

School of Psychology and Speech Pathology

Department of Health Sciences

**Investigating Relationships between Trait Anxiety, Emotional Processing
and Psychopathy as a Dimensional Personality Trait**

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement is made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signed: Date.....

Sarah Burns

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Abstract

Psychopathy can be described as a constellation of destructive characteristics that include callousness, egocentricity, manipulation and deceit. Evidence suggests that psychopathy as a personality trait (a contemporary view of psychopathy that opposes the more traditional taxonomic conceptualisation) is associated with broad deficits in emotional processing, however there is a lack of investigation into psychopathy and emotion regulation and manipulation. There is also evidence that suggests anxiety levels may phenotypically distinguish between two subtypes of psychopathy; primary (concerned with interpersonal characteristics associated with psychopathy) and secondary (concerned with chronic antisocial behaviours associated with psychopathy) psychopathy.

While some of these relationships have been addressed previously, research has primarily been conducted in forensic and institutionalised settings. There has been markedly less research conducted in non-criminal community samples where the prevalence of psychopathy is said to be low. Within such samples, self-report measures are the more commonly used methods of measurement. It has been recognised that certain self-report measurements of psychopathy and emotion processing lack adequate psychometric properties.

This thesis comprises two studies designed to address two aims; (i) to improve the psychometric properties of the Secondary Psychopathy subscale of the Levenson Self-Report Psychopathy Scale (LSRP-S; Levenson, Kiehl, & Fitzpatrick, 1995) and the Poor Emotional Skills subscale of the Emotion Manipulation Scale (EMS-POS; Austin, Farrelly, Black, & Moore, 2007); and (ii) to investigate the relationships between psychopathy, trait anxiety and emotion processing variables. In Study One, a systematic process of item generation was used to produce new items that may potentially be included in revised versions of the LSRP and EMS. Confirmatory factor analyses using community samples which were collected using an online survey indicate that the addition of eight and nine new items to the LSRP-S ($N = 331$) and EMS-POS ($N = 294$) respectively improved the model fit of each measure. The

revised scales produced higher Cronbach's α values than the original scales (LSRP-S α improved from .71 to .87; EMS-POS α improved from .69 to .75), rendering them sufficient for use in subsequent research. Study Two tested hypotheses investigating relationships amongst trait anxiety, emotion processing variables and primary and secondary psychopathy in a community sample. A convenience community sample ($N = 470$) was obtained using an online survey. Two avenues were investigated. The first was that trait anxiety and other emotion processing variables would be additive predictors that will differentially predict primary and secondary psychopathy. Most of these hypotheses were supported via structural equation modelling (SEM) techniques, with key findings being strong relationships between trait anxiety and secondary psychopathy (16% of the variance), and emotion manipulation and primary psychopathy (17.64% of the variance). The second avenue investigated if trait anxiety would moderate the relationships between emotion dysregulation and psychopathy subtypes. SEM analyses were used and multi-group comparisons were made across 'high Trait Anxiety ($N = 163$)' and 'low Trait Anxiety ($N = 157$)' groups using a model positing relationships between emotion processing variables and primary and secondary psychopathy. Analyses failed to support moderation due to equivalence of pathways for high and low trait anxiety groups.

It was concluded that evidence from Study One has demonstrated improvements to self-report measures of psychopathy and emotional deficits, and the results of Study Two have illustrated that trait anxiety and certain emotional processes are predictors of primary and secondary psychopathy. Theoretical and applied implications for these findings are discussed, including the relevance of the findings to psychopathy conceptualised as a personality trait and the applicability of the findings in different non-forensic settings. This research will add to the small but growing body of research concerning psychopathic traits in non-clinical, non-forensic populations.

Table of Contents

Declaration.....	2
Acknowledgements.....	3
Abstract.....	4
List of Figures.....	9
List of Tables.....	10
List of Appendices.....	12
Chapter One: General Introduction.....	13
1.1 Overview of the thesis.....	13
1.2 Structure of the thesis.....	15
Chapter Two: Literature Review.....	17
2.1. Overview of Chapter Two.....	17
2.2. History of psychopathy as a construct.....	18
2.3. Factor structure of psychopathy.....	20
2.3.1. Two-factor model of psychopathy.....	20
2.3.2. Cooke and Michie’s (2001) 3-factor model of psychopathy.....	22
2.3.3. 2-Factor/4-facet model of psychopathy.....	23
2.4. Measurement of psychopathy.....	25
2.4.1. Clinician-rated assessment: The Psychopathy Checklist (PCL-R; Hare, 2003).....	25
2.4.2. Self-report psