future consequences, unwillingness to entertain the impact that their actions may have on other people, disregard for others) one approach to target such tendencies may be to improve consequential thinking and focus on aligning the clients present behaviours with long term goals and personal values.

To our knowledge, this study is the first to examine DSM-5 domain and facet associations with aggression in an offender population; this population is arguably one of the most important for examination of the personality trait-aggression relationship. Prospective studies of the PD trait-aggression relationship should be conducted in forensic, clinical and community samples to corroborate the present findings and further explore the types and levels of severity of aggression associated
with high hostility and risk taking. Empirical investigation of the potential mediating/moderating relationships between hostility and risk taking on aggression potential may also be warranted. Establishing the psychometric characteristics of the PID-5 within forensic samples is also necessary to ensure the measure is suitable for use in such contexts. Finally, research on the predictive utility of domain level analyses on other forensic and clinical outcomes is required, and movement towards a universally accepted scoring approach to accompany future versions of the PID-5 should be high on the agenda.

Acknowledgement

We are grateful to Dr. Stuart Lee for his guidance on statistical analysis.

Funding/Support

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CHAPTER SIX: EMPIRICAL STUDY ONE

References


Callous-unemotional traits and conduct problems in the prediction of conduct 


### DSM-5 Facets Included in the Different Domain-Level Scoring Algorithms

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<th>APA-all facets</th>
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* denotes facets that overlap across domains in the APA-all facets scoring algorithm.
+ denotes an established association with aggression (as based on research on equivalent or similar facets from alternate personality inventories). Evidence is discussed below.

* evidence reviewed for aggression and high levels of maladaptive perfectionism, as opposed to lack of Rigid Perfectionism (as presented within the DSM-5).
### Table 2

Mean (M), Standard Deviation (SD), Range and Internal Reliability Statistic (α) for LHA-S-A, IM-PDS and the PID-5 Domains and Facets

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*Note. N = 208. LHA-S-A = Life History of Aggression-Self-Report-Aggression Subscale; IM-PDS = Impression Management Subscale of the Paulhus Deception Scale; PID-5 = Personality Inventory for the DSM-5; (A) denotes a domain based on the APA-three facets only scoring algorithm; (K) denotes a domain based on the Krueger et al. scoring algorithm.*
Table 3

Partial Correlations Between Significant Personality Facets and Life History of Aggression

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*p < .05, **p < .01, ***p < .001, two-tailed.
## Table 4

*Hierarchical Multiple Regression Unstandardized Coefficient (B), Standard Error of Beta (SE B), and Standardized Coefficient Values (β)*

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<th>Step 2</th>
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</tr>
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<td>Age</td>
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<td>.04</td>
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<td>IM-PDS</td>
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<td><strong>Step 2</strong></td>
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<tr>
<td>Impulsivity</td>
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<tr>
<td>Irresponsibility</td>
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<td>.73</td>
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<tr>
<td>Suspiciousness</td>
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<tr>
<td>Withdrawal</td>
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</table>

*Note. N = 208. IM-PDS = Impression Management Subscale of the Paulhus Deception Scale. * p < .05, *** p < .001.*
Chapter Seven. The Role of Aggression-Related Cognition and Emotional and Coping States to Aggression (Empirical Study Two)

7.1 Preamble to Empirical Study Two

This chapter presents the second empirical study of this thesis. As highlighted in Chapter Two, the GAM posits a role for aggression-related cognitive schema (i.e., EMS) that generate uncomfortable cognitive and affective states, and increase the accessibility of aggressive concepts in memory. However, due to mixed empirical findings with regard to EMS-aggression associations, and the fact that EMS do not take into account critical emotional and coping states that are linked to EMS activation and conducive to aggression, the utility of EMS within the GAM has been questioned. The related concept of schema modes, which has been linked to aggression and recognised in both research and clinical contexts as an important construct to clarify patterns of maladaptive thinking, feeling and behaviour evident in PD populations (a population of significant clinical interest for understanding aggression), has been suggested as an avenue by which to advance schema knowledge and understandings of aggression within the GAM. Nevertheless, before schema modes can be considered alongside GAM-delineated constructs, a crucial preliminary step is to collectively examine EMS and schema mode associations with aggression, and determine whether schema modes improve the prediction of aggression beyond that of EMS alone. Accordingly, the present study was designed as an initial step helping to address this gap in the literature. The theoretical and clinical implications of these findings are discussed. Empirical Study Two functions to address overarching thesis aim two, and contribute valuable information to overarching thesis aim three.
Empirical Study Two titled 'The Role of Aggression-Related Cognition and Emotional and Coping States to Aggression in a Prisoner Sample' has been submitted for publication to the journal of Psychology, Crime and Law. This is a peer-reviewed journal that publishes both review and empirical articles that promote the study and application of psychological approaches to crime, criminal and civil law, and the influence of law on behaviour. The current impact factor of this journal is 1.009 (Thomson Reuters, 2016). The format of this manuscript is consistent with the requirements of Psychology, Crime and Law. For ease of reading, manuscript pagination has been replaced with thesis pagination. However, sections of this article have not been numbered.
7.2 Author Indication Form for Empirical Study Two

Swinburne Research
Authorship Indication Form
For PhD (including associated papers) candidates

NOTE
This Authorship Indication form is a statement detailing the percentage of the contribution of each author in each associated 'paper'. This form must be signed by each co-author and the Principal Coordinating Supervisor. This form must be added to the publication of your final thesis as an appendix. Please fill out a separate form for each associated paper to be included in your thesis.

DECLARATION
We hereby declare our contribution to the publication of the 'paper' entitled:
THE ROLE OF AGGRESSION RELATED COGNITION AND EMOTIONAL AND CODING STATES TO AGGRESSION IN A PRISONER SAMPLE

First Author
Name: ASHLEY DONNIE
Percentage of contribution: 60%
Date: 16/05/2017
Brief description of contribution to the ‘paper’ and your central responsibilities on project: Reviewed literature, designed research questions, secured ethics, data collection, conducted statistical analysis of data, prepared manuscript.

Second Author
Name: FLORA GILBERT
Percentage of contribution: 5%
Date: 15/05/2017
Brief description of your contribution to the ‘paper’: Support in conceptualising research design, review and editing of manuscript.

Third Author
Name: STUART LEE
Percentage of contribution: 5%
Date: 17/05/2017
Brief description of your contribution to the ‘paper’: Assistance with statistical analysis, critically revised and edited manuscript draft.

Fourth Author
Name: MICHAEL DUFFEY
Percentage of contribution: 10%
Date: 21/05/2017
Brief description of your contribution to the ‘paper’: Participated in overall design of research program, assisted in designing research questions, supervised statistical analysis, critically revised and edited manuscript drafts.

Principal Coordinating Supervisor: Name: [Signature]
Date: 21/05/2017

In the case of more than four authors please attach another sheet with the names, signatures and contribution of the authors.
The role of aggression-related cognition and emotional and coping states to aggression in a prisoner sample

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This manuscript has not been previously published and it has not been submitted simultaneously for publication elsewhere.
Abstract

Contemporary social-cognitive aggression theory and extant empirical research highlights the relationship between certain Early Maladaptive Schema (EMS) and aggression in offenders. To date, the related construct of schema modes, which presents a more comprehensive and integrated schema unit, has received scant empirical attention. Furthermore, EMS and schema modes have yet to be examined concurrently with respect to aggressive behaviour. This study examined associations between EMS, schema modes and aggression in an offender sample. Two hundred and eight adult male prisoners completed self-report psychological tests measuring their histories of aggression, EMS and schema modes. Regression analyses revealed that EMS were significantly associated with aggression but did not account for a unique portion of variance once the effects of schema modes were taken into account. Three schema modes, Enraged Child, Impulsive Child, and Bully and Attack, significantly predicted aggression. These findings support the proposition that schema modes characterised by escalating states of anger, rage and impulsivity characterise aggressive offenders. In this regard, we call attention to the need to include schema modes in contemporary social-cognitive aggression theories, and suggest that systematic assessment and treatment of schema modes has the potential to enhance outcomes with violent offenders.

**Keywords:** Aggression; cognition; early maladaptive schema; schema modes; emotional and coping states.
The role of aggression-related cognition and emotional and coping states to aggression in a prisoner sample

Since the 1970's, a range of social-cognitive theories have emerged to explain aggression propensity (Bandura, 1973; Berkowitz, 1989; Dollard et al., 1939; Mischel & Shoda, 1995; Tedeschi & Felson, 1994; Zillmann, 1983). In general, social-cognitive approaches assume that individual differences in aggressive behaviour are, to a large extent, determined by underlying internal, self-regulating cognitive processes (e.g., learning, mental representation, interpretation) and constructs (e.g., interpersonal knowledge, attitudes, affect). More recent developments in the field have lead to the emergence of integrated social-cognitive, information processing models of aggression, namely social information processing (SIP; Crick & Dodge, 1994), script theory (Huesmann, 1986, 1988, 1998) and the general aggression model (GAM; Anderson & Bushman, 2002), which integrate various domain specific factors of social-cognitive theories, alongside social information processing sequences. Despite differences in their focus, terminology, specificity and scope, these integrated social-cognitive, information processing models of aggression encompass similar underlying principles. First, they assert that a sequence of subprocesses are involved in the processing of social information, these include the encoding and interpretation of environmental cues, the generation and selection of goals, behaviours or scripts to guide behaviour, the evaluation of the selected script for appropriateness, the selection and enactment of behavioural responses, and the interpretation of the response of others. According to the prevailing models, aggression is suggested to result from systematic biases or deficits occurring at different stages of the subprocesses, particularly the encoding
and interpretation of social cues (Crick & Dodge, 1994; Huesmann, 1998). Second, the social-cognitive structures involved in increasing aggression propensity are represented in memory as complex associative networks of nodes that comprise cognitive concepts and emotions (Anderson & Bushman, 2002; Huesmann, 1998). When these sets of concepts are strongly interconnected they are known as knowledge structures. Knowledge structures contain, or are linked to, various schemas (i.e., patterns of thoughts that organise and interpret information), scripts (i.e., cognitive sequences of expected behaviours for a given situation), and normative beliefs. They influence perception at multiple levels, guide people's interpretations and behavioural responses to their social environment and become automatic with use. The GAM and script theory emphasise the importance of knowledge structures. Specifically, these models presume that habitually aggressive individuals hold more aggression related knowledge structures (e.g., hostile schema, aggressive scripts and normative beliefs supportive of aggression), and have stronger network connections between these aggressive concepts (Anderson & Bushman, 2002; Huesmann, 1998). Third, emotions and cognitions interact to increase aggression potential. Specifically, emotional states, and in particular anger, can affect the social information subprocesses that guide social behaviour, and in turn, emotions can be changed as a result of the outcome of the subprocesses (Crick & Dodge, 1994). Additionally, emotional states can form a part of the knowledge structure network, and therefore they can directly prime aggression related knowledge structures and influence the activation of aggressive concepts relevant to the present situation (Anderson & Bushman, 2002; Huesmann, 1998). Finally, the models assert that personal and situational variables combine to influence an individual’s cognition, affect and level of arousal. In turn, these internal states
influence various interpretation and decision making processes, ultimately leading to
behavioural action, which may or may not be aggressive in nature (Anderson &
Bushman, 2002; Huesmann, 1998).

Integrated social-cognitive information processing models of aggressive
behaviour have gained support from a gradually accumulating body of empirical data
linking the aforementioned cognitive processes and concepts to aggressive
behaviour. In particular, the role of cognitive schema, particularly hostile world
schema, in increasing aggression potential has been established. For instance, the
presence of a hostile attributional bias (i.e., perceiving hostility in others where there
is no hostile intent) is common in both aggressive children and adults (Dodge, 1980;
Dodge & Coie, 1987; Dodge & Frame, 1982; Dodge, Pettit, Bates, & Valente, 1995);
and research on social perception (Fiske & Taylor, 1991; Schneider, 1991) and
aggression suggest that hostile attributional biases are products of well-developed
schemas. Although the schema-aggression link is emphasised across contemporary
social-cognitive models of aggression, relatively few empirical studies have
examined the content and structure of schemas, beyond hostility biases and schemas,
in adult samples with established histories of aggression. It is possible that the lack
of research in this area is due, in part, to the perceived difficulty in reliability
assessing information about the nature of schemas. Importantly, in order for violent
offender treatment programs to be effective, they need to be founded in coherent,
clearly articulated theoretical models of what causes violence, as well as an
extensive empirical evidence base (Lösel, 2001; McGuire, 2001). As such, drawing
upon contemporary findings from clinical practice has the potential to improve both
clinical work with violent offenders and advance theory.
Within the clinical domain, the Schema Therapy (ST) framework (Young et al., 2003) has been increasingly used to examine maladaptive cognitive schema in people with personality disorder (PD), and more recently in forensic populations. The most basic concept in ST is that of Early Maladaptive Schemas (EMS), which are defined as stable and enduring dysfunctional patterns of beliefs that influence perceptions and expectations about oneself in relation to the social environment. These beliefs develop early in life as a result of exposure to adverse childhood experiences and, although adaptive to an individual's functioning and self-concept early in life, these cognitions drastically distort later information processing and lead to maladaptive behavioural patterns (Young et al., 2003). Young (2014a) identified 18 EMS; 15 are grouped into four higher-order schema clusters (Disconnection and Rejection, Impaired Autonomy, Impaired Limits and Excessive Responsibility and Standards), while three are unclassified. Various studies have demonstrated that EMSs can be reliability assessed using the Young Schema Questionnaire (YSQ) Long Form (Young, 2014c) or Short Form (Young, 2014d) (Bach et al., 2015; Calvete et al., 2013; Gilbert et al., 2013b; Saariaho et al., 2009; Stopa, Thorne, Waters, & Preston, 2001; Voderholzer et al., 2014).

Regarding the relationship between EMS and aggression, Loper (2003) investigated associations between EMS domains (using the Early Maladaptive Schemas Questionnaire - Research (EMSQ-R); Ball & Young, 1999), PD, emotional distress and behavioural adjustment in incarcerated women. Results indicated that higher scores on the schema domain of Impaired Limits (which encompassed the Entitlement and Insufficient Self-Control schemas) were associated with higher levels of physical assault ($\beta = .37$), verbal threats ($\beta = .36$), and hostility ($\beta = .33$). The Disconnection and Rejection domain (encompassing the Abandonment,
Mistrust, Emotional Deprivation, Social Isolation and Defectiveness schemas) was predictive of a range of psychological symptoms, including hostility ($\beta = .27$).

Finally, the Impaired Autonomy domain (which encompassed the Dependence, Vulnerability to Harm, Enmeshment and Failure schemas) demonstrated non-significant associations with psychological distress, institutional misconduct and violence (Loper, 2003). It is important to note, however, that this study was conducted prior to the most recent update of the EMS clusters within the YSQ, where several EMSs were grouped into alternative clusters. As such, aggression results pertaining to the EMSQ-R Disconnection and Rejection and Impaired Autonomy domains must be interpreted with caution. In a non-clinical, predominantly female sample, Tremblay and Dozois (2009) found that ten EMSs had positive relationships with aggression, with the strongest occurring for Mistrust ($\beta = .29$), Entitlement ($\beta = .24$) and Insufficient Self-Control ($\beta = .17$). In a community forensic mental health sample, Gilbert and colleagues (2013b) found that higher levels of Insufficient Self-Control was independently related to a greater history of past aggression ($\beta = .35$). Contrary to the above findings, Chakhssi and colleagues (2012) found that in a sample of male offenders meeting Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV) PD diagnostic criteria, EMSs were not independently associated with institutional violence.

A similar line of research on implicit theories provides additional support for the EMS-aggression relationship. According to Ward (2000), implicit theories are comprised of structured interconnected cognitive belief networks that emerge around an underlying dominant theme. These belief networks are actively involved in interpreting and organising incoming information and thus predict and guide social behaviour. Importantly, implicit theory scholars "view implicit theories as a type of
schema" (Polaschek et al., 2009, p. 77). Similar to the hostile attribution bias-schema link, implicit theory scholars argue that the distorted type of thinking involved in implicit theories arise as a consequence of underlying EMS (Fisher & Beech, 2007). As such, implicit theory research can be drawn upon to further explicate the relationship between EMS and aggression. Research conducted by Polaschek and colleagues (2009) examined implicit theories in a sample of violent offenders. Results revealed four violence-related implicit theories that were associated with violent offending, including: (a) normalisation of violence, (b) the need to act violently to achieve or maintain status/autonomy in a violent world ("beat or be beaten"), (c) the sense of moral superiority and entitlement to attack, harm or discipline others ("I am the law"), and (d) the inability to appropriately regulate one's own behaviour and maintain self-control ("I get out of control"). Notably, the latter three implicit theories appear to closely resemble three EMS, namely Mistrust, Entitlement, and Insufficient Self-Control, respectively, which provides supplementary support for the findings by Tremblay and Dozois (2009) and Gilbert and colleagues (2013b). Taken together, the above findings tend to support the notion that the presence and activation of certain EMS render people more likely to engage in aggressive behaviour.

Although the EMS approach may be a contributing and valuable model for explaining aggression propensity, it may also be limited in the sense that in some individuals several schemas are activated at the one time (Lobbestael et al., 2007). Consequently, it may be difficult to identify and isolate specific EMSs involved in increasing aggression potential, which may contribute to inconclusive research findings. In addition, it has been recognised that people rely upon various strategies of overcompensation (i.e., aggressive, hostile, dominant, recognition-seeking,
manipulative, passive-aggressive or obsessive responses), avoidance (i.e., social or psychological withdrawal, addictive self-soothing, compulsive or stimulation-seeking responses), or surrender (i.e., compliant or dependent responses) to cope with activated schema (Bernstein et al., 2007). However, the influence of such habitual coping responses linked to activation of EMS is not account for within the EMS framework.

ST also emphasises the concept of schema modes, which are clusters of activated EMS and behavioural coping responses. Unlike EMS, which reflect one-dimensional dysfunctional patterns of beliefs, schema modes are manifest emotional states and coping styles that are active for a particular individual at any given moment (Young et al., 2003). Schema modes develop through experience and are triggered by life situations that an individual has become over-sensitised to (i.e., situations that arouse painful memories). Schema modes are aroused when EMS are activated and maladaptive coping responses lead to intense negative emotions that result in a lessening of control of an individual's behaviour. People may shift from one schema mode to another, and as that shift occurs, different schemas and coping responses become activated. Young and colleagues (2014) identified 14 modes covering five domains, including Innate Child, Surrender and Avoidant, Internalised Parent, Over-Compensating, and Healthy Adult Modes. Others (e.g. Bamelis et al., 2011; Bernstein et al., 2007; Lobbestael et al., 2008) have proposed and reported on additional schema modes. Importantly, the introduction of modes to the ST framework does not imply the addition of new content-related material, rather it provides a more comprehensive unit of analysis that takes into account EMS, coping style and emotional and behavioural responses. Moreover, given contemporary social-cognitive theories of aggression assert that cognition and emotion interact to
increase aggression propensity, schema modes may represent a useful construct to empirically explore the specific emotional and coping states, elicited in part by EMS, that give rise to aggression.

To date, there have been few attempts to explore the relationship between schema modes and aggression. In a sample of 95 forensic in-patients with a DSM cluster B PD diagnosis, Keulen-de Vos and colleagues (2016) used an adapted version of the Mode Observation Scale (MOS; Bernstein et al., 2009) to retrospectively assess schema modes from descriptions of patient's crimes. The results demonstrated that the Vulnerable Child ($r = .82$), Lonely Child ($r = .32$), Detached Self-Soother ($r = .46$) and Paranoid Overcontroller ($r = .35$) modes were more often triggered in the events leading up to criminal and violent behaviours, while the Angry Child ($r = .27$), Impulsive Child ($r = .46$), Bully and Attack ($r = .71$) and Predator ($r = .37$) modes were more prevalent during the crime itself. Importantly, although temporal sequencing of the mode-aggression relationship is not yet established, links to anger and aggression research are evident in the schema mode sequences reported in this study. Firstly, in line with aggression theory (i.e., Berkowitz, 1989, 1990; Dollard et al., 1939) and previous research regarding emotional triggers (Fontaine, 2007; Miller & Lynam, 2006; Vitacco et al., 2008), it appears that increases in painful, unpleasant and vulnerable feelings (e.g., abandonment, shame, loneliness or fear) play a critical role in the initial stages of aggressive and violent criminal behaviours. Secondly, as events leading up to crimes progressed, patients’ emotional states appear to be characterised by increases in anger and impulsivity (e.g., Angry and Impulsive Child mode), eventually resulting in criminal behaviours characterised by aggression (i.e., Bully and Attack and Predator modes). This progression from painful, inner-directed emotions to states
that involve anger, impulsivity and aggression appears consistent with accounts suggesting that aggressive behaviours often serve as compensatory functions for other contrary, emotional states that involve feelings of weakness, fear, humiliation or helplessness (Anderson & Bushman, 2002; Berkowitz, 1989; Bernstein et al., 2007; Keulen-de Vos et al., 2014; Keulen-de Vos et al., 2016). In addition, in an attempt to cope with painful emotions, engagement in activities related to the Detached Self-Soother mode (e.g., alcohol or drug use) may limit cognitive resources, leading to disinhibition of aggressive impulses, and therefore increases in violent behaviour. The study also assessed rates of institutional incidents prospectively, and found that Vulnerable Child and Angry Child modes ($R^2 = .16$) and the Overcompensatory schema mode domain ($R^2 = .06$) predicted institutional violence.

Overall, there appears to be tentative support for a link between schema modes and aggression, however, additional research is needed to explicate these associations more clearly and to determine whether EMS or schema modes is the most productive unit of analysis in relation to understanding aggression propensity. Investigation of schema modes reflects a logical step forward for integrated social-cognitive theories to further explain aggression propensity; this approach has the potential to lead to a more nuanced and substantiated understanding of the problematic cognitions, emotional states and frequently engaged coping mechanisms that characterise those individuals at risk of aggression.

**The Present Study**

This study investigated the relationship between aggression and EMS and schema modes in an offender population. With respect to maladaptive schema, it was
hypothesised that Mistrust, Entitlement, and Insufficient Self-Control schemas would be positively associated with aggression. Regarding schema modes, given the scarcity of previous empirical research in this area, the primary aim was to explore the associations between all schema modes and aggression history. With this exploratory approach in mind, based on the limited evidence available it was hypothesised that Angry Child, Enraged Child, Impulsive Child, Vulnerable Child, Detached Self-Soother, Bully and Attack and Self-Aggrandizer would demonstrate the strongest positive associations with aggression. Finally, it was hypothesised that the presence of schema modes would improve the prediction of aggression over and above EMS alone.

Method

The present study comprised part of a larger program of research designed to investigate correlates of aggressive behaviour, PD traits and aggression-related cognitive constructs and emotional states in offenders (authors names suppressed to assist blind review).

Participants

Two hundred and eight male participants aged between 18 and 60 years ($M = 34.99, SD = 9.35$) were recruited from a remand centre in Melbourne, Australia. The ethnic background of the sample was 71.60% Australian, 6.30% Australian Aboriginal, 4.50% European, 4.40% Asian, 2.90% Maori and 10.30% mixed or other ethnicities. People who were unable to speak English or who were illiterate were ineligible to participate.
Measures

History of Aggression. The Life History of Aggression-Self-Report-Aggression Subscale (LHA-S-A; Coccaro et al., 1995) is a self-report survey assessing the frequency and severity of overt aggressive acts (i.e. verbal, indirect, nonspecific fighting, physical assault and temper tantrums) occurring since age 13. It comprises five items rated on a six-point response scale ranging from 0 (never happened) to 5 (happened so many times that I could not give a number), and summed to produce an overall score (range = 0 to 25). No psychometric data is currently available for the LHA-S-A, however, given the LHA-S-A correlates strongly with the Life History of Aggression-Aggression Subscale interview version (LHA-A) (E. F. Coccaro, personal communication, May 11, 2014), the psychometric properties for the LHA-A are presented below. The LHA-A has demonstrated good test-retest reliability ($r = .80$) and internal reliability ($\alpha = .87$), and moderate to strong correlations with other trait-based measures of aggression (Coccaro et al., 1997). In an offender population, LHA-A scores have been shown to relate to official criminal records, the Cormier-Lang System for Quantifying Criminal History-Violence Offences Index (CL-V; Quinsey et al., 2006) and the Violence Rating Scale (VRS; Robertson et al., 1987) (Gilbert et al., 2013a). In the same offender population, the LHA-A most reliably quantified the density (i.e., severity and frequency) of past aggression.

Early Maladaptive Schemas. The Young Schema Questionnaire-Short Form, Version 3 (YSQ-S3; Young, 2014d) was used to assess EMS. The YSQ-S3 comprises 90 items, which assess the 18 EMS, and participants self-report responses are rated on a six-point Likert scale ranging from 1 (completely untrue of me) to 6
(describes me perfectly), with higher scores indicating greater relevance of the EMS. An average EMS score can be calculated by dividing the scale sum score by the number of items that refer to the particular EMS (range = 1 to 6). In an offending population, the YSQ-S3 has demonstrated acceptable internal consistencies with 14 out of 18 EMS scores ranging from .72 (Subjugation) to .89 (Defectiveness/Shame); while Unrelenting Standards ($\alpha = .61$), Enmeshment ($\alpha = .63$), Entitlement ($\alpha = .65$) and Dependence ($\alpha = .69$) fell below the conventional cut-off of .70 (Gilbert et al., 2013b).

**Schema Modes.** Participants' schema modes were assessed using the Schema Mode Inventory, Version 1.1 (SMI; Young et al., 2014). The SMI contains 124 items that are associated with 14 schema modes. Participants rate themselves on a six-point Likert scale ranging from 1 (never) to 6 (always). The score for each schema mode was summed and then divided by the number of items in the subscale, which produced a mean score for each schema mode (range = 1 to 6). Psychometric properties of the SMI Version 1.1 (124 items) are yet to be published, however an alternative version of the SMI (118 items) has demonstrated good to excellent internal consistency, with Cronbach's alpha ranging from .79 to .96 (Lobbestael et al., 2010), and adequate test-retest reliability of the separate modes, with intraclass correlations (ICC) ranging from .65 to .92. Convergent and divergent validity has also been supported (Lobbestael et al., 2010). The decision was taken to use the 124-item version in the present study, as it is the most recent version published by the Schema Therapy Institute.
Socially Desirable Responding. The Impression Management Subscale of the Paulhus Deception Scale (IM-PDS; Paulhus, 1999) is a self-report measure used to assess participants' tendency to present an overly inflated self-description. The IM-PDS comprises 20-items and requires participants to rate themselves on a five-point Likert scale ranging from 1 (not true) to 5 (very true). The score for each item was summed to produce a total raw IM-PDS score, which was then converted into a T-score (range = 29 to 90). Higher scores indicate a greater likelihood of an inflated self-description. The IM-PDS demonstrates excellent internal consistency with prison entrants (α = .86) and correlates strongly with other measures of socially desirable responding (Paulhus, 1999). Although controlling for social desirability remains a contentious issue (Mills & Kroner, 2005, 2006; Mills et al., 2003), the decision was taken to include the IM-PDS in the present research to minimise potential bias from those participants who may not have provided self-reported responses in an accurate and honest manner.

Ethics Approval

This study was approved by the Department of Justice Human Research Ethics Committee and the Swinburne University of Technology Human Research Ethics Committee (Melbourne, Australia).

Procedure

Eligibility criteria were constructed so as to be as broad as possible, whereby individuals were considered to be eligible for the research as long as they were: a) aged over 18 years, and b) able to speak English without the aid of an interpreter. Participants were recruited voluntarily at an orientation session for new prisoners.
and by posters and flyer forms placed in the common areas in the remand centre units. To reduce the impact of potential situational demands that may have affected full and honest reporting, the confidential and anonymous nature of the research was emphasised to participants prior to participation. All participants provided written informed consent. Study measures were completed in groups of up to five remandees under the supervision of a doctoral student. After completing the survey battery participants were offered a certificate of participation.

**Statistical Analyses and Data Preparation**

Data was analysed using IBM SPSS Statistics Version 23.0. Partial correlation analyses were used to determine if a relationship existed between aggression and EMS and schema modes, while controlling for age and IM-PDS; age and IM-PDS were related to aggression history and schema constructs. To examine the unique associations between schema constructs and aggression history, and the extent to which schema modes improved the explanation of aggression history, the variables identified as significant in the correlation analyses were incorporated into a hierarchical multiple regression analysis, with age and IM-PDS entered in Step 1, EMS entered in Step 2 and schema modes entered in Step 3.

A random check of 21 participants’ entered data showed data entry to be accurate. Less than five percent of items were missing from the dataset. A non-significant Little's MCAR test, $\chi^2(1733) = 1660.48, p = .89$, revealed that data were missing completely at random (Little, 1988). When data are missing completely at random and less than five percent of data are missing overall, imputation using the expectation maximisation algorithm provides unbiased parameter estimates and improves statistical power of analyses (Enders, 2001). Missing data were imputed...
using Missing Values Analysis in SPSS 23.0. Four univariate outliers were detected (one on the Practical Incompetence EMS, one on the Self-Aggrandizer schema mode and two on the Bully and Attack schema mode), as suggested by a z-score greater than 3.29. As the outliers were deemed to be a legitimate part of the sample and, given that in a large sample size a few scores in excess of 3.29 are expected, the decision was taken to retain the outliers and change the scores to one unit larger than the next most extreme score in the distribution (Tabachnick & Fidell, 2013).

**Results**

Table 1 describes the means, standard deviations, ranges and internal reliability statistics for the LHA-S-A, IM-PDS, YSQ-S3 subscales and SMI subscales. The variables demonstrated good to excellent internal reliability, with the exception of YSQ-S3 Entitlement, whereby Cronbach's alpha fell below .70 (Tabachnick & Fidell, 2013). Results of the two-tailed partial correlation analyses for the three hypothesised YSQ-S3 subscales and the SMI subscales that were significantly associated with LHA-S-A scores are presented in Table 2. Regarding YSQ-S3 associations, the three specified EMSs demonstrated significant correlations with LHA-S-A. Eight of the 14 schema modes demonstrated a significant correlation with LHA-S-A. No significant associations were found between LHA-S-A and Vulnerable Child \( (r = .14) \), Detached Self-Soother \( (r = .12) \), Demanding Parent \( (r = .12) \), Healthy Adult \( (r = .09) \), Contented Child \( (r = -.05) \), and Compliant Surrender \( (r = -.08) \).

Prior to finalising the hierarchical multiple regression model assumptions were tested. Three cases were identified as multivariate outliers, as indicated by Mahalanobis Distance values greater than 31.26. To check whether these three cases
were having an undue influence on the hierarchical multiple regression, the analysis was first conducted with the full sample \((n = 208)\), and then conducted again with the three relevant cases removed \((n = 205)\). Removal of the three cases resulted in an additional 5 percent of variance explained in \(R^2\) and improvements in the predictor coefficients, therefore the decision was taken to remove the three cases from further analyses. Hierarchical multiple regression model assumptions were tested again with the reduced sample \((n = 205)\). One additional multivariate outlier was detected, therefore as above, analyses were conducted with the identified outlier retained and with the outlier removed. Given removal of the additional case demonstrated a negligible effect on \(R^2\) and the coefficients, the case was included in further analyses \((n = 205)\). Two schema modes (Angry Child and Undisciplined Child) demonstrated high correlations \((r \text{ greater than } .70)\) with other predictor variables and were therefore removed from further analyses due to issues of multicollinearity (Tabachnick & Fidell, 2013). Additional preliminary analyses revealed that the assumptions of linearity, normally distributed residuals and homoscedasticity were met.

Table 3 displays the unstandardised beta coefficients, standard errors, Beta, and \(R^2\) change values of the hierarchical multiple regression. Age and IM-PDS were entered at Step 1, explaining 21.90% of the variance in LHA-S-A, adjusted \(R^2 = .21\), \(F(2, 202) = 28.28, p < .001\). The addition of the three EMS in Step 2 significantly increased the explanation of variance in LHA-S-A, \(F \text{ change } (3, 199) = 5.06, p = .002\), and explained 27.40% of total variance in LHA-S-A, adjusted \(R^2 = .26\), \(F(5, 199) = 15.03, p < .001\). At Step 2, Insufficient Self-Control was the only EMS to uniquely predict higher aggression scores. The further addition of the SMI variables in Step 3 significantly increased the explanation of variance in LHA-S-A, \(F \text{ change} \)
(6, 193) = 13.59, \( p < .001 \), with the final model explaining 49.00\% of the variance in LHA-S-A, adjusted \( R^2 = .46 \), \( F(11, 193) = 16.84, p < .001 \). In the final model, IM-PDS, Enraged Child, Impulsive Child, and Bully and Attack were statistically significant.

**Discussion**

This is the first study to report on the relationship between aggression and EMS (i.e., maladaptive *patterns of beliefs* about the self in relation to the environment) and schema modes (i.e., manifest moment to moment *emotional and coping states* comprised of activated EMS and coping responses). In line with contemporary, integrative social-cognitive theories of aggression, the findings of the present study represent an important and logical step in the acquisition of knowledge concerning the role of maladaptive cognitions and emotional and coping states in aggressive behaviour. As hypothesised, the Insufficient Self-Control, Mistrust and Entitlement schemas demonstrated positive associations with aggression after adjusting for age and impression management. Although Insufficient Self-Control was significantly uniquely related to aggression history in Step 2 of the regression model, this effect became non-significant in Step 3 once the effects of schema modes were taken into account.

Regarding schema modes, associations between all schema modes and aggression were explored; however, based on extant research, it was hypothesised that seven schema modes would be positively associated with aggression. This hypothesis was partially supported, with Enraged Child, Angry Child, Impulsive Child, Bully and Attack and Self-Aggrandizer found to be positively associated with aggression history. Three additional schema modes, Undisciplined Child, Detached
Protector and Punitive Parent, were also positively associated with aggression. When entered simultaneously into Step 3 of the regression model, only the Enraged Child, Impulsive Child and Bully and Attack modes were uniquely significantly related to aggression history; a finding that is consistent with Keulen-de Vos and colleagues (2016).

It is evident that themes of anger, rage and disinhibition underpin the Enraged Child, Bully and Attack, and Impulsive Child modes. For instance, in response to perceived or real mistreatment, abandonment, humiliation or frustration, an individual endorsing the Enraged Child schema mode will often experience intense feelings of anger, lose control, and act impulsively and aggressively, attacking people or destroying objects (Lobbestael et al., 2007). Similarly, in an attempt to overcompensate for abuse or humiliation, an individual scoring high on the Bully and Attack mode will use threats, intimidation, aggression and coercion in a controlled, strategic and often retaliatory or sadistic way to ensure personal needs and desires are met. Finally, motivated by rebelliousness to maltreatment, an individual endorsing the Impulsive Child mode will act on impulse in a selfish or uncontrolled manner, without regard to potential consequences for the self or others, in order to get his or her own way.

It is well established that anger, rage and impulsivity can contribute to aggressive behaviour. According to contemporary social-cognitive aggression theory, anger influences aggression in a number of ways. First, anger reduces aggressive inhibitions by interfering with higher level cognitive processing that typically guides moral reasoning and judgment (Anderson & Bushman, 2002; Crick & Dodge, 1994; Huesmann, 1998). When cognitive processing is restricted, only the most accessible and frequently used knowledge structures are retrieved. If an
aggressive repertoire is entrenched, aggressive retaliation is more likely to be supported by activated EMS and modes, scripts and beliefs, and consequently aggressive actions will be enacted (Anderson & Bushman, 2002; Huesmann, 1998). Second, anger can serve as a cue for hostile biases, which consequently primes the retrieval of aggression related concepts in memory and influences the activation of aggressive concepts relevant to the present situation (Anderson & Bushman, 2002; Huesmann, 1988). An individual will use the activated anger related knowledge structures to interpret the social situation and guide aggressive responses to the situation (Anderson & Bushman, 2002). Third, anger maintains aggressive dispositions over time by increasing attention to, depth of processing of, and ultimately recall of provoking events (Anderson & Bushman, 2002). Regarding difficulties in impulse control, when an individual has insufficient time and cognitive capacity to evaluate situational events they are more likely to engage in actions quickly and without consideration of the consequences (Anderson & Bushman, 2002). Such actions may be aggressive or non-aggressive; however, because aggressive individuals are more likely to engage in immediate appraisals that tap into anger and rage-related affect (Enraged Child) and/or include a retaliation goal and/or a specific intention to carry out that goal (i.e., Bully and Attack), aggression is much more likely (Anderson & Bushman, 2002). Although the temporal relationship between modes and aggression is yet to be determined, the current results are in line with empirical findings of Keulen-de Vos and colleagues (2016), which suggest that anger and impulsivity related modes are prevalent whilst aggressive behaviours are being enacted. Schema modes may therefore be best conceptualised as the 'state' that an individual enters once social-information processing sequences have been
disrupted, aggression related knowledge structures have been activated, and appraisal and decision making processes have been compromised.

Finally, our third hypothesis, that the presence of schema modes would improve the prediction of aggression over and above EMS alone, was supported. In fact, the inclusion of schema modes in the regression model explained almost twice the variance than that of EMS. This suggests that at the group level EMS may not be the optimal approach to elucidate the underlying mechanisms involved in increasing aggression potential in offenders when compared to the relevant emotional and coping states that arise in part from the activation of maladaptive cognitions. This is an important finding that certainly warrants replication and further empirical attention.

Limitations

The results of the present study should be considered in light of several limitations. This study is cross-sectional in design and therefore we are limited in our ability to make causal inferences about the precise role of schema modes to past aggressive behaviour. More specifically, in this research and in prior studies, although correlation analyses indicate that individuals who report higher levels of past aggression also endorse higher rates of EMS and modes, the temporal relationship between aggression and these constructs is still unknown. Cronbach's alpha fell below the conventional cut-off point for YSQ-S3 Entitlement, therefore these results should be interpreted with caution. The psychometric properties of the SMI Version 1.1 (124 items) used in the present study are unknown, beyond the results presented here, which therefore limits the generalisability of our findings. Self-reported aggression histories may have been biased by participants’ recall. EMS
and schema mode assessments were based solely on self-report. Regarding the SMI, given the consistency in the present findings to results of a retrospective researcher-rated assessment of schema modes using the MOS (Keulen-de Vos et al., 2016), the self-report SMI appears to be an effective measure for indexing schema modes. The SMI does not include the forensic specific modes assessed within the MOS, which may be particularly important to elucidate the mode-aggression relationship in offender populations. Future research is required to determine associations between the SMI and MOS. Controlling for social desirability within forensic populations remains a controversial topic. Opponents suggest that the removal of social desirability can weaken results between the predictor and outcome variable (Mills & Kroner, 2005) or that social desirability may in fact function as a personality trait rather than a moderator of validity (Mills et al., 2003). Nonetheless, in line with Mills and Kroner (2006), the direct relationship observed between the IM-PDS and ratings of aggression suggests that social desirability may have been a potential difficulty if not controlled for within this population. Finally, it is important to consider that no one factor by itself explains more than a small portion of individual differences in aggressiveness (Monahan et al., 2001); although not reviewed here the role of genetic, biochemical and neuroanatomical contributors to aggression are documented (Cadoret et al., 1997; DiLalla & Gottesman, 1991; Nelson & Trainor, 2007).

**Implications**

This study has important theoretical and clinical implications. From a theoretical viewpoint, the current findings suggest that integrating schema modes into contemporary social-cognitive aggression theory may represent a logical
progression. The GAM, in particular, draws heavily on aggression-related knowledge structures, specifically maladaptive cognition (i.e., EMS), normative beliefs and behavioural scripts (Anderson & Bushman, 2002). Given the current findings, and those of Gilbert and colleagues (2013b), which showed that the effects of EMS do not account for any unique variance in aggression beyond the effects of normative beliefs, scripts and trait anger (Gilbert et al., 2013b), we suggest that the more comprehensive construct of modes may be a more useful unit of analysis to explain aggression propensity within the GAM framework. The fact that schema modes capture content that is central to the GAM, i.e., cognition, affect and action/coping tendencies, further supports this proposition.

From an applied perspective, this study has important implications for the measures currently available to assess schema modes. As noted, the SMI is a self-report tool, while the MOS involves observation. Although self-report measures have their disadvantages (de Ruiter & Greeven, 2000), the observational nature of the MOS means that this measure is unsuitable for use in forensic settings where intensive observation is unfeasible. Importantly, given the present findings based on the SMI are consistent with prior results obtained by Keulen-de Vos and colleagues (2016) using the MOS, this suggests that these two measures may produce comparable findings.

Routine assessment of schema modes in violent offenders has the potential to assist clinicians in gaining a better understanding of the mechanisms that increase a client’s risk for aggression. For example, the schema mode conceptual framework brings attention to the underlying triggers that lead an individual to enter into aggression-inducing modes (Enraged Child, Impulsive Child and Bully and Attack). Additionally, the schema mode model explicitly highlights the key factors (i.e.,
cognition, emotional responses and dysfunctional forms of coping) that characterise aggressive offenders, and thus are likely responsible for intensifying and maintaining a particular mode experience, and exacerbating aggression potential over the long-term.

Although no significant EMS-aggression relationships were found at the multivariable level, at an individual level, assessment of EMS (and similarly coping responses) may still be useful to elucidate the maladaptive cognitions (and behavioural responses) that activate the aggression related schema modes. This notion is consistent with research that suggests that ST is being increasingly implemented to address recidivism risk in forensic settings (Bernstein et al., 2012; Keulen-de Vos et al., 2014); and highlights an avenue of research that warrants empirical investigation. Overall, by using the schema mode framework to carefully conceptualise the underlying triggering events and maintaining mechanisms of an individual's aggressive behaviours, therapeutic interventions may then be tailored to address each of these risk factors to ameliorate aggression risk. The mode model may also serve as a useful and accessible conceptual platform to communicate with clients and improve their understanding of the cognitions, emotional states and coping behaviours that make them vulnerable to increased levels of aggression.

Regarding therapeutic intervention, many contemporary group-based violent offender treatment programs focus exclusively on mood and anger management skills, problem solving skills, and interpersonal, social or parenting skills (Howells & Day, 2002). Most often these skills are developed through the use of cognitive and behavioural techniques. While cognitive-behavioural approaches play an important part in laying the groundwork for awareness and insight into unhealthy schema modes, experiential techniques are also considered critical to consolidate schema
awareness on a deeper-emotional level that may lead to meaningful changes in behaviour (Keulen-de Vos et al., 2014). For example, for a client who endorses the Enraged Child mode cognitive techniques may be used to modify the EMSs related to the mode, behavioural techniques may be used to teach coping skills and break maladaptive behavioural patterns and experiential techniques may be used to assist the client to vent their rage and appropriately process all vulnerable/negative emotions connected with the Enraged Child mode (Young et al., 2003). Given the degree of emotional deficits experienced by violent offenders and the fact that they frequently struggle to work with emotions in treatment, if schema modes are to be targeted in treatment, emotion regulation work would also need to be a very high priority. Overall, greater attention to schema modes in therapy could be undertaken in conjunction with and complementary to other therapeutic frameworks commonly used in violence reduction programs, perhaps even forming a key foundational module in a multi-modular treatment program.

To our knowledge, this study is the first to examine the combined effect of EMS and schema modes on aggression in an offender population. Future studies should be conducted to substantiate the present results. Furthermore, research that allows for investigation of the temporal sequencing of the aggression and schema mode relationship may be beneficial. For instance, in a sample of participants who are prone to schema mode activation a prospective empirical study with an extended follow up period or an in-depth qualitative study may assist in elucidating the temporal sequencing of the activation of schema modes and aggression propensity. Studies utilising both the SMI and MOS within the same sample will assist in substantiating the proposition that these measures produce comparable results. If supported, SMI scale development may be advantageous to include the forensic-
specific modes currently incorporated in the MOS that are likely relevant to
aggression research. If further empirical support is found for the influence of schema
modes on aggression it will be important to ascertain whether this knowledge can be
incorporated into (a) social-cognitive theories of aggression to further explicate
aggression potential, and (b) existing aggression treatment programs to improve
treatment outcomes.

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References


### Table 1

*Mean (M), Standard Deviation (SD), Range and Internal Reliability Statistic (α) for LHA-S-A, IM-PDS, YSQ-S3 Subscales and SMI Subscales*

<table>
<thead>
<tr>
<th>Variable</th>
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<th>SD</th>
<th>Range</th>
<th>α</th>
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<td>1.00 - 6.00</td>
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<td>1.00 - 6.00</td>
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<td></td>
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<td>1.00 - 6.00</td>
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<td>1.70 - 6.00</td>
<td>.77</td>
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Table 2

Partial Correlations for Hypothesised EMS and SMI Subscales that were Significantly Related to Life History of Aggression

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<th>10</th>
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<td>-</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
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<td>3. Entitlement</td>
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<td>.44***</td>
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<td>-</td>
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<td>4. Mistrust</td>
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<td>.45***</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>.31***</td>
<td>.35***</td>
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<td>-</td>
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<td>.54***</td>
<td>.59***</td>
<td>.73***</td>
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<td>7. Impulsive Child</td>
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<td>.47***</td>
<td>.52***</td>
<td>.59***</td>
<td>.73***</td>
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<td>8. Undisciplined Child</td>
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<td>.72***</td>
<td>.31***</td>
<td>.46***</td>
<td>.29***</td>
<td>.52***</td>
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<td>9. Bully and Attack</td>
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<td>.34***</td>
<td>.56***</td>
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<td>11. Detached Protector</td>
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<td>.37***</td>
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<td>.51***</td>
<td>.45***</td>
<td>.26***</td>
<td>.20**</td>
<td>.63***</td>
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*p < .05, **p < .01, ***p < .001, two-tailed.
Table 3

Hierarchical Multiple Regression Unstandardised Coefficient (B), Standard Error of Beta (SE B), Standardised Coefficient (β), and $R^2$ Change

<table>
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<th>Predictor</th>
<th>$B$</th>
<th>$SE$ B</th>
<th>$\beta$</th>
<th>$R^2$ Change</th>
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<tr>
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<td>.22***</td>
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</tr>
<tr>
<td>Enraged Child</td>
<td>2.05</td>
<td>0.43</td>
<td>.40***</td>
<td></td>
</tr>
<tr>
<td>Impulsive Child</td>
<td>1.47</td>
<td>0.58</td>
<td>.22*</td>
<td></td>
</tr>
<tr>
<td>Bully and Attack</td>
<td>1.46</td>
<td>0.69</td>
<td>.19*</td>
<td></td>
</tr>
<tr>
<td>Self Aggrandizer</td>
<td>-.23</td>
<td>0.64</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>Detached Protector</td>
<td>-0.14</td>
<td>0.50</td>
<td>-.02</td>
<td></td>
</tr>
<tr>
<td>Punitive Parent</td>
<td>-0.75</td>
<td>0.49</td>
<td>-.12</td>
<td></td>
</tr>
</tbody>
</table>

*Note. $N = 205$. * $p < .05$, ** $p < .01$, *** $p < .001$. IM-PDS = Impression Management Subscale of the Paulhus Deception Scale.*
Chapter Eight. Extending the General Aggression Model: Contributions of DSM-5 Maladaptive Personality Facets and Schema Modes (Empirical Study Three)

8.1 Preamble to Empirical Study Three

This chapter presents the final empirical study of the thesis, and extends those findings emerging in Chapters Six and Seven. In light of methodological limitations and criticisms regarding the role of personality and EMS within the GAM, this study sought to determine whether consideration of maladaptive personality facets and schema modes, alongside GAM-delineated aggressive scripts, normative beliefs supportive of aggression and anger, improves the prediction of aggression history in a sample of offenders. The central DSM-5 maladaptive personality facets and schema modes proposed to underlie differences in aggression propensity, and receiving empirical validation in Chapters Six and Seven, respectively, were included within the present study. Since a finding emerging from Chapter Seven was that maladaptive cognitions as conceptualised by Young and colleagues (2003) EMS framework were not significantly related to aggression, once the effects of schema modes were accounted for, the relationships between EMS and aggression and their connections to GAM constructs were not examined. The theoretical and clinical implications of these findings are considered. Empirical Study Three functions to address overarching thesis aim three.

Empirical Study Three, titled 'Extending the General Aggression Model: Contributions of DSM-5 Maladaptive Personality Facets and Schema Modes' has been submitted for publication to the journal of Psychological Assessment. This is a peer-reviewed journal that publishes both integrative reviews and empirical articles
CHAPTER EIGHT: EMPIRICAL STUDY THREE

cconcerning assessments conducted in the broad field of clinical psychology. The current impact factor of this journal is 2.901 (Thomson Reuters, 2016). The format of this manuscript is consistent with the requirements of *Psychological Assessment*. For ease of reading, manuscript pagination has been replaced with thesis pagination. However, sections of this article have not been numbered.
8.2 Author Indication Form for Empirical Study Three

Swinburne Research
Authorship Indication Form
For PhD (including associated papers) candidates

NOTE
This Authorship Indication form is a statement detailing the percentage of the contribution of each author in each associated ‘paper’. This form must be signed by each co-author and the Principal Coordinating Supervisor. This form must be added to the publication of your final thesis as an appendix. Please fill out a separate form for each associated paper to be included in your thesis.

DECLARATION
We hereby declare our contribution to the publication of the ‘paper’ entitled: EXTENDING THE GENERAL REGRESSION MODEL CONTRIBUTIONS OF DON’S MALADAPTIVE PERSONALITY FACTS AND SCHEMATIC MODELS

First Author
Name: RYUSH DUNNE Signature: 
Percentage of contribution: 20% Date: 16/01/2017
Brief description of contribution to the ‘paper’ and your central responsibilities/role on project: Reviewed literature, designed research questions, secured ethics, data collection, conducted statistical analysis of data, prepared manuscript

Second Author
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Brief description of your contribution to the ‘paper’: Assistance with statistical analysis, critically revised and edited manuscript

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Name: MICHAEL DUFFENJ Signature: 
Percentage of contribution: 15% Date: 16/01/2017
Brief description of your contribution to the ‘paper’: Participated in overall program design, assisted in designing research questions, supervised statistical analysis, ethically revised and edited manuscript drafts

Fourth Author
Name: Signature: 
Percentage of contribution: NOT APPLICABLE Date: 16/01/2017
Brief description of your contribution to the ‘paper’:

Principal Coordinating Supervisor: Name: Michael O’Duffen Signature: 
Date: 16/01/2017

In the case of more than four authors please attach another sheet with the names, signatures and contribution of the authors.
Extending the General Aggression Model: Contributions of DSM-5 Maladaptive Personality Facets and Schema Modes

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This manuscript has not been previously published and it has not been submitted simultaneously for publication elsewhere.
Abstract

Although it remains the most contemporary and comprehensive theory of aggression, some suggest that the utility of the General Aggression Model (GAM) is limited by a disproportionate focus on aggression-related cognitive knowledge structures to the detriment of other aggression-related constructs, including personality traits. In addition, the GAM fails to take into account important emotional and coping states related to primary knowledge structures and conducive to aggression. This study examined the relative impact of GAM specified constructs (including aggressive script rehearsal, normative beliefs supportive of aggression, and anger), dysfunctional personality traits (as measured by the Personality Inventory for the DSM-5) and maladaptive emotional and coping states (as conceptualized by Schema Therapy's schema modes) to aggression history. Participants were 208 incarcerated adult male prisoners who completed a battery of self-report psychological tests assessing the aforementioned constructs. Results revealed that GAM-delineated variables and various personality traits and schema modes were significantly associated with aggression; only anger (as measured by the State-Trait Anger Expression Inventory-2-Trait Anger Subscale), the personality trait Risk Taking, and the Enraged Child schema mode uniquely accounted for variance in multivariable modeling. Overall, the results indicate that consideration of maladaptive personality traits, specifically risk taking, and schema modes characterized by intense anger and destructive coping behavior, alongside GAM-delineated constructs, may assist with assessment and treatment of aggressive offenders.
Keywords: Aggression; General Aggression Model; Anger; DSM-5 dimensional maladaptive personality traits model; Risk taking; Schema modes; Emotional states; Coping responses.

Public Significance Statement: This study highlights the benefit of considering personality traits and emotional and coping states (schema modes), alongside aggression-specific constructs, when examining aggression propensity. In particular, assessment and treatment efforts with aggressive offenders should focus on states of anger and rage, risk taking tendencies and destructive coping behaviors.
Extending the General Aggression Model: Contributions of DSM-5 Maladaptive Personality Facets and Schema Modes

Social cognition is arguably the leading theoretical perspective in the field of aggression. Contemporary social-cognitive models take an integrative approach, whereby aggression results from the interplay of person and situation variables, deficits in social information processing (i.e., encoding, interpretation), and the interaction of relevant aggression related knowledge structures (i.e., scripts, normative beliefs and schemas) and emotions (Anderson & Bushman, 2002; Berkowitz, 1989; Crick & Dodge, 1994; Huesmann, 1998; Mischel, 1973; Mischel & Shoda, 1995). Particularly important to individual differences in aggression is a persons' interpretation of events in the present environment, beliefs about appropriate ways of responding to such events, perceived competencies for responding, and expectations regarding the likely outcomes (Anderson & Carnagey, 2004). The General Aggression Model (GAM; Anderson & Bushman, 2002) has been proposed as the most contemporary and advanced social-cognitive theory of aggression because it explicitly organizes and unifies a range of empirically validated concepts, including biological factors, personality traits, social, cognitive and emotional processes, short- and long-term memory processes, and decision processes, which are presumed to underlie aggression (Anderson & Bushman, 2002; Anderson & Carnagey, 2004). Some scholars, however, argue that the utility of the GAM is limited by the heavy focus on the role of aggression-related cognitive knowledge structures (i.e., scripts, normative belief and schema) to the detriment of personality, and other environmental and biological inputs (Ferguson & Dyck, 2012). Additionally, given the strong link between cognition and emotion, others (e.g.,
Dunne, Gilbert, Lee, & Daffern, 2017) have begun to question whether schema is an optimal cognitive construct to understand aggression propensity. Instead, consideration of the related construct of schema modes, which encompasses cognition, emotion and behavioral responses, has been raised as a potential avenue by which to strengthen existing social-cognitive models of aggression. The present study offers a novel approach to extend the utility of the GAM. Specifically, GAM-delineated constructs (aggressive scripts, normative beliefs and anger) were examined alongside maladaptive personality facets from the Diagnostic and Statistical Manual of Mental Disorders - 5th Edition (DSM-5) dimensional-categorical personality disorder (PD) trait system and Schema Therapy's (ST) schema modes, to determine the relative importance of each of the variables to the aggressive behavior of a sample of offenders. By integrating recent developments in personality and schema research with the most contemporary social-cognitive model of aggression, this study aimed to overcome reported inadequacies of the GAM and contribute to refinement of the overall model.

**Overview of the General Aggression Model**

The GAM integrates social learning theory (Bandura, 1971) with numerous existing social-cognitive theoretical frameworks (Berkowitz, 1990; Crick & Dodge, 1994; Huesmann, 1988, 1998; Mischel, 1973; Mischel & Shoda, 1995) to account for the development and maintenance of aggressive behavior (Anderson & Bushman, 2002). At its broadest level, the GAM considers distal and proximate factors and processes of aggression (Anderson & Carnagey, 2004). Distal factors and processes include both biological (e.g., genetic, hormonal) and environmental (e.g., abusive home environment) modifiers that exert their influence over a long period of time.
For the most part, these distal factors influence an individual's personality, which is seen as the sum of a person's knowledge structures (i.e., scripts, beliefs and attitudes, and schemas) and represents an individuals' personal preparedness to aggress. The interplay of distal factors, in turn, operate by both increasing proximate factors and processes that facilitate aggression and decreasing proximate factors and processes that inhibit aggression. Proximate factors and processes are those that are present and active during a current social episode; in this regard, the GAM focuses on proximate inputs (e.g., characteristics of the person and the situation), routes (e.g., affect, cognition and arousal) and outcomes (e.g., appraisal and decision making processes) of the interaction between a person and a situation that lead to behavioral action (Anderson & Bushman, 2002).

**GAM-delineated constructs**

The GAM draws heavily on the activation and application of aggression-related knowledge structures, i.e., behavioral scripts, normative beliefs, and maladaptive schema. These knowledge structures represent proximal factors at the route level that directly influence aggressive behavior (Anderson & Bushman, 2002). Knowledge structures form in memory as sets of strongly interconnected networks of nodes, influence an individual's perception, interpretation and response to their social and physical environment, and can become automatized with use. Importantly, the GAM posits that habitually aggressive individuals hold more aggression related knowledge structures and have stronger network connections between these aggressive constructs (Anderson & Bushman, 2002; Huesmann, 1998). Consequently, when one aggression related construct is activated, constructs with similar meanings and those that are frequently activated in conjunction with the first
construct, develop stronger links and thus are more likely to be activated simultaneously in the future. The GAM also emphasizes the importance of affective states, specifically anger. According to the model, anger contains links to GAM-delineated knowledge structure networks, and can therefore prime and influence the activation of aggressive scripts, normative beliefs and schema relevant to the present social situation (Anderson & Bushman, 2002; Huesmann, 1998).

**Aggressive behavioral scripts**

Aggressive behavioral scripts are acquired through observation and behavior and comprise procedural knowledge to assist an individual in predicting events that are about to happen, how a person should respond, and the likely outcomes of certain behaviors (Anderson & Bushman, 2002). Essentially, they act as a mental blue print for enacting aggression. Frequent mental rehearsal and reinforcement of aggressive scripts results in entrenchment and increased accessibility. In non-clinical (Nagtegaal et al., 2006), clinical (Grisso et al., 2000; Podubinski et al., 2017) and forensic populations (Gilbert & Daffern, 2011; Gilbert et al., 2015; Nagtegaal et al., under revision) aggressive script rehearsal has been associated with increased aggression propensity ($r$ range = .20 to .47).

**Normative beliefs supportive of aggression**

Normative beliefs supportive of aggression refer to cognitions that influence the perceived acceptability of aggressive behavior; they act as a filter that regulates responses by guiding the search for appropriate behavioral scripts (Huesmann, 1998). According to the GAM, habitually aggressive individuals typically select inappropriate aggressive behavioral scripts, which are subsequently filtered through
normative beliefs that endorse aggression. As a result, aggressive responses are perceived to be favorable (Anderson & Bushman, 2002). Aggression-supportive beliefs have been found to be predictive of physical and verbal aggression in both male and female prison populations (Archer & Haigh, 1997a, $r = .63$ and .58, males and females respectively) and male and female student samples (Archer & Haigh, 1997b, $r = .53$ and .31, males and females respectively). Gilbert and colleagues (2013b) found that positive attitudes towards violence significantly predicted aggression history in a community offender population ($\beta = .23$).

**Maladaptive schemas**

While the GAM focuses heavily on aggressive scripts and normative beliefs, it also posits a role for any cognitive structure that generates uncomfortable cognitive and affective states conducive to aggression and that increase the accessibility of aggressive constructs in memory (Anderson & Carnagey, 2004). The ST model (Rafaeli et al., 2011; Young et al., 2003) has frequently been drawn upon in maladaptive cognition research, with particular reference made to Early Maladaptive Schema (EMS). EMS are self-defeating patterns of core beliefs that develop as a result of exposure to adverse childhood experiences, and imposed on reality or experience to help an individual explain it, to mediate perception, and to guide behavioral responses (Young et al., 2003). While a limited number of studies have demonstrated associations between particular EMS and aggression (Dunne et al., 2017, $r$ range = .17 to .22; Gilbert et al., 2013b, $r$ range = -.15 to .33; Tremblay & Dozois, 2009, physical aggression $r$ range = -.05 to .40 and verbal aggression $r$ range = .09 to .40), Gilbert and colleagues (2013b) found that EMS did not account for a unique portion of variance beyond the effects of aggressive scripts, normative
beliefs, and trait anger. As such, the utility of schema within the GAM has recently been questioned.

Anger

Anger is an important antecedent to aggressive behavior (Daffern & Howells, 2009; Gilbert et al., 2013b; Posternak & Zimmerman, 2002) and a critical route through which GAM-delineated knowledge structures operate (Anderson & Bushman, 2002). Trait anger has been associated with higher rates of aggressive script rehearsal (Gilbert et al., 2013b, $r = .30$; 2015, $r = .30$), normative beliefs supportive of aggression (Gilbert et al., 2013b, $r = .59$; 2015, $r = .57$) and several EMSs (Gilbert et al., 2013b, $r$ range = .24 to .61).

Extending the Utility of the GAM

The GAM and personality

Although the GAM offers clear explanations of the proximate cognitive mechanisms involved in increasing human aggression, critics suggest that the role of personality within the model is not yet well conceptualized (Ferguson & Dyck, 2012). As the model stands, personality is conceived as both a distal and proximate factor that influences aggression, yet there is seldom elaboration on this claim. The lack of elaboration may be attributable to the social cognitive nature of the model, in general, such that specific cognitive knowledge structures are privileged over personality, biological and environmental factors (Ferguson & Dyck, 2012). When personality is mentioned, its role in increasing aggression is, according to Ferguson and Dyck (2012), highly confounded because it is couched in the language of social cognition. That is, within the GAM, personality is construed as an accumulation of
an individual’s knowledge structures (i.e., scripts, beliefs and attitudes, and schemas). Conceptualizing personality as the sum of an individual's knowledge structures also disregards an extensive body of literature regarding the importance of established personality traits and some PDs in predicting aggression (Bettencourt et al., 2006; Blackburn et al., 2003; Coid et al., 2006; Gilbert et al., 2015; Jones et al., 2011; Miller, Lynam, et al., 2003; Miller et al., 2012). Based on these criticisms, it is argued that explicit consideration of personality traits that are known to be associated with aggression, as established in extant personality research, may assist in better explicating the role of personality within the GAM.

To date, one study has examined the role of personality traits, using higher-order Five Factor Model (FFM; Costa & McCrae, 1992) personality trait domains and GAM constructs (i.e., scripts, normative beliefs and anger) in relation to aggression history in an offender sample residing in the community (Hosie et al., 2014). The results demonstrated that the GAM constructs, particularly script rehearsal and trait anger, made the strongest contribution to the understanding of aggression, while the personality trait domains exhibited non-significant relationships with aggression. While Hosie and colleagues (2014) suggest that such findings counter criticisms that the GAM focuses too heavily on knowledge structures, it may be argued that a more fine-grained analysis using personality trait facets, rather than domains, is necessary to fully explicate the influence of personality within the GAM. Furthermore, although general trait models (e.g., FFM) and measures (e.g., NEO-Personality Inventory-Revised; Costa & McCrae, 1992) are frequently utilized to explore the relationship between personality and aggression, a recurrent criticism is that these models/measures do not include enough maladaptive
personality item content to adequately capture personality pathology likely related to increased aggression propensity (De Fruyt et al., 2013).

The latest edition of the DSM features an empirically-based model of maladaptive personality traits in a separate *Emerging Measures and Models* chapter (Section III) (American Psychiatric Association, 2013). This hybrid dimensional-categorical model for PD was developed in response to well-recognized shortcomings and widespread dissatisfaction with the categorical diagnostic scheme (Krueger & Markon, 2014); its addition to the manual is designed to encourage and promote research into the ways in which this new approach could be used to assess maladaptive personality and diagnose PD (American Psychiatric Association, 2013).

The DSM-5 personality traits are organized into five broad maladaptive trait domains: Negative Affect, Detachment, Antagonism, Disinhibition and Psychoticism, that encompass 25 lower-order facets. As a basis for operationalizing the pathological personality traits, Krueger and colleagues (2013b) developed the *Personality Inventory for the DSM-5* (PID-5).

Although the PID-5 has been available since 2013 there has been few studies exploring its relevance to aggression. In a sample of male and female college students, Dowgwillo and colleagues (2016) explored associations between the Section III PD model domains and facets and intimate partner violence (using the Revised Conflict Tactics Scale (CTS-2); Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Results demonstrated that for female participants, CTS-2 Relationship Violence was associated with PID-5 domains of Detachment ($\beta = .16$) and Antagonism ($\beta = .10$), and facets of Callousness ($\beta = .22$), Intimacy Avoidance ($\beta = .13$), Unusual Beliefs and Experiences ($\beta = .10$), and Withdrawal ($\beta = -.11$). For male participants CTS-2 Relationship Violence was associated with PID-5 domains
of Detachment ($\beta = .19$) and Disinhibition ($\beta = .16$), and facets of Irresponsibility ($\beta = .19$), Depressivity ($\beta = .17$), Unusual Beliefs and Experiences ($\beta = .13$), Anxiousness ($\beta = -.11$), and Risk Taking ($\beta = -.13$). The PID-5 facets accounted for a greater portion of variance in CTS-2 Relationship Violence (10.1% and 16.1% for women and men, respectively) than did the five domains (5.8% and 10.6% for women and men, respectively). In an earlier analysis of data from the sample of 208 adult male offenders reported on in the current study, Dunne et al. (in press-b) empirically investigated the relationship between aggression (using the Life History of Aggression-Self-Report-Aggression Subscale (LHA-S-A); Coccaro et al., 1995) and PID-5 trait domains and facets. Although there were non-significant relationships between the DSM-5 domains and aggression, the facets of Hostility ($\beta = .36$) and Risk Taking ($\beta = .18$) were positively related to aggression. Overall, both Dowgwillo and colleagues (2016) and Dunne and colleagues (in press-b) suggest that certain DSM-5 domains and facets are linked to aggression, with a facet-level analysis providing greater predictive utility than domain-level analysis. Accordingly, consideration of DSM-5 maladaptive personality facets, alongside empirically validated GAM-delineated cognitive constructs, may assist in clarifying the role of personality within the GAM and may ultimately enhance the application of the GAM in both research and clinical contexts.

**From maladaptive schema to schema modes**

Although the concept of EMS has been shown to bear relevance to aggression potential, existing research may be confounded by the fact that individuals with PD, who may be at heightened risk of aggression, sometimes experience various EMS at once (Lobbestael et al., 2007). Consequently, it may be...
difficult to identify and isolate specific EMSs responsible for increasing aggression risk. Additionally, ST theory recognizes that certain EMS and coping responses (i.e., aggressive, hostile, dominant, recognition-seeking, manipulative, passive-aggressive or obsessive responses (reflective of schema overcompensation); social or psychological withdrawal, addictive self-soothing, compulsive or stimulation-seeking responses (reflective of schema avoidance); compliant or dependent responses (reflective of schema surrender)) are consistently activated together (Young et al., 2003), yet the latent influence of such coping strategies on aggression potential are not accounted for within the EMS framework. The schema mode conceptualization has emerged as an extension of the ST model (Young et al., 2003). Schema modes are comprised of clusters of activated EMS and behavioral coping responses; they reflect the schema and associated coping responses that are active for a particular individual at any given moment. Triggered by life situations that an individual has become over-sensitized to, schema modes produce intense negative emotional reactions and lead to engagement in rigid, maladaptive coping styles (i.e., schema overcompensation, avoidance or surrender) that take over control of an individual's functioning and behavior (Young et al., 2003). Individual changes in cognition, feelings and behavior are reflected in a shift from one mode state to another, and as that shift occurs, different EMS and coping responses that were previously dormant become activated. Schema modes can be comprised of both maladaptive and healthy features. Young and colleagues (2014) have identified 14 schema modes; six modes center around maladaptive innate child themes, three modes revolve around dysfunctional surrender/avoidant themes, two modes revolve around overcompensatory themes, two modes center around maladaptive internalized parent themes and one mode reflects a healthy adult theme.
Although limited, research is available examining the link between schema modes and aggression. The lack of research in this area may be due, in part, to researchers being less acquainted with the concept of schema modes, as well as the fact that it is quite a complex construct that encompasses many elements. One Dutch investigation examined schema mode progressions in 95 forensic in-patients with a cluster B (e.g. antisocial) PD diagnosis (Keulen-de Vos et al., 2016). Using an adapted version of the Mode Observation Scale (MOS; Bernstein et al., 2009), the researchers retrospectively assessed schema modes from patients descriptions of their crimes found in their case notes and police reports that included victim and witness statements. Analyses revealed that Vulnerable Child \((r = .82)\), Detached Self-Soother \((r = .46)\), Paranoid Overcontroller \((r = .35)\) and Lonely Child \((r = .32)\) modes preceded criminal and violent behavior, whereas Bully and Attack \((r = .71)\), Impulsive Child \((r = .46)\), Predator \((r = .37)\) and Angry Child \((r = .27)\) modes were most often active whilst engaging in criminal and violent behaviors. The findings therefore suggest that schema modes characterized by vulnerability and sensitivity to threat were more often activated prior to violence occurring, whereas modes characterized by anger, dominance and impulsivity were activated to a greater extent during the conduct of violent behavior.

The full version of the SMI (124 items) was used in the current male offender sample to examine associations between EMS, schema modes and aggression history (Dunne et al., 2017). Results revealed that the effects of EMS on aggression became non-significant when schema modes were accounted for, and that schema modes characterized by escalating states of anger, rage and impulsivity (i.e., Enraged Child, Impulsive Child, and Bully and Attack) significantly predicted aggression history. This suggests schema modes were more influential than EMS in explaining variation.
in aggression history, but also, as shown by Keulen-de Vos and colleagues (2016) externalizing and dominance modes may be particularly important for understanding aggression potential.

Overall, research on the contribution of schema modes to aggression is promising. Examination of schema modes, alongside empirically validated GAM constructs and personality traits, has the potential to lead to a more nuanced and substantiated understanding of the problematic cognitions, emotional states and frequently engaged coping mechanisms that result in aggressive behavior.

The Present Study

The present study has three aims, specifically, to a) explore associations between GAM constructs, DSM-5 maladaptive personality facets, and schema modes in an offender population, b) explore the associations between offenders histories of aggression and GAM constructs, DSM-5 maladaptive personality facets and schema modes, and c) determine whether the addition of DSM-5 maladaptive personality facets and schema modes improves the prediction of aggression history over and above GAM constructs alone. The DSM-5 facets of Hostility (i.e., persistent or frequent feelings of anger; anger or irritability in response to minor slights and insults; mean, nasty or vengeful behavior) and Risk Taking (i.e., engagement in dangerous, risky, and potentially self-damaging activities, unnecessarily and without regard to consequences; lack of concern for one's limitations and denial of the reality of personal danger; reckless pursuit of goals regardless of the level of risk involved) were chosen for inclusion in the study since they were found to be significantly related to aggression in a previous analysis of data from the current study sample (Dunne et al., in press-b). Similarly, three schema
modes related to aggression in a previous analyses of data from the current study sample were included, namely Enraged Child, Impulsive Child, and Bully and Attack (Dunne et al., 2017). Briefly, an individual endorsing the Enraged Child mode experiences intense feelings of anger and rage that are often out of control and results in hurting or damaging people or objects (Lobbestael et al., 2007). In order to get his or her own way, an individual in an Impulsive Child mode will act on desires and impulses in a selfish or uncontrollable manner and without regard to possible consequences for the self or others. Finally, an individual high on the Bully and Attack mode will use emotional, physical, verbal or sexual threats, intimidation or aggression in a controlled and strategic manner to ensure personal needs and desires are met (Lobbestael et al., 2007).

It was hypothesized that positive inter-correlations would be found for the GAM constructs (i.e., scripts, normative beliefs and anger), DSM-5 maladaptive personality variables (i.e., Hostility and Risk Taking) and schema modes (i.e., Enraged Child, Impulsive Child and Bully and Attack). It was hypothesized that the GAM constructs, DSM-5 personality facets, and schema modes would be positively associated with aggression history. Finally, it was anticipated that the presence of the DSM-5 maladaptive personality facets would improve the prediction of aggression over and above GAM constructs, and that the addition of schema modes would further improve the prediction of aggression beyond both GAM and DSM-5 personality variables.

Method

The present study comprised the ultimate part of a program of research; one prior investigation focused exclusively on the examination of DSM-5 personality
trait-aggression relationships (Dunne et al., in press-b), while the other explored EMS and schema mode relationships with aggression (Dunne et al., 2017).

Participants

Two hundred and eight male prisoners aged between 18 and 60 years ($M = 34.99$, $SD = 9.35$) were recruited from a remand centre in Melbourne, Australia. The ethnic background of the sample was 71.60% Australian, 6.30% Australian Aboriginal, 4.50% European, 4.40% Asian, 2.90% Maori and 10.30% mixed or other ethnicities. People who were unable to speak English or who were illiterate were ineligible to participate.

Measures

Life History of Aggression-Self-Report-Aggression Subscale (LHA-S-A). The LHA-S-A (Coccaro et al., 1995) is a brief self-report survey that assesses the frequency and severity of an individual's overt aggressive acts (i.e. verbal, indirect, nonspecific fighting, physical assault and temper tantrums) occurring since age 13. It comprises five items, which are rated on a six-point response scale ranging from 0 (never happened) to 5 (happened so many times that I could not give a number). An overall score is produced by summing all items (range = 0 to 25), and higher scores reflect a greater history of aggression. Psychometric data is not currently available for the LHA-S-A; however, the LHA-S-A correlates strongly with the interview version (LHA-A) (E. F. Coccaro, personal communication, May 11, 2014), and therefore the psychometric properties for the LHA-A are presented below. The LHA-A demonstrates good internal reliability ($\alpha = .87$) and test-retest reliability ($r = .80$), and strong to moderate correlations with other measures of aggressiveness.
Coccaro et al., 1997). LHA-A scores relate to official criminal records, the Cormier-Lang System for Quantifying Criminal History-Violence Offences Index (CL-V; Quinsey et al., 2006) and the Violence Rating Scale (VRS; Gilbert et al., 2013a; Robertson et al., 1987), and have been found to reliably quantify the severity and frequency of past aggression (Gilbert et al., 2013a).

**The Schedule of Imagined Violence-Self-Report-Frequency (SIV-S-F).**

The Schedule of Imagined Violence (SIV; Grisso et al., 2000) is a structured set of eight interview questions designed to measure the nature of an individuals' self-reported violent cognitions (i.e., the presence, recency, frequency, chronicity, diversity, seriousness of reported violent thoughts, the target and proximity to the target). With the developer’s permission, the interview-based measure was adapted into a self-report format (SIV-S) and several amendments were made. Given the authors were exclusively interested in the frequency of script rehearsal, as employed by Gilbert and colleagues (2013b), the SIV-S frequency item (SIV-S-F) was selected to denote participants’ previous levels of engagement in aggressive script rehearsal. The original SIV frequency item ("How often have you had these daydreams or thoughts in the past two months") was modified in the SIV-S-F to read ("How often do you have thoughts about hurting or injuring other people each week?"). The timeframe of one week was selected as it was deemed a more feasible time period for participants to be able to accurately recall the frequency of their script rehearsal. Additionally, the Likert response scale was removed and participants were requested to rate their responses on a continuous scale (range = 0 to 100). This modification was undertaken in an attempt to develop a more sensitive measure of the frequency of script rehearsal.
The Measures of Criminal Attitudes and Associates-Attitudes to Violence Subscale (MCAA-AV). The MCAA-AV (Mills & Kroner, 2001; Mills et al., 2002) is a 12-item, self-report questionnaire designed to measure an individual's level of endorsement of attitudes that are supportive of violence. Items are rated as either "Agree" or "Disagree" and a total score is produced by summing the number of "Agree" items (range = 0 to 12). A higher MCAA-AV total score reflects greater endorsement of violent attitudes. The MCAA-AV has demonstrated good internal consistency ($\alpha = .78$) and test-retest reliability (ICC = .74) (Mills & Kroner, 2001), and shows predictive validity for violent recidivism in offenders (Mills et al., 2004).

The State-Trait Anger Expression Inventory-2-Trait Anger Subscale (STAXI-2-T-Ang). The STAXI-2-T-Ang (Spielberger, 1999) is a 10-item, self-report questionnaire that assesses an individual's disposition to experience angry feelings and their tendency to respond with anger across a range of situations. Items are rated on a four-point scale ranging from 1 (Almost Never) to 4 (Almost Always), and summed to produce a total score (range = 10 to 40), with higher scores representing higher levels of trait anger. The STAXI-2-T-Ang has demonstrated good internal consistency in both normal adults ($\alpha = .84$ to .86) and psychiatric patients ($\alpha = .87$), good test-retest reliability ($r = .78$ to .82) (Spielberger, 1999), and strong convergent validity ($r = .75$) (Culhane & Morera, 2010).

Personality Inventory for the DSM-5 (PID-5). The PID-5 (Krueger et al., 2013b) is a self-report questionnaire that assesses five broad trait domains of Negative Affect, Detachment, Antagonism, Disinhibition and Psychoticism. It comprises 220 items that measure the 25 maladaptive personality trait facets (each of
which vary in length from 4 to 14 items). Items are rated on a four-point response scale ranging from 0 (very false or often false) to 3 (very true or often true). Higher total trait scores reflect greater personality dysfunction. In both an outpatient and a community sample, the PID-5 facets of Hostility (outpatient $\alpha = .87$ and community $\alpha = .87$) and Risk Taking (outpatient $\alpha = .88$ and community $\alpha = .89$) demonstrated good internal consistencies (Watson et al., 2013).

**Schema Mode Inventory, Version 1.1 (SMI).** The SMI (Young et al., 2014) is a self-report questionnaire containing 124 items that are associated with 14 schema modes. Items are rated on a six-point response scale ranging from 1 (never) to 6 (always). An average schema mode score is calculated by dividing the scale sum score by the number of items that refer to the particular schema mode (range = 1 to 6), with higher scores reflecting greater endorsement of the schema mode. Psychometric properties for the SMI Version 1.1 are yet to be published, however a 118 item version of the SMI has demonstrated good to excellent internal consistency for the Enraged Child ($\alpha = .92$), Impulsive Child ($\alpha = .89$) and Bully and Attack ($\alpha = .81$) modes (Lobbestael et al., 2010). Adequate test-retest reliability of the three separate modes have been reported, with intraclass correlations (ICC) ranging from .78 (Impulsive Child) to .86 (Bully and Attack), and convergent and divergent validity has also been supported (Lobbestael et al., 2010). The decision was taken to use the 124-item version in the present study as it is the most recent version published by the Schema Therapy Institute.

**The Impression Management Subscale of the Paulhus Deception Scale (IM-PDS; Paulhus, 1999).** The IM-PDS is a 20-item, self-report measure designed
to assess the tendency to present an overly inflated self-description. Participants rate themselves on a five-point Likert scale ranging from 1 (not true) to 5 (very true). Item responses are summed to produce a total IM-PDS score, which is subsequently converted into a T-score (range = 29 to 90). Higher scores reflect a greater likelihood of an inflated self-description. The IM-PDS demonstrates excellent internal consistency with prison entrants ($\alpha = .86$) and correlates strongly with other measures of socially desirable responding (Paulhus, 1999).

**Ethics Approval and Procedure**

This study was approved by the Victorian Department of Justice Human Research Ethics Committee and the Swinburne University Human Research Ethics Committee. Participants were recruited voluntarily at an induction session for new prisoners and by posters and flyers placed in the common areas in the remand centre units. After providing written informed consent, participants completed the study measures in groups of up to five remandees under the supervision of a doctoral student. Participants were offered a certificate of participation for their time.

**Statistical Analyses and Data Preparation**

Data were analyzed using IBM SPSS Statistics Version 23.0 and the hypotheses were addressed using descriptive statistics and univariate and multivariable parametric tests. Partial correlation analyses were used to determine if positive associations existed between aggression, GAM constructs, personality facets and schema modes, while controlling for age and IM-PDS; age and IM-PDS were related to aggression history and all independent variables. To examine the unique associations between the independent variables and aggression history, and the
extent to which the personality facets and schema modes improved the explanation of aggression history, the two covariates and eight independent variables were incorporated into a hierarchical multiple regression analysis. Specifically, age and IM-PDS were entered in Step 1, the GAM variables were entered in Step 2, the personality variables were entered in Step 3, and finally the schema modes were entered in Step 4 of the regression.

Prior to analysis, data were examined for accuracy, missing values, and outliers. A random check of 21 participants’ entered data showed data entry to be accurate. Given less than five percent of items were missing from the dataset and a non-significant Little's MCAR test, $\chi^2(1733) = 1660.48, p = .89$, revealed that data were missing completely at random (Little, 1988), the decision was taken to impute missing data using the expectation maximization algorithm, which provides unbiased parameter estimates and improves statistical power of analyses (Enders, 2001). Missing data were imputed using Missing Values Analysis in SPSS 23.0. Six univariate outliers were detected (two on the Bully and Attack schema mode and four on the SIV-S-F), as indicated by a z-score greater than 3.29. As the outliers were deemed to be a legitimate part of the sample and, given that in a large sample size a few scores in excess of 3.29 are expected, the decision was taken to retain the outliers and change the scores to one unit larger than the next most extreme score in the distribution (Tabachnick & Fidell, 2013). Follow up analyses showed no further univariate outliers on the Bully and Attack schema mode (no z-scores greater than 3.29), however, additional univariate outliers were revealed on the SIV-S-F.

Consequently, in order to reduce the impact of univariate outliers and improve normality, linearity and homoscedasticity, the SIV-S-F was logarithmically transformed (SIV-S-F(Log)).
Results

Table 1 describes the mean, standard deviation, range and internal reliability statistics for the LHA-S-A, IM-PDS, and the GAM, maladaptive personality and schema mode variables. All variables demonstrated acceptable internal reliabilities. Results of the two-tailed partial correlation analyses are presented in Table 2. With the exception of the MCAA-AV and the Impulsive Child mode, all independent variables demonstrated significant positive inter-correlations, after controlling for age and IM-PDS. Further, all eight independent variables demonstrated a significant positive correlation with LHA-S-A, after controlling for age and IM-PDS.

Prior to finalizing the hierarchical multiple regression model assumptions were tested. Regarding multicollinearity, although STAXI-T-Ang, Hostility and Enraged Child demonstrated inter-correlations greater than 0.70 (see Table 2), the Tolerance values for each of the three variables were above the recommended cut off point of 0.20 (Menard, 2002) and therefore the variables were retained within the regression model. One case was identified as a multivariate outlier, as indicated by a Mahalanobis Distance value greater than 29.59 (Tabachnick & Fidell, 2013). Examination of the studentized residuals showed that 95.19% of cases had values within ± 1.96, 99.52% of cases had values within ± 2.58 and 100% of cases had values within ± 3.29. All values for Cook’s Distance and standardized DFBeta for the constant were less than 1 and all Leverage values were less than 0.20, suggesting no influential cases. To further check whether this case was having an undue influence on the hierarchical multiple regression, the analysis was first conducted with the full sample \( n = 208 \), and then conducted again with the relevant case removed \( n = 207 \). Given removal of the case resulted in an increase in the standard error for the regression model, lower tolerance levels for some predictor variables, and
negligible improvements in the overall variance explained in $R^2$ and the predictor coefficients, the decision was taken to include the case in further analyses. Additional preliminary analyses revealed no violations in the assumptions of linearity, normally distributed residuals and homoscedasticity.

Table 3 displays the unstandardized beta coefficient, 95 percent confidence interval, Beta, and $R^2$ change values of the hierarchical multiple regression. Age and IM-PDS were entered at Step 1, explaining 22.00% of the variance in LHA-S-A, adjusted $R^2 = .21, F(2, 205) = 28.87, p < .001$. The addition of the GAM variables in Step 2 significantly increased the explanation of variance in LHA-S-A, $F$ change (3, 202) = 26.95, $p < .001$, and explained 44.30% of total variance in LHA-S-A, adjusted $R^2 = .43, F(5, 202) = 32.10, p < .001$. At Step 2, IM-PDS and STAXI-2-T-Ang uniquely predicted higher aggression scores. The addition of the two DSM-5 maladaptive personality facets in Step 3 significantly increased the explanation of variance in LHA-S-A, $F$ change (2, 200) = 5.61, $p = .004$, and explained 47.20% of total variance in LHA-S-A, adjusted $R^2 = .45, F(7, 200) = 25.58, p < .001$. At Step 3, IM-PDS, STAXI-2-T-Ang and Risk Taking uniquely predicted higher aggression scores. Finally, in Step 4, the inclusion of the three schema modes significantly increased the explanation of variance in LHA-S-A, $F$ change (3, 197) = 3.04, $p = .03$, with the final model explaining 49.60% of the variance in LHA-S-A, adjusted $R^2 = .47, F(10, 197) = 19.37, p < .001$. In the final model, IM-PDS, STAXI-2-T-Ang, Risk Taking and Enraged Child uniquely predicted higher aggression scores.

**Discussion**

This is the first study to (a) examine inter-correlations among GAM constructs, DSM-5 maladaptive personality facets and schema modes, (b)
concurrently investigate the role of GAM, DSM-5 personality and schema mode variables to the prediction of aggression, and (c) determine whether the addition of personality facets and schema modes improve the prediction of aggression over and above GAM constructs alone. The hypothesis that GAM-specified variables, DSM-5 personality facets and schema modes would demonstrate positive inter-correlations was largely supported. After controlling for age and impression management, the GAM constructs (e.g., scripts, normative beliefs and anger) were significantly positively associated with the DSM-5 maladaptive personality facets. The strength of these relationships varied, with Hostility ($r$ range = .36 to .71) demonstrating stronger associations with the three GAM variables than Risk Taking ($r$ range = .22 to .31). These findings extend past research (e.g., Hosie et al., 2014) by connecting maladaptive personality trait facets, as conceptualized by the new dimensional trait model of PD, to key aggression constructs. Regarding GAM-schema mode associations, trait anger was strongly associated with all three schema modes, while aggressive scripts were moderately associated with the Enraged Child and Bully and Attack modes and weakly associated with the Impulsive Child mode. Normative beliefs supportive of aggression were moderately associated with the Enraged Child and Bully and Attack Modes, however, a non-significant association was found with the Impulsive Child mode. Finally, consistent with Bach and colleagues (2016), Hostility and Risk Taking were positively associated with the Enraged Child, Impulsive Child and Bully and Attack schema modes, and again these associations were stronger for Hostility ($r$ range = .58 to .70) than Risk Taking ($r$ range = .30 to .42).

It was hypothesized that all GAM, personality, and schema mode variables would be positively associated with aggression history. This hypothesis was
supported (strongest associations occurring between aggression and the Enraged Child mode, followed by aggression and trait anger) and is consistent with prior findings by Gilbert and colleagues (2013b) and Dunne and colleagues (2017; in press). However, when the GAM specified constructs were entered simultaneously into the regression model in Step 2, trait anger was the only GAM variable to significantly predict aggression history, with this effect remaining significant once the personality facets and schema modes were accounted for. When the personality facets were entered into Step 3 of the regression analysis, Risk Taking was the only personality variable to significantly predict aggression history, and this effect remained significant in the model once schema modes were accounted for. When the three schema modes were entered into the final step of the regression model, the Enraged Child mode was the only schema mode to demonstrate a unique relationship with aggression history. Finally, our third hypothesis, that the presence of DSM-5 personality traits and schema modes would improve the prediction of aggression over and above GAM constructs alone, was supported. This suggests that personality traits and emotional and coping states should be considered alongside relevant GAM-delineated cognitive constructs in exploring why aggression occurs.

It is important to consider the way in which risk taking, trait anger and the Enraged Child schema mode may operate within the context of the GAM to increase aggression propensity. As noted, according to the GAM, distal factors and processes (i.e., biological and environmental modifiers, personality) influence proximate factors and processes. At the proximate level, person and situation factors (i.e., inputs) are presumed to activate cognitive, affective and arousal states (i.e., routes), which in turn influence aggression by means of appraisal and decision-making processes (i.e., outputs) (Anderson & Bushman, 2002). Appraisal and decision
making processes include both automatic, referred to as "immediate processes", and more controlled processes, referred to as "reappraisal". Based on the outcomes of these immediate appraisals or reappraisals, people engage in either impulsive or thoughtful behaviors. The relationship between aggression and risk taking may be conceptualized in terms of both distal and proximate causes and processes. As a result of early biological and environmental influences, aggressive individuals may be more likely to develop a general risk taking disposition (i.e., a distal risk factor) that increases their personal preparedness to aggress overtime and across situations. When these risk taking traits are activated in the present social situation, their influence on aggressive behavior may be best understood in terms of both GAM inputs and outputs. At the input level, the GAM emphasizes that person and situational factors are not mutually exclusive, instead they interact within the present situational context to increase aggression propensity. This notion is consistent with person-environment interaction principles (Roberts et al., 2008), which propose that individuals are attracted to environments that are consistent with their personality. Accordingly, individuals high in risk taking, and with an inclination towards persistent hostile thinking and angry affect (as evidenced in the present study by significant positive correlations between Risk Taking, Hostility and trait anger), may be more inclined to select and remain in high risk environments, such as those where the potential for aggression and violence is high (e.g., a nightclub or busy entertainment precinct), because these environments are consistent with and facilitate the expression of their primary risk taking tendencies (Anderson & Carnagey, 2004). We further speculate that when an individual high in risk taking is in high risk situations, aggression related cognition, affect and arousal are more likely to be activated (a notion supported by the present studies significant positive associations
between risk taking and GAM-delineated constructs). Consequently, appraisals are likely biased by the aggression-related content of the present internal state (Anderson & Bushman, 2002). High risk takers may also experience additional unique biases in appraisal and decision making processes. Specifically, research has shown that high risk takers (a) perceive less risk across new situations (Zuckerman & Kuhlman, 2000), which may ultimately lead to denial of the reality of personal danger and unrealistic expectations about personal limitations, and (b) focus on the immediate, beneficial consequences of their behavior while discounting the longer-term outcomes to themselves and others (Zuckerman & Kuhlman, 2000). In line with Joireman and colleagues (2003), these appraisal and decision making deficits, in combination with increased rates of hostility, anger and arousal, may lead to an increased preparedness to act aggressively without consideration of the dangers to the self or others or long term adverse consequences. Overall, the GAM framework highlights that the personality facet of risk taking may be relevant to aggression potential by serving as both a predisposing and precipitating personality characteristic and a marker for compromised appraisal and decision making processing.

A vast array of literature demonstrates that trait anger is closely linked to aggressive behavior (Howells, 2009a). According to the GAM, anger stimulates aggression by (a) interfering with higher level cognitive processing, (b) serving as a cue for hostile biases, and (c) priming the retrieval and activation of GAM-delineated knowledge structures (a notion supported by the significant positive correlations between these variables in the present study) (Anderson & Bushman, 2002). Consistent with Gilbert and colleagues (2013b), the present results suggest that higher trait anger has the strongest relationship with aggression, as compared
with other GAM-specified constructs; however, in contrast to the present study, Gilbert and colleagues (2013b) found that normative beliefs and script rehearsal were also significantly related to aggression history. We suggest the non-significant relationship between script rehearsal and aggression is best explained by the measurement approach adopted in the current study. A number of modifications were made to the SIV in the present study. Firstly, the SIV (interview version) was adapted into a self-report format (SIV-S-F). This change in format meant that the researchers were unable to establish rapport with the participants or verbally normalize the experience of aggressive thoughts so as to encourage individuals to be as candid as possible with regard to their aggressive scripts. Consequently, the SIV-S-F may have inadvertently led to the denial or minimization of aggressive script rehearsal. Secondly, the period of retrospective recall was reduced from two months to one week. The frequency with which participants engaged in aggressive script rehearsal over a period of one week within a remand environment may not have been indicative of the frequency with which they engage in script rehearsal in the community or other contexts where many of their aggressive behaviors have occurred. Future investigations may benefit from a more precise measure of aggressive script rehearsal; either by using the SIV in a semi-structured interview format as per Gilbert and colleagues (2013b), or where participants employ self-monitoring to record when they are engaging in aggressive script rehearsal.

Regarding the relationship between schema modes and aggression, the Enraged Child mode remained a significant predictor in multivariable analysis. According to the ST model, the Enraged Child mode is triggered in response to core emotional needs not being met or perceptions of unfair treatment (e.g., abandonment, abuse, deprivation or subjugation) (Lobbestael et al., 2007). When activated, an
CHAPTER EIGHT: EMPIRICAL STUDY THREE

individual experiences intense feelings of anger and rage that results in harm or
damage to people or objects. The displayed rage is out of control, impulsive, and has
the goal of destroying the aggressor, sometimes literally (Lobbestael et al., 2007).
Within the context of the GAM, the Enraged Child schema mode conceptualization
likely plays an important role at the input level; here, an oversensitivity to particular
triggers (e.g., perceptions of abandonment) may represent one kind of predisposing
person factor that, if activated in the current social encounter, can lead to intense
anger and rage and concurrent activation of aggression related cognition (scripts,
normative beliefs, schema) and arousal (GAM routes). In addition to serving as a
predisposing risk factor, we speculate that the Enrage Child mode may represent the
'state' that an individual enters once the present internal state, i.e., cognition, affect
and arousal (GAM routes), has been activated and when appraisal and decision
making processes (GAM outputs) have been compromised. Specifically, when in an
Enraged Child 'state', we suggest that appraisal processes are characterized by
automatic, unconscious processing dominated by rage-related affect, high arousal,
hostile cognition, beliefs in the legitimacy of aggression, aggressive scripts, goals
related to aggression and intentions to carry out aggression-related acts. Appraisals
may also be biased by risk taking tendencies (as indicated by the positive correlation
between the Enraged Child mode and DSM-5 Risk Taking), including denial of the
reality of personal danger, unrealistic expectations about personal limitations, and a
focus on the immediate consequences of behavior. As a result, higher-level cognitive
processing and cognitive resources are probably restricted, such that reappraisal
cannot occur and the immediate appraisal prevails. The biased immediate appraisal
ultimately leads to greater reliance on habitual coping styles, most likely the
overcompensation style, that when activated induces aggressive coping responses
(e.g., attacking other people or destroying objects), rather than thoughtful and considered non-violent responses, to cope with the uncomfortable cognitive and affective state (Anderson & Bushman, 2002; Young et al., 2003). Consequently, the overcompensation schema style becomes reinforced with increased activation and use of overcompensation (aggressive) coping responses. Although the temporal sequencing of this line of reasoning is yet to be established, such a proposition appears consistent with Keulen-de Vos and colleagues (2016) who demonstrated that the anger-related schema mode (i.e., Angry Child) was more often activated during the conduct of violent behavior.

Limitations

The results of the present study should be considered in light of certain limitations. Given this study is cross-sectional in design, our ability to make causal inferences about the role of GAM constructs, maladaptive personality and schema modes to past aggressive behavior is limited. The study sample is also limited in terms of gender with only male offenders participating; studies in larger and more diverse samples would assist in establishing the generalizability of the current findings. Given the study relied entirely on self-report, participant endorsement of the frequency of their aggression related cognitions and behaviors may have been biased by (a) their ability to recall these events or (b) beliefs that had developed during the time elapsed between aggressive thoughts/behaviors that lead to feelings of shame or guilt and subsequent denial of such thoughts/behaviors (O'Leary, Malone, & Tyree, 1994). The Cronbach alpha values for the measures included within this investigation (α = .80 to .93) suggested acceptable consistency of responding within this adult offender sample. Beyond these psychometric properties
presented, the PID-5 and SMI have not been validated in forensic contexts. Studies examining the statistical properties in forensic populations are required to establish the clinical utility of both measures within offender populations; this will assist in strengthening the generalizability of the present findings. Finally, uncertainty continues to exist as to whether social desirability should be controlled for within offender populations. Some suggest that removal of social desirability may undermine the measurement of the construct of interest, thereby reducing the relationship between the predictor and outcome variable from significant to non-significant (Mills & Kroner, 2005), while others suggest that socially desirable responding functions more as a personality trait of its own than as a moderator of validity (Mills et al., 2003). In any case, given socially desirable responding has been recognized as a potential difficulty in forensic contexts (Baker & Beech, 2004), e.g., a negative relationship between impression management and endorsement of antisocial attitudes has been identified for some offenders (Mills & Kroner, 2006), and the current data suggested a direct relationship between impression management and ratings of aggression, the decision was taken to adjust for social desirability within analyses.

**Implications**

This study gives rise to a number of important implications. At present, given personality explanations within GAM literature are embedded within social-cognitive language (e.g., personality is conceptualized as the accumulation of an individuals' knowledge structures), it is difficult to clearly articulate how personality operates within the model to increase aggression propensity. By examining the relationship between aggression and established personality facets, this research
highlights that consideration of risk taking traits, in addition to an individuals' knowledge structures, is paramount to understanding the aggressive behavior of offenders. Specifically, within the context of the GAM, this research highlights that risk taking traits may (a) operate as a predisposing characteristic that makes an offender more likely to aggress, (b) lead an offender to seek certain situations that are consistent with their primary tendencies and which are conducive to aggression, and (c) exert influence during the present situation by activating the present internal state (cognition, affect and arousal) and compromising appraisal and decision processes. Replication of the present personality findings in male and female, and non-clinical, clinical and forensic samples will further corroborate the role of personality within the GAM.

The present findings highlight that Enraged Child emotional states and coping styles/responses are important to understanding aggression. Although a previous study with the current sample has identified the importance of three EMS, namely Mistrust, Entitlement and Insufficient Self Control, to the Enraged Child mode (Dunne et al., 2017), further research is needed to (a) replicate the findings in other clinical populations (e.g., youth, female, and mentally disordered offenders), and (b) identify the habitual coping styles/responses that group together with EMS to form the Enraged Child mode. This could be achieved through qualitative methodologies (e.g., in-depth semi-structured interviews) within violent offender populations who could be invited to discuss the operation and activation of the Enraged Child mode in relation to aggressive and violent behaviors or through a self-report study utilizing the Young Schema Questionnaire (Young, 2014d), the Young-Rygh Avoidance Inventory (Young & Rygh, 2014), the Young Compensation Inventory (Young, 2014b) and the SMI or MOS. It is important to note, however,
that the latter study may be limited by the inventories currently available to capture schema coping styles. For instance, although avoidance and compensation coping inventories are currently available, a schema surrender inventory is not. The avoidance and compensation coping inventories are not currently accompanied by a scoring approach, therefore uncertainty remains as to whether the coping styles are broken down into coping response categories, or if overarching coping style scores are obtained. Given the potential limitation of the schema coping inventories, other coping inventories that capture additional general coping styles/strategies that may be relevant to aggression, could be utilized in future research.

Further research should examine whether schema coping styles and general coping styles are relevant to aggression when considered alongside other theoretically informed and empirically validated aggression constructs. We suspect that aggression-related coping styles may be associated with other constructs included in the GAM, however the unique contribution of habitual coping styles to aggression propensity remains unclear. This line of research may help to broaden the scope of the GAM to other aggression related variables.

From an applied perspective, the present study highlights that assessment of maladaptive personality characteristics and cognitive, affective and coping states are relevant to violence risk assessment. In particular, systematic assessment of anger, risk taking tendencies, and Enraged Child mode characteristics may improve the individual formulation of violence propensity in incarcerated populations and help to identify those individuals that are more likely to act aggressively. For offenders with elevated levels of anger, high risk taking tendencies and maladaptive schema and coping responses linked to the Enraged Child mode, treatment targeted at a reduction in these risk factors may be beneficial. At present, many contemporary group-based
violent treatment programs focus on anger management skills, whereby such interventions seek to improve the participant’s capacity to regulate and control their negative affective state (Howells et al., 2008). Fewer programs, however, focus on reducing risk taking tendencies. Given the key features of risk taking include deficits in risk appraisal, lack of consideration of future consequences, and an unwillingness to consider the impact that actions may have on the self or other people, one avenue to strengthen existing treatment programs may be to include approaches that focus on improving consequential thinking and perspective taking and aligning the clients present behaviors with long term goals and personal values. Interventions aimed at targeting the Enraged Child schema mode may also enhance treatment efficacy; however, before this can occur, additional research will need to be conducted to identify those EMS and coping responses that produce the Enraged Child mode, and would therefore serve as primary treatment targets.

Within treatment settings, the schema mode model has the potential to serve as a useful conceptual framework for clinicians to communicate and work collaboratively with aggressive clients. For instance, the mode model facilitates the identification of underlying psychological triggers (e.g., oversensitivity to perceptions of unfair treatment) that are present in the current situation and make a client susceptible to activation of aggression-related cognition, affect and arousal. Moreover, it brings attention to the key cognitive, emotional and coping factors responsible for producing, intensifying and maintaining aggression experiences. More generally, the ST framework highlights particular treatment techniques that may be usefully incorporated into existing violence treatment programs. For instance, contemporary group-based violent offender treatment programs tend to rely heavily on the use of cognitive and behavioral techniques to build a range of skills,
CHAPTER EIGHT: EMPIRICAL STUDY THREE

e.g., anger management skills, problem solving skills, and interpersonal, social or parenting skills (Howells & Day, 2002), and similarly, ST emphasizes the importance of cognitive-behavioral techniques to build awareness and insight into unhealthy EMS and schema modes (Young et al., 2003). However, ST also emphasizes that meaningful changes in behavior can only occur once schema awareness is consolidated on a more emotional level, and in order to achieve this experiential techniques (e.g., chair-work and imagery rescripting) are considered critical (Keulen-de Vos et al., 2014). For example, when working with a highly aggressive offender, treatment may require the use of (a) cognitive techniques to bring awareness to and modify the EMSs, coping styles, beliefs and scripts linked to mode activation, (b) behavioral techniques to break maladaptive behavioral patterns and teach adaptive coping responses, and (c) experiential techniques to assist the client to vent their rage and appropriately process all vulnerable/negative emotions connected with the Enraged Child mode (Young et al., 2003). Additionally, ST emphasizes the importance of the client-therapist relationship. Specifically, the unique approaches of limited reparenting (i.e., meeting the needs of clients, within the appropriate bounds of the therapeutic relationship, that were not met by their parents in childhood) and empathic confrontation (i.e., demonstrating empathy for the client's schemas as they emerge towards the clinician, while also showing clients that their reactions to the clinician are often distorted or dysfunctional in ways that reflect their schemas and coping styles) may assist in creating a corrective emotional experience and thus reduce the clients tendency to activate GAM related constructs, select habitual coping responses and enact the Enraged Child mode (Young et al., 2003). Overall, consistent with research suggesting that ST is being increasingly implemented in forensic settings (Bernstein et al., 2012; Keulen-de Vos et al., 2014),
greater attention to schema modes and ST techniques could be undertaken in conjunction with other traditional therapeutic frameworks commonly seen in violence reduction programs, and could form a key foundational module in a multi-modular treatment program (Dunne et al., 2017). This proposition is in line with research on offender programs suggesting that multi-modal interventions that favor cognitive-behavioral techniques, a skills-oriented delivery style, and include thorough theoretical and empirical foundations (like that of ST and related schema mode research) are more likely to produce more effective outcomes (Lösel, 2001).

Finally, although trait anger, risk taking and the Enraged Child schema mode are clinically useful for understanding offender aggression at the group level, assessment and intervention aimed at the individual level should ensure a sufficient focus on other constructs that are empirically linked to aggression (i.e., aggressive script rehearsal and normative beliefs). Furthermore, although this study focused exclusively on personality and aggression-related psychological constructs, this does not imply that consideration of social, environmental and lifestyle factors is not crucial to understanding and treating aggression risk. In fact, there is a wealth of literature supporting the need to consider factors such as poverty and poor education (Carpenter & Nevin, 2010) and the extent of association with others who are involved in criminal and violent activities (Mills et al., 2002; Mills et al., 2004). It will therefore remain important to consider these aspects, along with the personality, cognitive, affective and coping factors delineated within the present study, during assessment and treatment to determine their relevance to an individual's aggressive behavior.
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References


CHAPTER EIGHT: EMPIRICAL STUDY THREE


Chapter eight: empirical study three


CHAPTER EIGHT: EMPIRICAL STUDY THREE


Table 1

*Mean (M), Standard Deviation (SD), Range and Internal Reliability Statistic (α) for LHA-S-A, IM-PDS and GAM, Maladaptive Personality and Schema Mode Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>α</th>
</tr>
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<tbody>
<tr>
<td>LHA-S-A</td>
<td>14.50</td>
<td>6.05</td>
<td>1.00 - 25.00</td>
<td>.87</td>
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<tr>
<td>IM-PDS</td>
<td>52.79</td>
<td>9.45</td>
<td>31.00 - 83.00</td>
<td>.70</td>
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<tr>
<td>STAXI-T-Ang</td>
<td>21.99</td>
<td>6.78</td>
<td>10.00 - 40.00</td>
<td>.91</td>
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<td>MCAA-AV</td>
<td>5.30</td>
<td>3.83</td>
<td>.00 - 12.00</td>
<td>.89</td>
</tr>
<tr>
<td>SIV-S-F(Log)</td>
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<td>.57</td>
<td>.00 - 2.00</td>
<td>*</td>
</tr>
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<td>Hostility</td>
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<td>.87</td>
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<td>Risk Taking</td>
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<td>.89</td>
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<td>0.94</td>
<td>1.00 - 5.89</td>
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<td>Bully and Attack</td>
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### Table 2

*Partial Correlations*

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<td>1. LHA-S-A</td>
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<tr>
<td>2. STAXI-2-T-Ang</td>
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<td>-</td>
<td></td>
<td></td>
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<td></td>
</tr>
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<td>3. MCAA-AV</td>
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<td>.31***</td>
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<td>.38***</td>
<td>.34***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>.48***</td>
<td>.71***</td>
<td>.36***</td>
<td>.40***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Risk Taking</td>
<td>.32***</td>
<td>.25***</td>
<td>.31***</td>
<td>.22**</td>
<td>.38***</td>
<td>-</td>
<td></td>
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<td>7. Enraged Child</td>
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<td>8. Impulsive Child</td>
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<td>.58***</td>
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<td>.42***</td>
<td>.59***</td>
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<td>9. Bully and Attack</td>
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<td>.47***</td>
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<td>.33***</td>
<td>.55***</td>
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Table 3

Hierarchical Multiple Regression Unstandardized Coefficient (B), 95% Confidence Interval (CI), Standardized Coefficient (β), and $R^2$ Change

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<th>Predictor</th>
<th>B</th>
<th>95% CI</th>
<th>β</th>
<th>$R^2$ Change</th>
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<td><strong>Step 1</strong></td>
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<td>.22***</td>
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<tr>
<td>Constant</td>
<td>31.51</td>
<td>[26.97, 36.04]</td>
<td>- .12</td>
<td></td>
</tr>
<tr>
<td>Age</td>
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<td>[-0.16, 0.01]</td>
<td>- .12</td>
<td></td>
</tr>
<tr>
<td>IM-PDS</td>
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<td>[-0.35, -0.19]</td>
<td>- .43***</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
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<td></td>
<td></td>
<td>.22***</td>
</tr>
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</tr>
<tr>
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<td>[-0.07, 0.07]</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
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<td>[-.21, -.06]</td>
<td>-.21**</td>
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<tr>
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<td>[.28, .51]</td>
<td>.44***</td>
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<tr>
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<td>[-.20, -.04]</td>
<td>-.19**</td>
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<td>Hostility</td>
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<td>Bully and Attack</td>
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<td>[-1.21, 1.19]</td>
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PART V: INTEGRATED DISCUSSION
Chapter Nine: General Discussion

This chapter integrates the literature review with the findings of the three empirical studies presented in Chapters Six to Eight, and it discusses these findings with respect to the three overarching thesis aims outlined in Chapter One. It reviews several important methodological limitations of the present research and considers the implications of the main findings. Throughout this chapter, the significance of the research and the contribution it makes to the broader scientific literature is emphasised. The chapter closes with suggested avenues for continued research and several concluding remarks.

9.1 Overview and Synthesis of the Main Findings

This thesis addressed a number of salient gaps in the literature by providing a nuanced account of the cognitive constructs, personality traits, and emotional and coping states linked to aggression history in a sample of offenders. Broadly, this research sought to advance the evidence base in three important ways, by: (1) examining the utility of the DSM-5 maladaptive personality trait model to aggression research, (2) concurrently investigating the role of EMS and schema modes to aggression history, and (3) exploring whether the addition of aggression-related DSM-5 maladaptive personality traits and schema modes, in addition to GAM-delineated constructs, improved the prediction of aggression history in a sample of incarcerated offenders. This thesis attempted to help shift the theoretical and empirical focus from an emphasis on aggression-related cognitive knowledge structures largely dominating social-cognitive aggression literature in recent years. It was hoped that this investigation would provide support for a more in-depth and sensitive analysis of additional clinically meaningful personality and schema mode
concepts within the most contemporary and integrative aggression framework. By doing this, this thesis aimed to contribute to the ongoing refinement of aggression theory and provide theoretically sound avenues by which to advance aggression related assessment and treatment efforts.

This thesis included one review paper and three empirical studies that were designed to collectively address the three overarching thesis aims. The first aim was to explore associations between DSM-5 maladaptive personality domains and facets and aggression. In order to address this aim, two important research tasks were undertaken. First, given the paucity of research in this area, a theoretical examination was conducted linking established personality and PD and aggression literature to equivalent DSM-5 maladaptive personality domains and facets. The main finding in relation to this task was that a myriad of DSM-5 domains and facets could reasonably be expected to be associated with aggression, however, the strongest associations were anticipated for DSM-5 domains of Antagonism, Disinhibition and Neuroticism, and facets of Grandiosity, Attention-Seeking and Separation Insecurity (Review Paper One). Second, an empirical investigation was conducted into the relationship between DSM-5 maladaptive personality domains (utilising two separate scoring approaches, i.e., the APA-three facets only and Krueger et al. algorithms) and facets to histories of aggression in an offender sample. Irrespective of the scoring algorithm used, DSM-5 domains were not significantly related to aggression history. Two DSM-5 facets, namely Hostility and Risk Taking, demonstrated significant relationships with aggression history (Empirical Study One).

The second research aim was to concurrently examine the role of EMS and schema modes to aggression in an offender population. The main finding in relation
to this objective was that one EMS (Insufficient Self Control) was related to history of aggression, however this effect became non-significant once schema modes were taken into account in the multivariable model. Importantly, three schema modes (Enraged Child, Impulsive Child and Bully and Attack) were significantly related to aggression history (Empirical Study Two).

The final aim of this thesis was to amalgamate the key findings of the first two empirical studies with key determinants of aggression as specified by the GAM. Specifically, this research aimed to investigate whether two DSM-5 maladaptive personality traits (i.e., Hostility and Risk Taking as indicated by the findings from Empirical Study One) and three schema modes (i.e., Enraged Child, Impulsive Child and Bully and Attack from Empirical Study Two) accounted for additional variance in aggression history, over and above GAM-delineated aggressive scripts, normative beliefs supportive of aggression and trait anger (Empirical Study Three). The key findings in relation to this aim indicated that the addition of the personality and schema mode constructs improved the prediction of aggression, with GAM trait anger, DSM-5 Risk Taking and the Enraged Child schema mode demonstrating significant relationships with aggression history.

The main findings will now be discussed in greater detail within the context of the three broad aims of this research. Rather than merely repeating what has been discussed within the three preceding empirical chapters, this chapter provides an integrated narrative of the central outcomes of this thesis and the added value of the findings to the broader literature on aggression. The narrative is organised according to the two broad themes evident throughout this thesis: (1) the application of maladaptive personality traits to aggression research, and (2) the relevance of schema constructs to aggression research.
9.2 DSM-5 Maladaptive Personality Traits Are Important to Aggression

Research

9.2.1 DSM-5 Personality and Aggression: A Preliminary Theoretical Application

The initial analysis of the available psychological literature in Chapter Three indicated that the DSM-5 maladaptive personality trait model bears important theoretical relevance to aggression (Research Aim One). Given the lack of research examining DSM-5 trait associations with aggression, an important finding of the initial review was that each of the five DSM-5 domains, and most of the facets could reasonably be linked to a higher potential for aggression. Importantly, however, the myriad of findings, and the fact that the strength of the anticipated DSM-5 trait-aggression associations varied considerably across studies, also highlighted the complex and equivocal nature of the personality and aggression relationship.

A further finding emerging from this review was that the size of the empirical bases upon which to generalise to DSM-5 facet-aggression associations differed substantially. It was evident that particular facets (e.g., hostility related facets) tended to have larger empirical bases upon which to draw on within the theoretical examination, while the empirical literature for facets not characteristically considered pertinent to aggressive action (e.g., intimacy avoidance, withdrawal) were (understandably) less well-developed. Personality facets that had less-well developed empirical bases tended to be those that were not encompassed within widely used personality assessment instruments, e.g., the NEO Personality Inventory. As such, accurately capturing these personality facets and exploring their associations with aggression may have been regarded as more difficult and thus neglected. The review therefore highlighted that use of the DSM-5 maladaptive trait
model represented an important avenue by which to build upon the empirical bases of maladaptive facet-aggression associations not adequately explored in extant literature.

Another finding emerging from this review was that there were often limited extant findings relating to aggression and maladaptive variants of the facet of interest. Instead, a number of the anticipated DSM-5 maladaptive personality trait-aggression associations presented relied upon general personality trait-aggression literature, whereby it was presumed that a negative general personality trait association with aggression could be expected to represent the relationship that would emerge for the maladaptive trait counterpart (e.g., low FFM Straightforwardness (frankness in expression) has been linked to aggression, and therefore a comparable association was suggested for DSM-5 Deceitfulness and Manipulativeness). Given the known dimensional nature of personality traits, this was a practical approach to explore DSM-5 trait associations with aggression, and one which was generally bolstered by similar psychopathy-aggression findings presented within the review. Nonetheless, few empirical investigations had opted to utilise pathological personality assessment instruments to explore personality domain and facet relationships with aggression. Finally, only a minority of studies explored personality trait-aggression associations in high risk, aggressive populations. Overall, the theoretical analysis indicated that utilisation of the DSM-5 maladaptive personality trait model had the potential to advance personality-aggression knowledge by providing a theoretically sound maladaptive personality framework upon which to examine these relationships (Research Aim One). As such, an important next step was to empirically examine DSM-5 maladaptive personality
traits in a sample where both higher levels of pathological personality and aggressive behaviour were likely to occur.

9.2.2 DSM-5 Personality and Aggression: Two Empirical Applications

9.2.2.1 DSM-5 Personality Facets Are Important Factors that Help Explain Past Aggression

The theoretical examination of DSM-5 maladaptive personality trait associations with aggression was an important initial task in addressing Research Aim One. In order to build upon the theoretical review and advance the personality-aggression field, the present research also sought to empirically examine relationships between DSM-5 maladaptive personality domains (utilising both the APA-three facets only and Krueger et al. scoring algorithms) and facets and histories of aggression in a sample of incarcerated offenders (Research Aim One). Based on the theoretical examination (Chapter Three), it was hypothesised that each of the DSM-5 domains would demonstrate a significant positive association with history of aggression. Due to the different item content included in the two separate Antagonism domain scoring algorithms, the Krueger et al. Antagonism domain was expected to demonstrate a stronger association with aggression than the APA-three facets only Antagonism domain. The present research found that the strength of the DSM-5 domain-aggression associations were fairly consistent irrespective of the scoring algorithm utilised. In general, DSM-5 domains demonstrated weak, positive associations with aggression, with the exception of the APA-three facets only Antagonism domain, which demonstrated a non-significant association. A more significant finding was that when the effects of the DSM-5 domains were examined independently in separate regression analyses (i.e., domains grouped according to the
scoring algorithm used), none of the domains significantly predicted past aggression. The present study also examined the relationships between DSM-5 maladaptive personality facets and aggression. Given the myriad of potential personality facet-aggression associations identified in the theoretical review, it was anticipated that those facets demonstrating a moderate or greater association with aggression (as based on research on equivalent or similar facets from alternate personality measures) would be related to history of aggression. The present research found that 14 maladaptive personality facets were more prevalent in those offenders with more established histories of aggression. However, when multivariable analyses were conducted only DSM-5 Hostility and Risk Taking were significantly related to past aggression. These findings add to the broader personality-aggression literature by examining combinations of maladaptive personality traits in a high risk offender population and providing empirical support for the utility of two of the DSM-5 maladaptive personality facets in explaining aggression history (Research Aim One).

Importantly, the results of this research correspond with (a) extant personality research highlighting the importance of lower-order facet level personality analyses (Dowgwillo et al., 2016; Samuel & Widiger, 2008), and (b) other empirical studies demonstrating a relationship between aggression and hostility (e.g., Jones et al., 2011; Miller, Lynam, et al., 2003; Miller et al., 2012) and risk taking related traits (e.g., Caspi et al., 1997; Miller et al., 2012; Zuckerman & Kuhlman, 2000). Interestingly, the present DSM-5 Risk Taking finding differed from that of Dowgwillo and colleagues (2016), who found an inverse relationship between DSM-5 Risk Taking and intimate partner violence in an undergraduate student sample. The reasoning behind the disparate results is somewhat unclear, however may be attributable to the notion that aggression directed toward female intimates can be
controlled and deliberate in nature (Chase, O'Leary, & Heyman, 2001). Moreover, although mean age of the undergraduate sample was not presented in the Dowgwillo and colleagues (2016) study, it is possible that the two samples may have differed in terms of age, and the severity of aggression and risk taking may have been greater in the present offender sample. Although speculative, it is also possible that undergraduate intimate partner violence perpetrators may represent a fundamentally different group to those with more pervasive histories of aggression. Overall, the present findings substantiate the role of hostility within social-cognitive theories of aggression (Anderson & Bushman, 2002; Berkowitz, 1990; Crick & Dodge, 1994; Huesmann, 1998) and suggest that consideration of risk taking traits may be important to advancing aggression theory.

9.2.2.2 Integrating DSM-5 Personality Facets within the General Aggression Model Adds to the Prediction of Aggression History

Although direct examination of maladaptive personality-aggression relationships contributes important knowledge to both the study of personality and aggression, in order to advance contemporary aggression theory, it is imperative to consider the way in which aggression-related maladaptive personality traits operate alongside empirically established aggression-related constructs. As highlighted in Chapter Two, the GAM has contributed extensively to knowledge regarding the importance of aggression-related cognitions to aggressive behaviour. Yet the analysis of the available psychological literature revealed that, within the GAM, the conceptualisation of personality is potentially confounded, and the role of personality in increasing aggression propensity is not well understood. As such, the final component of the personality-aggression research within this thesis sought to
explore whether the addition of DSM-5 Hostility and Risk Taking traits improved the prediction of past aggression, beyond that of GAM-delineated constructs (Research Aim Three). In line with the results of Chapter Six (Empirical Study One), it was anticipated that the two DSM-5 traits would account for unique variance in aggression history, once the effects of aggressive scripts, normative beliefs and trait anger were taken into account. The present research found only partial support for this contention. Firstly, with regards to GAM constructs, although aggressive scripts, normative beliefs and trait anger demonstrated significant, positive associations with aggression, trait anger was the only significant predictor of aggression history. Although the role of trait anger in increasing aggression potential has been established (e.g., Bettencourt et al., 2006; Cornell et al., 1999; Fives et al., 2011; Gilbert et al., 2013b), the present findings with regards to aggressive scripts and normative beliefs supportive of aggression are in contrast with prior research (e.g., Gilbert & Daffern, 2011; Gilbert et al., 2013b; Healy & O'Donnell, 2006; Holtzworth-Munroe et al., 2000; Mills et al., 2004; Nagtegaal et al., under revision; Podubinski et al., 2017). With regards to the non-significant script-aggression finding, it is possible that the method of script assessment utilised in the present research was compromised (see Section 9.4, 'Limitations and Methodological Issues of the Present Research'). The rationale behind the non-significant normative beliefs-aggression finding appears more ambiguous. Upon examination, the severity of aggression history and the degree of aggression-related normative beliefs was greater than that of a previous study (e.g., Gilbert et al., 2013b) that demonstrated a significant relationship between these constructs. This therefore suggests that the non-significant finding cannot be attributed to lower rates of these constructs within the present sample. The positive normative beliefs-aggression association identified
within the present research is consistent with, although substantially weaker than, prior investigations (e.g., Gilbert et al., 2013b). Importantly, however, it was the weakest of all the correlations between aggression and the other independent variables within the current research. As such, it is likely that the unique relationship between normative beliefs and aggression fell away due to the effects of the other more strongly associated independent variables. Secondly, with regards to DSM-5 personality facets, while both DSM-5 Hostility and Risk Taking were found to be more prominent in offenders with greater past aggression, once the GAM constructs were accounted for, only Risk Taking was independently related to aggression history. These findings presented in Chapter Eight are notable; they provide preliminary support for the inclusion of established maladaptive personality traits, specifically risk taking, within the context of the GAM (Research Aim Three). Importantly, such an approach (a) overcomes previously confounding GAM conceptualisations of personality and thus highlights the predictive utility in explicating personality as separate from GAM knowledge structures, (b) enables convergence with clinical definitions of personality, and (c) highlights the need for both researchers and clinicians to consider clinically relevant personality variables in addition to empirically established aggression-related constructs.

Although reviewed in Chapters Six (Empirical Study One) and Eight (Empirical Study Three), the role of anger and risk taking in increasing aggression propensity are briefly outlined in the following sections. A brief explanation for the non-significant hostility-aggression relationship is also provided.
9.2.2.2.1 Trait Anger is Important in Explaining Aggression History

The current findings (Chapter Eight) support the contention that anger is an emotional state that is important to aggression (Daffern & Howells, 2009; Novaco, 2007; Posternak & Zimmerman, 2002). A more significant finding was that, from a GAM perspective, the tendency to experience frequent, intense and long-lasting periods of anger represents the most important personal quality related to aggression propensity (as measured by past aggressive behaviour), over and above the tendency to engage in aggressive script rehearsal and to hold more attitudes that are supportive of violence. The GAM draws attention to the importance of anger by delineating various routes by which anger exerts its influence over aggressive behaviour. Specifically, anger is suggested to increase aggression likelihood by interfering with higher-order cognitive processing that typically inhibits aggressive responses, serving as a justification for retaliatory behaviours, biasing cue interpretations towards hostility, priming and activating aggression-related constructs in memory, and maintaining aggressive intentions overtime (Anderson & Bushman, 2002).

9.2.2.2 Risk Taking Adds Significantly to the Prediction of Aggression History

Although relatively few studies have examined the role of risk taking to aggression, the current findings underscore the need to consider risk taking traits alongside contemporary aggression constructs. As noted, within the GAM, personality may serve as both a distal (exerts influence over a long period of time) and proximate (present and active in the current social encounter) factor that increases aggression propensity. Specifically, at the distal level, the tendency to take
risks may serve as a long-term predisposing risk factor for aggression. At the proximate level, risk taking traits may influence aggression by (a) leading an individual to seek out high-risk situations (i.e., those of an aggressive nature) that are consistent with and enable activation of their primary risk taking tendencies (Anderson & Bushman, 2002; Roberts et al., 2008), (b) activating aggression related cognition, affect and arousal (Anderson & Bushman, 2002; Joireman et al., 2003); a notion supported by the significant correlations found between Risk Taking and aggression-related constructs in the present research (Chapter Eight), and (c) restricting an individuals' ability to engage in cognitive reappraisal, such that immediate appraisals prevail, and consequently the individual is unable to adequately consider the risks and consequences associated with aggressive behaviour (Anderson & Bushman, 2002; Zuckerman & Kuhlman, 2000).

9.2.2.2.3 A Final Word on the Non-Significant DSM-5 Trait Hostility and Aggression Relationship

In line with the prior personality-aggression examination (Chapter Six), other empirical investigations (e.g., Jones et al., 2011; Miller, Lynam, et al., 2003; Miller et al., 2012) and several social cognitive theories of aggression (e.g., Anderson & Bushman, 2002; Berkowitz, 1990; Crick & Dodge, 1994; Huesmann, 1998), it was anticipated that DSM-5 Hostility would add to the prediction of aggression history, over and above GAM-delineated constructs. However, this hypothesis was not supported. The non-significant pattern of findings may have been attributed to the high inter-correlation observed between STAXI-2 Trait Anger and DSM-5 Hostility. Although the review of the multicollinearity statistics indicated it was appropriate to retain both independent variables within the analyses (Menard, 2002), the relative
importance of Hostility may have been reduced below significance given that the Hostility and Anger variables were measuring similar constructs (Tabachnick & Fidell, 2013). Alternatively, given that Hostility and Anger were highly correlated, this may indicate that consideration of only one of the constructs (i.e., anger) may be sufficient within contemporary aggression theory.

9.2.3 Summary of Outcomes and Contribution to the Literature

The studies in this thesis make a significant contribution to existing literature by examining the relevance of a newly proposed dimensional maladaptive personality trait model to aggression research. Such a detailed inquiry has not, to the author’s knowledge, been undertaken to date. In addressing this gap, the current research was able to demonstrate that (1) the DSM-5 personality trait model provides a useful framework by which to examine maladaptive personality facet associations with aggression (Research Aim One), and (2) consideration of risk taking traits improves the prediction of aggression history, over and above GAM-delineated constructs alone (Research Aim Three). Collectively, these findings highlight that more systematic and resolute assessment of DSM-5 maladaptive traits (particularly DSM-5 Risk Taking) has the potential to enhance violence risk assessment, add to the process of clinical case formulation, and improve the outcomes of violent offender treatment programs by highlighting pathological personality facets that contribute to aggression and which may be the target of treatment. The implications of these findings are discussed in further detail in Section 9.5.
9.3 The Relevance of Schema Constructs to Aggression Research

The second component of the present research sought to explore the relevance of schema constructs to aggression research. This was achieved by (a) collectively examining the importance of EMS and schema modes to past aggression (Research Aim Two), and (b) determining whether aggression-related schema modes accounted for additional variance in aggression history, above that of GAM-delineated constructs and DSM-5 maladaptive personality facets (Research Aim Three).

9.3.1 The Role of Early Maladaptive Schema and Schema Modes to Aggression

The literature presented in Chapter Two highlighted that entrenched cognitions (i.e., EMS) that generate uncomfortable cognitive and affective states are critical to aggression propensity (Anderson & Bushman, 2002; Huesmann, 1988, 1998). However, the EMS framework is potentially limited due to its inability to account for (a) rapid and intense shifts in emotions and (b) the associated emotional and coping states (i.e., schema modes) that are routinely triggered in response to EMS activation (Young et al., 2003). The present research aimed to concurrently examine the role of EMS, and the related construct of schema modes, to aggression history (Research Aim Two). Derived from a combination of the propositions of the GAM (Anderson et al., 2007) and evidence from previous empirical studies (e.g., Gilbert et al., 2013b; Keulen-de Vos et al., 2016), it was anticipated that three EMSs (Mistrust, Insufficient Self Control and Entitlement) and seven schema modes (Angry Child, Enraged Child, Impulsive Child, Vulnerable Child, Detached Self-Soother, Bully and Attack and Self-Aggrandizer) would be positively associated.
with aggression. Further, it was expected that the addition of schema modes to the multivariable model would improve the prediction of aggression history, above that of EMS alone. The current research found partial support for these contentions. Although higher levels of each of the three EMSs were evident in offenders with a greater history of aggression, when the effects of EMS were examined independently, only the Insufficient Self Control schema predicted past aggression. This initial finding is consistent with research conducted by Gilbert and colleagues (2013b) in a community offender population. Regarding schema modes, although Angry Child, Enraged Child, Impulsive Child, Bully and Attack, and Self Aggrandizer were more prominent in offenders with greater past aggression, as were three further schema modes (Undisciplined Child, Detached Protector, and Punitive Parent), associations between aggression and the Vulnerable Child and Detached Self-Soother modes were not identified. The most significant finding of this research was that the effect of the Insufficient Self Control schema on aggression became negligible once the effects of schema modes were taken into account. In the final multivariable model only the Enraged Child, Impulsive Child and Bully and Attack schema modes demonstrated significant relationships with past aggression. This finding is partly consistent with extant schema mode-aggression results found within a forensic inpatient sample diagnosed with Cluster B PD (Keulen-de Vos et al., 2016). Overall, the findings of this research contribute valuable information to both schema and aggression research. Specifically, they substantiate concerns that the EMS framework may not be the most valuable schema model to draw upon within contemporary aggression theory, and instead highlight the need to consider the more comprehensive construct of schema modes. They also highlight the important role of anger, rage and disinhibition in increasing aggression potential. This finding is
consistent with various social-cognitive theories of aggression (Anderson & Bushman, 2002; Crick & Dodge, 1994; Huesmann, 1998). Importantly, the present findings represent an important interim step to examine schema modes within the context of the GAM.

**9.3.2 Schema Modes and the General Aggression Model**

Similar to the personality-related research described within this thesis, the schema-related research sought to contribute to the refinement of the GAM by determining whether the inclusion of schema modes, in addition to aggression-related constructs and DSM-5 personality facets, improved the prediction of past aggression (Research Aim Three). To the authors' knowledge, such a comprehensive schema-aggression investigation had not been undertaken, yet had the potential to add significantly to the GAM by improving the schema conceptualisation within the model. Based on the findings of Chapter Seven (Empirical Study Two), it was anticipated that the Enraged Child, Impulsive Child and Bully and Attack schema modes would account for unique variance in past aggression. Partly consistent with this contention, the main schema mode finding emerging from the present research (Chapter Eight) was that, in addition to the GAM-delineated constructs and DSM-5 personality facets, the Enraged Child schema mode was independently related to aggression history.

The conceptualisation of the Enraged Child schema mode fits with the GAM framework. The specific role of the Enraged Child mode at each level of the GAM (input, route and output) has been described in detail in Chapter Eight (Empirical Study Three), and thus will not be repeated here. However, a summary of the key points is worthy of re-iteration. Importantly, it is suggested that the Enraged Child
mode may represent the 'state' that an aggressive individual enters when (a) predisposing Enraged Child related EMS and habitual coping responses and other aggression-related personal characteristics (e.g., risk taking traits) have been activated, in conjunction with situational variables, in a particular social encounter (b) a rage-related present internal state has been triggered, and (c) appraisal and decision making processes have been severely compromised. Ultimately, it is posited that the interaction of these constructs and processes leads an individual to rely on previously reinforced, maladaptive coping styles (i.e., the schema overcompensation style), whereby aggressive, dominant and hostile responses are imminent.

9.3.3 Summary of Outcomes and Contribution to the Literature

The present studies advance a small, but important, evidence base on the relevance of schema modes to aggression. Specifically, by conducting this research, the present thesis was able to highlight that (a) in comparison to EMS, the schema mode framework demonstrates greater predictive utility with regards to the explanation of past aggression (Research Aim Two), and (b) consideration of the Enraged Child schema mode adds to the prediction of aggression, beyond that of GAM-delineated constructs and DSM-5 maladaptive personality traits (Research Aim Three). Taken together, this research demonstrates that integrating the clinically relevant construct of schema modes into contemporary aggression theory allows for the identification of key cognitive, emotional and coping factors responsible for producing, intensifying and maintaining aggression. Such an approach draws attention to highly relevant aggression-related constructs not previously considered within the GAM. The findings also emphasise the need for forensic practitioners to consider schema modes in clinical settings where aggression related assessment and
interventions are undertaken. The implications of these findings are discussed in further detail in Section 9.5.

9.4 Limitations and Methodological Issues of the Present Research

To the extent possible, the present methodology was designed to overcome a number of limitations of existing aggression, personality, and schema literature, and to address several pertinent gaps in current knowledge. However, this research is not without its own set of limitations. The use of a retrospective, self-report methodology represents one of the primary shortcomings of the present research. Although extant empirical research has demonstrated support for the utility of self-report inventories for the accurate measurement of both personality (Hopwood et al., 2008) and aggression (Gilbert et al., 2013a), several factors may have compromised participants’ responding. With regards to personality, the PID-5 was designed to be administered to clinical participants who are willing to seek treatment and thus willing to openly describe themselves in a self-report questionnaire. Although participants voluntarily engaged in the present research, their participation was not indicative of their level of willingness to autonomously seek treatment as a result of awareness of psychopathology. As such, the degree of personality pathology and the potential for high levels of defensiveness and reduced levels of insight may have lead to biases in personality responding. Regarding the assessment of aggression, the frequency of reported aggressive acts may have been biased by participants’ ability to recall previous incidents. Moreover, research indicates that the reporting of aggressive behaviour and aggression-related cognitions could have been influenced by cognitive distortions that developed overtime that allowed participants to justify or deny the use of aggressive behaviour (Critchfield et al., 2008; Warren & South,
Accurate recall of aggression may have also been affected by particular cognitive factors (e.g., deficits in information processing) often associated with higher levels of aggression. More generally, given the high prevalence of impoverished educational attainment histories, high impulsivity traits, and the many and varied reasons for attentional deficits (e.g., high rates of acquired brain injury), offender populations may not be well-suited to self-report psychological assessment methods that are reliant upon verbal/literacy skills. In order to address these potential confounding influences, future investigations may seek to assess maladaptive personality traits and aggression related information using alternative methodologies (e.g., clinical interview with participant) in conjunction with corroborating data (e.g., use of PID-5-Informant Report Form (PID-5-IRF; Markon, Quilty, Bagby, & Krueger, 2013) with a partner, family member or close friend, file review, and official criminal records to verify past aggression) or through the use of prospective studies with long-term follow up periods.

Another limitation relates to the manner in which aggressive scripts were assessed. As noted in Chapter Eight (Empirical Study Three), in an effort to develop a more sensitive measure of the frequency of script rehearsal, several amendments were made to the SIV, including adapting the measure into a self-report format, changing the timeframe of script recall from two months to one week and requesting participants to respond on a continuous rather than Likert scale. Inadvertently, however, these modifications may have lead to reduced sensitivity of the measure, and thus non-significant script-aggression findings. Future investigations will therefore likely benefit from employing the SIV in its original semi-structured interview format, or from the development of more sensitive measurement approaches (e.g., the use of daily monitoring of script rehearsal).
To date, the PID-5, YSQ-S3 and SMI have not been validated within forensic populations. It is therefore possible that the construct validity of the measures may not have been as robust for participants in this sample as compared to samples where the validity of the measures has been supported. In Chapter Six (Empirical Study One), the Disinhibition domain, as calculated utilising the Krueger et al. algorithm, exhibited unacceptable internal reliability ($\alpha < 0.50$). In line with Krueger et al. (2012), given (lack of) Rigid Perfectionism is listed as a facet of Disinhibition, the Rigid Perfectionism facet was reverse-coded and then combined with the other PID-5 Disinhibition facets to create an overall Disinhibition domain score. The author suspects that the reverse coding of the Rigid Perfectionism item, may have lead to the unacceptable Cronbach's alpha of the Disinhibition domain within the present population. Similarly, the DSM-5 Detachment domain (calculated using the APA-three facets only algorithm) and the facets of Irresponsibility and Suspiciousness (from Empirical Study One), and the Entitlement schema (from Empirical Study Two) demonstrated questionable internal reliability, and thus warrant cautious interpretation. As noted in Chapter Eight (Empirical Study Three), a high correlation between DSM-5 Hostility and STAXI-2 Trait Anger was observed, which may have undermined the statistical significance of the DSM-5 personality variable. Although the analysis of the multicollinearity screening statistics indicated it was acceptable to retain both variables within the analysis (Menard, 2002), future investigations may seek to reconsider the inclusion of both hostility and anger variables if they are shown to be measuring similar constructs (note, it is important to remember though that hostility relates to cognition and anger to emotion so the two, whilst inter-related, are different constructs). Finally, until further examinations can substantiate
the discriminant validity of the PID-5 the present personality findings should be interpreted with caution.

Regarding the schema constructs, given the largely unconscious nature of EMS and schema modes, the current sample may have experienced difficulty reflecting on their prevailing cognitions. They may have also had difficulty understanding the more abstract nature and sophisticated wording of the YSQ-S3 and SMI items, which were primarily developed for use in therapeutic, rather than research, settings. Further, it is important to note that responding on the YSQ-S3 and SMI may itself activate EMS and associated coping responses, and thus trigger habitual schema modes (e.g., activation of the detached protector mode may have lead a participant to respond with low scores on the questionnaires in an attempt to avoid the negative thoughts and feelings triggered in response to completing the measures) (Young et al., 2003). This potential confound is likely to be most problematic in settings where, as in the present research, the researchers have limited prior knowledge of the participant and are unable to seek additional corroborating information. As anticipated, a weaker relationship was found for aggression and EMS than that of schema modes. Given the YSQ-S3 was utilised in the present research, it may be important for future research to administer the long form of the Young Schema Questionnaire (YSQ-L3; Young, 2014c) to more sufficiently capture EMS, and determine if the present findings are replicated using the more comprehensive EMS measure. Finally, as with the assessment of all cognitive constructs, the current methodology was unable to account for the temporal relationship between aggression and the schema structures. As identified in the present research, given the important role of schema modes to aggression, this is an avenue that certainly warrants further empirical examination and one which may be
accomplished through the use of longitudinal studies. Overall, urgent additional research is required to substantiate the psychometric properties of the PID-5, YSQ-S3 and SMI in forensic populations to ensure that the use of these measures is appropriate within future investigations.

The current sample comprised offenders who were incarcerated in a maximum-security remand centre in Melbourne, Australia. Although the maximum security environment likely facilitated the inclusion of offenders who had recently engaged in very serious acts of violence, there was also the possibility that offenders with less severe violence histories were included in the sample (e.g., those who were on remand for drug offences or financially motivated non-violent crimes). Although there was a reasonable range of aggressive behaviour and personality pathology, empirical replication of the present research findings with individuals with more serious histories of aggression (e.g., exclusively serious violent offenders) and severe PD traits may be useful. The sample was also exclusively comprised of males and therefore the findings may not generalise to females.

By their conceptual nature, knowledge structures, personality traits and schemas are considered stable, enduring and entrenched constructs that exert an influence on aggression over long periods of time (Anderson & Carnagey, 2004; Huesmann, 1998; Keulen-de Vos et al., 2016). Given the cross-sectional design of the present research, the stability of the constructs under investigation could not be established. Longitudinal, repeated assessment of the cognitive, personality and schema constructs would need to be considered in future investigations to directly examine the stability of these variables across time and situations. Finally, the present research did not directly test the proposed sequential nature of the aggression-related constructs to aggressive behaviour. In order to fully examine the
causal processes that lead to aggression, experimental manipulation of independent and mediating variables is needed (Spencer et al., 2005). Therefore, although the present research was unable to establish causality between the GAM, personality and schema constructs to aggression, future investigations could accomplish this task using prospective, repeated measures designs.

9.5 Implications of the Findings

Notwithstanding the limitations noted above, the present findings are important, and a number of conceptual and practical implications of the findings are worthy of discussion. While the overall implications of the present research are broadly consistent with those implications described within the initial review of the literature (Chapters Two and Three) and the empirical studies (Chapters Six to Eight), the following section considers the research and clinical implications of the research as a whole. To begin, the following section addresses the extent to which this research can add to the refinement and evolution of the GAM, and emphasises the strong need to integrate clinically meaningful concepts into contemporary aggression theory. It then discusses several implications relevant to the assessment, formulation and treatment of violent offenders.

9.5.1 Research Implications

In order for any theory to develop into a robust, coherent model, various iterations that incorporate recent developments in theoretical and clinical knowledge are required (Ward & Hudson, 1998). As such, the GAM may be viewed as a continually evolving model, whereby expansion of explanations regarding the
essential components of the model and the processes by which they operate lead to a more thorough understanding of the model in its entirety. The current findings provide an empirical validation of the relevance of clinically meaningful aggression-related personality traits and emotional and coping states to the aggressive behaviour of forensic populations. Furthermore, they provide preliminarily support for the notion that integration of clinically relevant DSM-5 maladaptive personality trait and schema mode models and measures with the GAM framework provide an opportunity for a more comprehensive and theoretically sound understanding of aggressive behaviour. More specifically, consideration of maladaptive personality traits has significant merit in that it (a) overcomes the GAMs purportedly problematic conceptualisation of personality, which, as it currently stands, is unable to differentiate between personality and cognitive knowledge structures, and (b) integrates relevant clinical perspectives of personality with contemporary social-cognitive aggression theory to highlight the manner in which established personality traits may operate to increase aggression potential. Similarly, the intersection of schema modes with the GAM represents a novel and relevant theoretical and clinical approach to better understanding the 'state' that one enters when they are at imminent risk for behaving aggressively. Overall, greater application of clinically meaningful concepts and measurement instruments within contemporary aggression research has the potential to inform, unify and enhance social-cognitive aggression theory, violent offender assessment efforts and treatments aimed at reducing habitual aggression and violence.
9.5.2 Clinical and Practical Implications

9.5.2.1 Assessment

The present findings emphasise that more thorough and comprehensive attention to trait anger, maladaptive personality traits, and rage related cognitions, emotions and behavioural coping responses would facilitate more complete formulations of aggression and violence. Importantly, given the wide variety of assessment tools available, clinicians need to carefully consider the empirical research base when selecting the most appropriate methods by which to conduct such fine-grained aggression risk assessments. Without this knowledge, clinicians may be conducting assessments that overlook vital violence risk related information. With regards to the assessment of anger, and similar rage-related emotional states associated with the Enraged Child schema mode, there are a variety of empirically validated self-report tools that assess the emotional, cognitive, behavioural and regulatory components of anger, for example the STAXI-2 and the Novaco Anger Scale and Provocation Inventory (Novaco, 2003).

Regarding personality, the present findings strengthen the theoretical and clinical movement towards the assessment of maladaptive personality traits in clinical settings. Rather than an ongoing reliance on broad PD diagnoses to confer violence risk, the present results support the contention that a PID-5 facet-level assessment of maladaptive personality traits, with particular attention paid to risk taking traits, is a clinically relevant approach to violence risk assessment. Although many structured approaches to violence risk assessment (e.g., the Historical Clinical Risk Management -20: Version 3 (HCR-20:V3; Douglas et al., 2013) and the VRS) include personality pathology as a key clinical risk factor, recent research highlights that assessment of risk taking is limited within risk assessment schemes (Klepfisz et
al., 2016). Although it is unlikely that the new DSM-5 PD trait model and the PID-5 will replace the use of existing risk assessment measures, risk assessments and risk assessment tools should consider risk taking traits.

Although high levels of impulsivity have been noted to be common treatment targets in violent offender treatment programs (Polaschek, 2006), the present findings highlight that considering risk taking as akin to impulsiveness may be detrimental to the assessment and treatment process because such an approach overlooks important differentiating risk information. Within the present research, risk taking traits were more specific to aggression potential than a general impulsive tendency. Consequently, in order to enhance violence risk assessment efforts, clinicians should explicitly consider an individual's tendency to (a) estimate risks as lower than that of what would be expected of low risk takers (b) deny the reality of personal danger, (c) hold unrealistic expectations about personal limitations, (d) focus more on immediate consequences of their behaviour, and (e) disregard or discount the future consequences of their behaviour to the self or others (Zuckerman & Kuhlman, 2000). Assessment of the presence of such risk taking biases, and their tendency to increase aggression potential, would ultimately inform violence treatment efforts.

Widely used risk assessment schemes (e.g., HCR-20:V3) highlight the need to consider problems with coping (e.g., inability to cope with stressful experiences, inadequate or inappropriate coping strategies) as a risk factor for violence. Consistent with this premise, assessing for the presence of habitual, rage-related copings states associated with the Enraged Child schema mode represents an additional and novel approach that should be routinely assessed in violent offenders, in relation to both risk assessment and treatment planning. In particular,
CHAPTER NINE: DISCUSSION

consideration of the overcompensation schema mode coping style (which is expected to be associated with the Enraged Child schema mode as it often results in the enactment of aggressive, hostile or dominant responses), and the related cognitive and emotional states, in violence risk assessments may lead to a clearer understanding of the links between an aggressive individual’s internal world (cognition, affect and arousal) and their tendency to use aggressive coping responses.

The findings of the present research highlight that the relevant personality, cognitive, affective and coping components underlying aggression cannot be considered in isolation. Given the inter-correlations observed between the independent variables within the present research, it can be expected, for example, that highly aggressive individuals are more likely to access aggressive scripts and normative beliefs condoning the use of aggression, experience long-lasting and intense anger, possess risk taking and hostile personality traits and activate rage-, impulsivity-, and dominance-related schema modes. Importantly, the treatment approach for an individual assessed as having all of these aggression-related risk factors would differ from that of an aggressive individual with a more limited number of aggression-related vulnerabilities. It is expected that the combined presence of the aggression-related variables (cognitive, affective, personality and coping) included within the present research is likely to indicate a high propensity for violent behaviour, and therefore each represents an underlying risk factor that should be considered an important target of treatment. Overall, from a GAM perspective, assessment and formulation should be comprehensive and integrative. Accordingly, assessment and subsequent formulation should pay attention to the relevant distal and proximate personality, cognitive, affective and coping causes and processes conducive to aggression, as well as relevant situational events and triggers,
problem-solving and information processing deficits, and self-regulation skills (e.g.,
ability to regulate negative emotional states), in order to fully understand how factors
underlying aggression come into operation and maintain aggressive dispositions over
time.

Finally, in addition to remaining cognisant of the cognitive, personality,
affective and coping factors found to be important to aggression in the present
research, the GAM maintains that consideration of various other distal (i.e.,
biological and environmental) and proximate (i.e., person and situation) factors may
also contribute to aggression potential. The potential relevance of these other factors
was not examined in this study. As research exploring the nature of the relationships
between GAM-delineated, personality and schema constructs and these other factors
emerges, clinicians will be required to consider these empirically linked factors
within assessment processes to determine their relevance to an individual's
aggressive behaviour.

9.5.2.2 Treatment

In general, the findings of the present research tend to suggest that
comprehensive interventions for violent individuals are required. Following
assessment of the various factors outlined in the previous section, it would be
important for interventions to be sufficiently individualised, whereby the targeting of
aggression-related cognitions, emotions, personality traits and coping responses,
might all be warranted, depending on the significance of each of the factors to the
individual. Consistent with the prevailing approach to offender rehabilitation (Bonta
& Andrews, 2007), those offenders with a greater number of violence risk factors
would require more intensive and multiply focussed interventions. At present, many
contemporary group-based violent treatment programs focus on anger management skills, whereby such interventions seek to improve the participant’s capacity to regulate and control their negative affective state (Howells et al., 2008). In line with the views of other researchers (e.g., McGuire, 2008), however, the findings of the present research suggest that in order to address the chronic, enduring and pervasive nature of aggression-related knowledge structures, pathological personality traits, and maladaptive schema and associated emotional and coping states, the content of current violent offender programs would need to be expanded, and the duration and intensity of interventions increased. In particular, additional modules that focus on (a) reducing risk taking tendencies, and (b) the key cognitive, emotional and coping factors responsible for producing, intensifying and maintaining aggression experiences, may improve the efficacy of current violent group treatment programs. Given it was developed for offenders with PD, and it directly targets EMS, maladaptive coping responses and schema modes (Bernstein et al., 2012; Young et al., 2003), one therapeutic approach that appears to fit well with both of the suggested supplementary modules is ST. As highlighted in detail in Chapter Eight, ST incorporates a number of experiential techniques to provide individuals with (a) a vocabulary to discuss painful aspects of their lives and personality, (b) a forum to reflect on and modify thoughts, feelings and behaviours in a productive manner, and (c) a space to appropriately express and process painful emotions and develop adaptive coping strategies (Bernstein et al., 2007; Keulen-de Vos et al., 2014). Consequently, in conjunction with other traditional therapeutic frameworks commonly seen in violence reduction programs (e.g., cognitive-behavioural and anger management approaches) multi-modular group programs may benefit from inclusion of schema-focused principles and techniques. Consistent with current
violent offender program delivery (Polaschek, 2010), and the GAM's perspective on
the importance of group influences on internal states (DeWall, Anderson, &
Bushman, 2011), inclusion of ST approaches within current violent offender
programs may also benefit from the positive effects of group dynamics, which may
serve as an added mechanism to encourage change and challenge erroneous beliefs
pertaining to the necessity or effectiveness of aggressive behaviour. Alternatively,
drawing upon ST approaches within an individual treatment format could be
considered, in addition to violence group interventions, and would possibly allow for
a more in-depth exploration of the individual’s past events, current situational
elements, and personality, affective, cognitive and coping processes that contribute
to aggressive behaviour.

9.6 Avenues for Future Research

Despite the potentially important contributions made by this thesis to the
broader literature on aggression, maladaptive personality, and schema theory, there
are several important avenues for future research. To begin, the GAM was originally
developed as a broad theory of aggression under which the various antecedents of
aggression may be investigated. Consequently, few studies have extensively
examined the specific factors underlying aggression from a GAM perspective. The
focus of the limited extant research has predominantly been on the empirical
examination of cognitive knowledge structures, without consideration of other
clinically relevant aggression-related constructs. To further enhance current
psychological aggression theory, and thus inform clinical assessment and treatment
efforts with violent offenders, additional research is needed in this area. Most
importantly, in order to strengthen the link between the theoretical basis of the GAM
and clinical work occurring in forensic populations, replication of the current empirical research in other violent populations, for instance female, youth, and clinical and forensic inpatient populations, is needed, and would enable the relationship between GAM knowledge structures, trait anger, maladaptive personality facets, and schema constructs and aggression to be more clearly delineated. Specifically, in order to demonstrate a causal relationship in the interplay between these variables, as well as validate the notion that aggression-related knowledge structures, maladaptive traits and schema constructs remain relatively stable over the lifetime, prospective, repeated measures studies are required. Investigations conducted in forensic settings (e.g., forensic inpatient units), where researchers are able to utilise self-report methodologies and corroborate this information with clinical file notes and interviews with participants and clinicians who engage regularly with and have extensive knowledge of the participants, are warranted.

More specific avenues for future research concern the role of the specific variables of interest within this thesis. The present research has demonstrated the importance of risk taking traits. However, within the extant literature the relationship between aggression and risk taking is not yet well conceptualised. Prior research has tended to focus on the relationship between aggression and related personality traits such as impulsivity, sensation-seeking, excitement seeking and harm avoidance. Although these related traits appear to overlap with risk taking, they are not equivalent. As such, future research should seek to determine whether risk taking traits are a specific violence risk factor for incarcerated adult male offenders only, or whether this finding generalises to other populations (e.g., community, inpatient, female, youth).
The present research tends to suggest that consideration of cognitive, emotional and coping states associated with the Enraged Child mode in current treatment interventions should be a high priority. Although the research presented in Chapter Seven (Empirical Study Two) confirmed the importance of the Mistrust, Entitlement and Insufficient Self Control EMS to the Enraged Child mode, further research is required to identify the habitual coping styles/responses that group together with EMS to form the Enraged Child mode, and that would therefore serve as the primary targets for treatment. In order to achieve this task, qualitative methodologies (e.g., in-depth semi-structured interviews) within violent offender populations or self-report studies that utilise the YSQ-S3 or YSQ-L3, SMI and schema (i.e., the Young-Rygh Avoidance Inventory (Young & Rygh, 2014) and the Young Compensation Inventory (Young, 2014b)) and clinical coping inventories warrant consideration. Further research should also examine whether schema coping styles and general coping styles are relevant to aggression when considered alongside GAM constructs. Additional research is also needed to determine whether any other types of affective experiences (e.g., fear, sadness, embarrassment, shame, guilt) are related to activation of the Enraged Child mode, and thus an increased propensity for aggression. Consistent with the present thesis, these avenues of research may help to broaden the scope of the GAM to other aggression related constructs, and enhance current violent offender assessment and treatment efforts.

The results of the present research support the contention that schema modes can be adequately accessed via self-report methods, an approach that is practicable for offender populations. However, an observational approach, using the MOS for schema mode assessment is also available, and its use in clinical settings may overcome the confounding influences (as highlighted in Section 9.4) that are
potentially present when self-report methodologies are used (i.e., the potential for biased responding when completing the SMI as a result of schema mode activation). As such, further research examining whether the SMI (completed by participants) and MOS (completed by clinical staff who have ongoing contact with the participant) produce comparable results within violent offender populations will assist in determining whether the measures may be used interchangeably within forensic settings for both assessment and treatment purposes.

Both the trait anger and schema mode findings demonstrate the importance of anger and rage to aggression propensity. In order to assist with a better understanding of how these affective experiences are internalised, maintained over the long-term and behaviourally expressed, research may seek to examine the unique relationships between trait anger and EMS, maladaptive personality traits and habitual coping styles. Such research may assist in the identification of treatment targets to reduce the negative, long-standing affects of anger that likely contribute to activation of the Enraged Child mode, and thus a greater potential for aggression.

Although the present research did not identify a significant relationship between aggression and script frequency, further research exploring the role of this construct to aggressive behaviour is necessary. The present research made several amendments to the SIV measure, which may have lead to the negligible script-aggression result. Given these amendments were unsuccessful in creating a more sensitive measure of aggressive script rehearsal, and the fact that prior research (e.g., Gilbert et al., 2013b) has only investigated the frequency of aggressive script rehearsal (and used this dimension to infer the storage, accessibility, and retrieval of aggressive scripts), future research should seek to develop more comprehensive approaches to assess the nature and operation of aggressive scripts. Given the
scarcity of empirical studies on aggressive scripts, further empirical research should aim to (a) validate and improve knowledge regarding the role of scripts in precipitating aggression, and (b) identify how aggressive scripts may be effectively targeted in treatment interventions. With regards to the former, knowledge to accomplish this task may be drawn from cognitive-behavioural treatment literature on rumination to identify how these principles might apply to aggressive script rehearsal. Regarding the latter, in line with sex offender literature on the targeting of deviant sexual fantasies, it may be beneficial to consider the development and use of aversion techniques or behaviour therapy (e.g., covert sensitisation (Marshall, O'Brien, & Marshall, 2009) when developing aggressive script treatment interventions for violent offenders.

9.7 Conclusions

Although theoretical and empirical investigations of the GAM have tended to focus largely on the role of anger and several types of cognitive knowledge structures (aggressive scripts, normative beliefs, maladaptive schema) considered relevant to aggression potential, the model has been criticised for its lack of consideration of other person-centred inputs, particularly personality variables. Moreover, given the GAM does not take into account critical emotional and coping states (schema modes) that are linked to activation of the primary knowledge structures and conducive to aggression, the utility of the model with violent populations may be limited. This thesis therefore sought to determine whether the integration of clinically relevant models of maladaptive personality (DSM-5) and schema modes (ST), alongside GAM constructs, improved the prediction of aggression history in a sample of offenders. In order to accomplish this task, three
important empirical examinations were conducted. The first examined the role of
DSM-5 maladaptive personality domains and facets to histories of aggression in an
offender sample. The findings demonstrated that the DSM-5 trait model could be
usefully applied within an offender population. More specifically, the results
highlighted the importance of a facet-level examination of maladaptive personality,
with two facets, namely Hostility and Risk Taking, demonstrating significant
relationships with aggression history. The second investigation explored the
relevance of EMS and schema modes to offenders' aggression history. Notably, the
results highlighted that consideration of schema modes provided greater predictive
validity than EMS, with three schema modes (Enraged Child, Impulsive Child and
Bully and Attack) demonstrating significant relationships with aggression history.
Finally, the third empirical study sought to amalgamate the findings from the
preliminary investigations. Specifically, this final study sought to determine whether
consideration of DSM-5 Hostility and Risk Taking and the Enraged Child, Impulsive
Child and Bully and Attack schema modes, in addition to GAM-delineated
aggressive scripts, normative beliefs supportive of aggression and anger, improved
the prediction of aggression history in a sample of offenders. Overall, the results
provided support for the importance of trait anger, DSM-5 Risk Taking and the
Enraged Child schema mode to aggression propensity. Taken together, the findings
of this thesis attest to the notion that consideration of novel, clinically meaningful
maladaptive personality and schema concepts, and instruments, within the GAM, has
the potential to contribute to the refinement of this model. Additionally, the findings
highlight that inclusion of maladaptive traits and schema modes within the GAM
provides a potentially more comprehensive and nuanced framework upon which to
guide the assessment and treatment of violent offenders. As such, more extensive
assessment and targeting of GAM constructs, relevant personality traits and emotional and coping states (schema modes) within violent offender treatment programs is indicated, with greater attention needing to be paid to the interrelationships among the specific aggression inducing factors.
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354


REFERENCES


REFERENCES


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REFERENCES


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REFERENCES


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REFERENCES


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APPENDICES

Appendix A: Ethics Approval Notices
Appendix B: Recruitment Poster
Appendix C: Recruitment Flyer
Appendix D: Explanatory Statement
Appendix E: Consent Form
Appendix F: Certificate of Participation
Appendix G: Life History of Aggression-Self-Report-Aggression Subscale
Appendix H: Personality Inventory for the DSM-5
Appendix I: Schedule of Imagined Violence-Self-Report
Appendix J: Copyright Permissions
Appendix A: Ethics Approval Notices

Department of Justice

Justice Human Research Ethics Committee

Planning Performance and Projects
Level 21
121 Exhibition Street
Melbourne, Victoria 3000
GPO Box 125A
Melbourne, Victoria 3001
Telephone: (03) 8684 1514
Facsimile: (03) 8684 1525
DX 210077

21 March 2014

Reference: CF/13/19800

Michael Daffern
Swinburne University of Technology

Re: Identifying the key psychological needs of violent offenders with personality disorder: Enhancing treatment for high-risk violent offenders

Dear Michael,

The Department of Justice Human Research Ethics Committee (JHREC) considered your response to the provisional approval for the project Identifying the key psychological needs of violent offenders with personality disorder: Enhancing treatment for high-risk violent offenders and has now granted full approval for the duration of the investigation subject to its approval by the Swinburne University HREC.

The Department of Justice reference number for this project is CF/13/19800. Please note the following requirements:

- To confirm JHREC approval sign the Undertaking form attached and provide both an electronic and hardcopy version within ten business days.
- The JHREC is to be notified immediately of any matter that arises that may affect the conduct or continuation of the approved project.
- You are required to provide an Annual Report every 12 months (if applicable) and to provide a completion report at the end of the project (see the Department of Justice Website for the forms).
- Note that for long term/ongoing projects approval is only granted for three years, after which time a completion report is to be submitted and the project renewed with a new application.
- The Department of Justice would also appreciate receiving copies of any relevant publications, papers, theses, conferences presentations or audiovisual materials that result from this research.
- All future correspondence regarding this project must be sent electronically to ethics@justice.vic.gov.au and include the reference number and the project title. Hard copies of signed documents or original correspondence are to be sent to The Secretary, Justice Human Research Ethics Committee, PO Box 4356, Melbourne, Victoria, 3001.

If you have any queries regarding this application you are welcome to contact me on (03) 8684 1514 or email: ethics@justice.vic.gov.au.

Yours sincerely,

Ms Nicole Wilson, Secretary,
Department of Justice Human Research Ethics Committee
SHR PROJECT 2014/078 Ethics Clearance
Keith Wilkins
Sent: Wed 2/04/2014, 3.52 PM
To: Michael Daffern; Ashley Dunne
Cc: RES Ethics

To: Prof Michael Daffern/Ms Ashley Dunne, CFBS/FHAD

Dear Michael and Ashley

SHR Project 2014/078 Identifying the key psychological needs of violent offenders with personality disorder: Enhancing treatment for high-risk offenders

Prof Michael Daffern, CFBS/FHAD; Ms Ashley Dunne

Approved Duration: 02/04/2014 to 31/12/2016

I refer to your application for Swinburne ethics clearance for the above supervised student project involving a Corrections Victoria facility.

Relevant documentation pertaining to your application, as per your email of 21 March 2014 (A Dunne to K Wilkins) with attachments, was given expedited ethical review on behalf of Swinburne's Human Research Ethics Committee (SUHREC) by a delegate, significantly on the basis of the ethical review conducted by the Department of Justice HREC (JHREC Ref CF/13/19800). Formal support expressed for the project (and conditions set) by the Corrections Victoria Research Committee (CD/14/65946) was noted.

I am pleased to advise that, as submitted to date, the project may commence in line with standard on-going ethics clearance conditions here outlined (as applicable). (Nb JHREC secretariat may need to be apprised of the Swinburne ethics clearance.)

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the current National Statement on Ethical Conduct in Human Research and with respect to secure data use, retention and disposal.

- The named Swinburne Chief Investigator/Supervisor remains responsible for any personnel appointed to or associated with the project being made aware of ethics clearance conditions, including research and consent procedures or instruments approved. Any change in chief investigator/ supervisor requires timely notification and SUHREC endorsement.

- The above project has been approved as submitted for ethical review by or on behalf of SUHREC. Amendments to approved procedures or instruments ordinarily require prior ethical appraisal/clearance. SUHREC must be notified immediately or as soon as possible thereafter of (a) any serious or unexpected adverse effects on participants and any redress measures; (b) proposed changes in protocols; and (c) unforeseen events which might affect continued ethical acceptability of the project.

- At a minimum, an annual report on the progress of the project is required as well as at the conclusion (or abandonment) of the project. (A copy of any progress, annual or final report submitted to DJHREC also being submitted to my office should meet these requirements, all things being equal; similarly with any request to modify approved protocols.)
A duly authorised external or internal audit of the project may be undertaken at any time.

Please contact the Research Ethics Office if you have any queries about Swinburne on-going ethics clearance, citing the SUHREC project number. A copy of this clearance email should be retained as part of project record-keeping.

Best wishes for the project.

Yours sincerely

Keith

-----------------------------------------------

Keith Wilkins

Secretary, SUHREC & Research Ethics Officer
Swinburne Research (H68)

Swinburne University of Technology
P O Box 218
HAWTHORN VIC 3122
Tel +61 3 9214 5218
Fax +61 3 9214 5267
Appendix B: Recruitment Poster

Understanding the relationship between personality and behaviour

Do you want to be a part of a survey?

I am conducting a survey as part of a Doctorate of Clinical Psychology at Swinburne University of Technology. I am interested in understanding the relationship between personality and behaviour.

The study involves completing a number of questionnaires. You will be asked about how you think about yourself, situations that may be annoying or frustrating, your experience of anger, the types of aggressive acts you think about and whether you have behaved aggressively during your life. You will not be required to answer any questions about offending history.

If you choose to participate, the information you provide will be kept confidential. Your information will not be provided to Corrections Victoria or any other agency. You do not need to have a history of violent offending to take part.

You may choose to be issued with a Certificate of Participation for your personal record.

This study has been funded by Swinburne University of Technology and approved by the Department of Justice and Swinburne University of Technology ethics committee.

If you are interested in participating, please:

1) Take one of the sign up pages from the stand below
   (If there are no pages below right now, they will be replaced soon. So please check back)

2) Write your name and unit on the slip below

3) Tear off the slip and place it in the envelope provided

4) Seal and return the envelope to the unit staff so they can post it to me

I will then contact you to arrange a time to answer any questions you might have about the research and complete the survey.

Ashley Dunne
Appendix C: Recruitment Flyer

Understanding the relationship between personality and behaviour

Do you want to be a part of a survey?

I am conducting a survey as part of a Doctorate of Clinical Psychology at Swinburne University of Technology. I am interested in understanding the relationship between personality and behaviour.

The study involves completing a number of questionnaires. You will be asked about how you think about yourself, situations that may be annoying or frustrating, your experience of anger, the types of aggressive acts you think about and whether you have behaved aggressively during your life. You will not be required to answer any questions about offending history.

If you choose to participate, the information you provide will be kept confidential. Your information will not be provided to Corrections Victoria or any other agency. You do not need to have a history of violent behaviour to take part.

This study has been funded by Swinburne University of Technology and approved by the Department of Justice and Swinburne University of Technology ethics committee.

If you are interested in participating, please:
1) Write your name and unit on the slip below
2) Tear off the slip and place it in the envelope provided
3) Seal and return the envelope to the unit staff so they can post it to me

I will then contact you to arrange a time to answer any questions you might have about the research and complete the survey.

Ashley Dunne

Study: Understanding the relationship between personality and behaviour

Name: ____________________
CRN: ____________________
Unit: ____________________
Appendix D: Explanatory Statement

Explanatory Statement
July 2014

Title: Understanding the relationship between personality and behaviour

Explanatory Statement – Metropolitan Remand Centre

This information sheet is for you to keep.

My name is Ashley Dunne and I am running a study with Michael Daffern, a Professor in the Centre for Forensic Behavioural Science, Swinburne University of Technology. This study is a part of a Doctorate degree in Clinical/Forensic Psychology at Swinburne University of Technology. This means that I will be writing a thesis (a report), describing my study. I also hope to publish my study in scientific journals. We have funding from Swinburne University of Technology for purchasing the psychological questionnaires to use with this study.

YOU ARE INVITED TO TAKE PART IN THIS STUDY. PLEASE READ THIS EXPLANATORY STATEMENT IN FULL BEFORE MAKING A DECISION ABOUT WHETHER YOU WILL TAKE PART.

Why were you chosen for this study?
You were invited to take part in this study because you are currently a prisoner at Metropolitan Remand Centre.

What is the study about?
The aim of this study is to understand the relationship between personality and behaviour.

Possible benefits
There may be no direct benefit to you from being involved in this study. However, you may choose to be issued with a Certificate of Participation for your personal records. In addition, you will be able to fill out questionnaires that tell us about your personality (we are interested in thinking style) and how this relates to behaviour. The results from this study may help us understand why people act aggressively. The results might also help improve treatment programmes for people who have been violent.

What does the study involve?
The study involves completing some questionnaires. You will be asked about how you think about yourself, situations that you may find annoying or frustrating, feelings of anger, and whether you have thought about aggressive acts or behaved aggressively during your life.

How much time will the study take?
Taking part in this study should take about 1-1.5 hours.

Inconvenience/discomfort
There is a small risk that you will feel uncomfortable when filling in the questionnaires. However, the tests we are using are common and there are no known negative effects. When you are completing the questionnaires you may stop the study at any time if you feel uncomfortable. If you become upset during the study I will refer you to your case manager for support.

Withdrawing from the study
Being in this study is voluntary, which means you do not have to take part if you do not want to. If you choose not to take part, it will have no effect on your care and management in the Centre. If you choose to take part, you have the right to not answer any question. While you are completing the questionnaire you may stop the study at any time. Once you have finished filling out the surveys and you hand them back to the researcher, because your name will not be recorded on any of the forms, you will not be able to withdraw from the study. If you have made arrangements with the researcher to finish the questionnaire
on another day, you will be able to withdraw from the study up until you hand the questionnaires back to
the researcher for the final time.

How your information is kept confidential
If you choose to take part, the information you provide will be kept confidential (private). Information is not
provided to Corrections Victoria or other agencies.

You should not talk about illegal matters that have not been dealt with in court. If you tell me about illegal
matters and if I am later ordered to appear in court then I may have to tell the court what you have told
me.

If you reveal that you intend to harm yourself or someone else, I will have to tell custodial staff so that they
can keep you and any other people safe.

Storage of data
We will store a copy of your completed questionnaires in a locked filing cabinet and electronically on a
password protected computer file in the secure research building of the Centre for Forensic Behavioural
Science at Swinburne University of Technology. Your questionnaire results will not have your name or any
identifying information on them. Only the researchers of this study have access to this information. Your
information will be securely kept for at least five years following publication of the thesis (the report) and
journal papers.

Use of data for other purposes
The group results of the study will be written up in a Doctoral research thesis (report). Results of this study
may also be presented at national and international conferences, and published in international journals.
We will not publish your name or anything else that could identify you when we write up the results of the study.

Results
If you would like to find out about the group study results, please contact Professor Michael Daffern via
email at mdaffern@swin.edu.au or by calling 03 99472600. The results will be available when the study
has been completed (expected completion date is December 2016). Individual results will not be available.

If you have a complaint about the way this research study (CF/13/19800.) is being run, please contact the
Principal Researcher (Professor Michael Daffern), the Human Research Ethics Committee of Swinburne
University of Technology or Human Research Ethics Committee of the Department of Justice.

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<tr>
<th>Secretary, Human Research Ethics Committee</th>
<th>Research Ethics Officer</th>
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<tr>
<td>Department of Justice</td>
<td>Swinburne University of Technology Human Research</td>
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<tr>
<td>Tel: 03 8684 1514</td>
<td>Ethics Committee</td>
</tr>
<tr>
<td>Email: <a href="mailto:ethics@justice.vic.gov.au">ethics@justice.vic.gov.au</a></td>
<td>Tel: +61 3 9214 5218</td>
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<td>Email: <a href="mailto:resethics@swin.edu.au">resethics@swin.edu.au</a></td>
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</table>

<table>
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<tr>
<th>Principal Researcher: Dr. Michael Daffern, Centre for Forensic Behavioural Science and Legal Studies, Swinburne University of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel: 03 9947 2608; Fax: 03 9947 2650</td>
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</table>

Thank you for your time.

Ashley Dunne
Appendix E: Consent Form

Participant Consent Form

Title: Understanding the relationship between personality and behaviour

NOTE: This consent form will remain with the Swinburne University of Technology researcher for their records

I agree to take part in the study detailed above. I have had the study explained to me, and I have read the Explanatory Statement, which I keep for my records. I understand that agreeing to take part means that:

I agree to complete questionnaires asking me about how I think about myself, situations that may be annoying or frustrating, ways I may experience feelings of anger, the types of aggressive acts I think about, and whether I have behaved aggressively during my life.

I understand that being involved in this study is voluntary, that I can choose not to take part in some or all of the study, and that I can withdraw from the study up until I hand the questionnaires back to the researcher for the final time without being penalised or disadvantaged in any way.

I understand that my answers to the questionnaires may be used in reports or published papers, and these will not, under any circumstances, include names or identifying information.

I understand that any information I provide is confidential (private), and that no information that could lead to the identification of any individual will be disclosed in any reports on the study, or to any other party.

I understand that data from the questionnaires will be kept in secure storage and only the research team will have access to such information. I also understand that the data will be kept for at least 5 years following publication of the thesis (the report) and journal papers, after which it will be destroyed.

Participant’s name

Signature ___________________________ Date: ___________________________
CERTIFICATE OF PARTICIPATION

This document certifies that

__________________________
(name)

Participated in student research by Swinburne University of Technology

on ___(Date)____

Signed

____________________

Student Researcher
Appendix G: Life History of Aggression-Self Report-Aggression Subscale

LHA-S-Aggression

Instructions: Rate yourself on each of the next five items using the rating system below. Only rate actual behavior be it verbal and/or physical. Do not include in your ratings thoughts not followed by any action or fantasies.

For these questions it is important to rate any events that have occurred over your lifetime (from 13 years of age to now).

0 = never happened
1 = only happened "once" (e.g., one time)
2 = happened "a couple" or "a few" (e.g., 2-3) times
3 = happened "several" (e.g., 4-9) times
4 = happened "many" (e.g., 10+) times
5 = happened "so many" times that I couldn't give a number

How Many Times Would You Say You Did the Following Things Over the Course of Your Life to DATE?

CIRCLE RATING HERE

1. "Throw" a temper tantrum
   (for example: screaming, slamming doors, throwing things when angry to the "breaking point"): 0 1 2 3 4 5

2. Get into physical fights with other people: 0 1 2 3 4 5

3. Get into verbal fights or arguments with other people: 0 1 2 3 4 5

4. Deliberately hit another person (or an animal) in anger: 0 1 2 3 4 5

5. Deliberately struck or deliberately broke objects (for example: windows, dishes, etc.) in anger: 0 1 2 3 4 5

Coccaro et al., 1995
Appendix H: Personality Inventory for the DSM-5 (PID-5)

The Personality Inventory for DSM-5 (PID-5)—Adult

Instructions to the individual receiving care: This is a list of things different people might say about themselves. We are interested in how you would describe yourself. There are no “right” or “wrong” answers. You can describe yourself as honestly as possible, we will keep your responses confidential. We’d like you to take your time and read each statement carefully, selecting the response that best describes you.

<table>
<thead>
<tr>
<th>Item</th>
<th>Very False or Often False</th>
<th>Sometimes or Somewhat False</th>
<th>Sometimes or Somewhat True</th>
<th>Very True or Often True</th>
<th>Item Score</th>
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</table>

**PID-5—Adult (Full Version)**, page 1

Krueger RF, Berringer J, Markon KE, Watson D, Skodol AE. Copyright ©2013 American Psychiatric Association. All Rights Reserved. This material can be reproduced without permission by researchers and by clinicians for use with their patients.
The Personality Inventory for DSM-5 (PID-5)—Adult, continued

**Instructions to individual receiving care:** Please continue to complete the questionnaire. Remember, this is a list of things different people might say about themselves. We are interested in how you would describe yourself. There are no “right” or “wrong” answers. So you can describe yourself as honestly as possible, we will keep your responses confidential. We’d like you to take your time and read each statement carefully, selecting the response that best describes you.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Very False or Often False</th>
<th>Sometimes or Somewhat False</th>
<th>Sometimes or Somewhat True</th>
<th>Very True or Often True</th>
<th>Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>Sometimes I get this weird feeling that parts of my body feel like they’re dead or not really me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>I am easily angered.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
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<tr>
<td>39</td>
<td>I have no limits when it comes to doing dangerous things.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>40</td>
<td>To be honest, I’m just more important than other people.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>41</td>
<td>I make up stories about things that happened that are totally untrue.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>42</td>
<td>People often talk about me doing things I don’t remember at all.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>43</td>
<td>I do things so that people just have to admire me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>44</td>
<td>It’s weird, but sometimes ordinary objects seem to be a different shape than usual.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>45</td>
<td>I don’t have very long-lasting emotional reactions to things.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
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<tr>
<td>46</td>
<td>It is hard for me to stop an activity, even when it’s time to do so.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tr>
<tr>
<td>47</td>
<td>I’m not good at planning ahead.</td>
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<td>I do a lot of things that others consider risky.</td>
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<td>People tell me that I focus too much on minor details.</td>
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<td>I’ve missed out on things because I was busy trying to get something I was doing exactly right.</td>
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<tr>
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<td>My thoughts often don’t make sense to others.</td>
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<td>I often make up things about myself to help me get what I want.</td>
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<tr>
<td>54</td>
<td>It doesn’t really bother me to see other people get hurt.</td>
<td>0</td>
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<tr>
<td>55</td>
<td>People often look at me as if I’d said something really weird.</td>
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<td>People don’t realize that I’m flattering them to get something.</td>
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<td>I’d rather be in a bad relationship than be alone.</td>
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<td>58</td>
<td>I usually think before I act.</td>
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<td>I often see vivid dream-like images when I’m falling asleep or waking up.</td>
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<tr>
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<td>I keep approaching things the same way, even when it isn’t working.</td>
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<td>I’m very dissatisfied with myself.</td>
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<td>I have much stronger emotional reactions than almost everyone else.</td>
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<td>I do what other people tell me to do.</td>
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<tr>
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<td>I like to take risks.</td>
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<tr>
<td>68</td>
<td>I can’t achieve goals because other things capture my attention.</td>
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<tr>
<td>69</td>
<td>When I want to do something, I don’t let the possibility that it might be risky stop me.</td>
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<td>Others seem to think I’m quite odd or unusual.</td>
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<td>My thoughts are strange and unpredictable.</td>
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<td>I don’t care about other people’s feelings.</td>
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</tbody>
</table>
### APPENDIX H

**Instructions to individual receiving care:** Please continue to complete the questionnaire. Remember, this is a list of things different people might say about themselves. We are interested in how you would describe yourself. There are no “right” or “wrong” answers. So you can describe yourself as honestly as possible, we will keep your responses confidential. We’d like you to take your time and read each statement carefully, selecting the response that best describes you.

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The Personality Inventory for DSM-5 (PID-5)—Adult, continued

<table>
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<th>Sometimes or Somewhat False</th>
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<th>Very True or Often True</th>
<th>Clinician Use</th>
<th>Item Score</th>
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<td>I like standing out in a crowd.</td>
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<td>I don't mind a little risk now and then.</td>
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<td>My behavior is often bold and grabs peoples' attention.</td>
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<td>I'm better than almost everyone else.</td>
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<td>115</td>
<td>People complain about my need to have everything all arranged.</td>
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<td>I always make sure I get back at people who wrong me.</td>
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<td>I'm always on my guard for someone trying to trick or harm me.</td>
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<tr>
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<td>I have trouble keeping my mind focused on what needs to be done.</td>
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<tr>
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<td>I talk about suicide a lot.</td>
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<td>I'm just not very interested in having sexual relationships.</td>
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<td>I get stuck on things a lot.</td>
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<td>I get emotional easily, often for very little reason.</td>
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<tr>
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<td>Even though it drives other people crazy, I insist on absolute perfection in everything I do.</td>
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<td>I almost never feel happy about my day-to-day activities.</td>
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<td>Sweet-talking others helps me get what I want.</td>
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<tr>
<td>126</td>
<td>Sometimes you need to exaggerate to get ahead.</td>
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<tr>
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<td>I fear being alone in life more than anything else.</td>
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<td>I get stuck on one way of doing things, even when it’s clear it won’t work.</td>
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<td>I’m often pretty careless with my own and others’ things.</td>
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<td>I am a very anxious person.</td>
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<td>People are basically trustworthy.</td>
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<tr>
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<td>I am easily distracted.</td>
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<td>It seems like I’m always getting a “raw deal” from others.</td>
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<td>I don’t hesitate to cheat if it gets me ahead.</td>
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<tr>
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<tr>
<td>138</td>
<td>I never know where my emotions will go from moment to moment.</td>
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<td>I have seen things that weren’t really there.</td>
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</table>
## APPENDIX H

The Personality Inventory for DSM-5 (PID-5)—Adult, continued

Instructions to individual receiving care: Please continue to complete the questionnaire. Remember, this is a list of things different people might say about themselves. We are interested in how you would describe yourself. There are no “right” or “wrong” answers. So you can describe yourself as honestly as possible, we will keep your responses confidential. We’d like you to take your time and read each statement carefully, selecting the response that best describes you.

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<th>Item score</th>
<th>Clinician Use</th>
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<td>Life looks pretty bleak to me.</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>152</td>
<td>I think about things in odd ways that don’t make sense to most people.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>153</td>
<td>I don’t care if my actions hurt others.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>154</td>
<td>Sometimes I feel “controlled” by thoughts that belong to someone else.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>155</td>
<td>I really live life to the fullest.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>I make promises that I don’t really intend to keep.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>157</td>
<td>Nothing seems to make me feel good.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>158</td>
<td>I get irritated easily by all sorts of things.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>159</td>
<td>I do what I want regardless of how unsafe it might be.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>160</td>
<td>I often forget to pay my bills.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>161</td>
<td>I don’t like to get too close to people.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>162</td>
<td>I’m good at conniving people.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>163</td>
<td>Everything seems pointless to me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>164</td>
<td>I never take risks.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>165</td>
<td>I get emotional over every little thing.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>166</td>
<td>It’s no big deal if I hurt other people’s feelings.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>167</td>
<td>I never show emotions to others.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>168</td>
<td>I often feel just miserable.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>169</td>
<td>I have no worth as a person.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>I am usually pretty hostile.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>171</td>
<td>I’ve skipped town to avoid responsibilities.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>172</td>
<td>I’ve been told more than once that I have a number of odd quirks or habits.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>173</td>
<td>I like being a person who gets noticed.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>174</td>
<td>I’m always fearful or on edge about bad things that might happen.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>175</td>
<td>I never want to be alone.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>176</td>
<td>I keep trying to make things perfect, even when I’ve gotten them as good as they’re likely to get.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>177</td>
<td>I rarely feel that people I know are trying to take advantage of me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>178</td>
<td>I know I’ll commit suicide sooner or later.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>179</td>
<td>I’ve achieved far more than almost anyone I know.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>180</td>
<td>I can certainly turn on the charm if I need to get my way.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>181</td>
<td>My emotions are unpredictable.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>I don’t deal with people unless I have to.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>183</td>
<td>I don’t care about other people’s problems.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>184</td>
<td>I don’t react much to things that seem to make others emotional.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>185</td>
<td>I have several habits that others find eccentric or strange.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>186</td>
<td>I avoid social events.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Very False or Often False</td>
<td>Sometimes or Somewhat False</td>
<td>Sometimes or Somewhat True</td>
<td>Very True or Often True</td>
<td>Item Score</td>
<td></td>
<td></td>
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<tr>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
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<td>---------------------------</td>
<td>------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>187</td>
<td>I deserve special treatment.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>188</td>
<td>It makes me really angry when people insult me in even a minor way.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>189</td>
<td>I rarely get enthusiastic about anything.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>I suspect that even my so-called &quot;friends&quot; betray me a lot.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>191</td>
<td>I crave attention.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>Sometimes I think someone else is removing thoughts from my head.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>193</td>
<td>I have periods in which I feel disconnected from the world or from myself.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>194</td>
<td>I often see unusual connections between things that most people miss.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>195</td>
<td>I don't think about getting hurt when I'm doing things that might be dangerous.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>I simply won't put up with things being out of their proper places.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>197</td>
<td>I often have to deal with people who are less important than me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>198</td>
<td>I sometimes hit people to remind them who's in charge.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>199</td>
<td>I get pulled off-task by even minor distractions.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>200</td>
<td>I enjoy making people in control look stupid.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201</td>
<td>I just skip appointments or meetings if I'm not in the mood.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202</td>
<td>I try to do what others want me to do.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>203</td>
<td>I prefer being alone to having a close romantic partner.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>204</td>
<td>I am very impulsive.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>205</td>
<td>I often have thoughts that make sense to me but that other people say are strange.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>206</td>
<td>I use people to get what I want.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>207</td>
<td>I don't see the point in feeling guilty about things I've done that have hurt other people.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>208</td>
<td>Most of the time I don't see the point in being friendly.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
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<tr>
<td>209</td>
<td>I've had some really weird experiences that are very difficult to explain.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>210</td>
<td>I follow through on commitments.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>211</td>
<td>I like to draw attention to myself.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>212</td>
<td>I feel guilty much of the time.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>213</td>
<td>I often &quot;zone out&quot; and then suddenly come to and realize that a lot of time has passed.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>214</td>
<td>Lying comes easily to me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>I hate to take chances.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>216</td>
<td>I'm nasty and short to anybody who deserves it.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>217</td>
<td>Things around me often feel unreal, or more real than usual.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>218</td>
<td>I'll stretch the truth if it's to my advantage.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>219</td>
<td>It is easy for me to take advantage of others.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
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<tr>
<td>220</td>
<td>I have a strict way of doing things.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>
Appendix I: Schedule of Imagined Violence-Self-Report


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

Please mark an X on the scale for the number of times **EACH WEEK**:

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

Please mark an X on the scale for the number of times **EACH MONTH**:

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

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

Please **circle one**:

- Today
- In the past 2 days
- In the past 3-7 days
- During the past month
- During the past 2 months
- More than 2 months ago
- Never

3. *When did you start having these thoughts?*

Please **circle one**:

- During the past month
- Since several months ago
- During the past 3-6 months
- More than a year ago
- Since several years ago
- As long as can remember
- I have never had these thoughts

4. *Did you start to have these thoughts since a specific event?*

Please **circle one**:

- Yes (please specify event: ______________________)
- No
5. When you have these thoughts, in what way do you usually think about injuring or hurting people?

Please circle one:
- Verbal aggression
- Physical aggression
- Sexual aggression
- Aggression with a weapon
- Other, (please specify)

6. 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?

Please circle one: Same / Different

7. Are they usually about the same person, or might they be about many different people?

Please circle one: Same / Different

8. Since the time you first started having these thoughts, have the injuries that you think about gotten more serious, less serious, or have they been about the same?

Please circle one:
- Less serious
- Same
- More serious

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

Please circle one:
- Yes
- No
- Don't know
APPENDIX J

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Article Title: Investigating the Relationship between DSM-5 Personality Disorder Domain and Antecedent Violence: An Offender Population Using the Personality Inventory for DSM-5

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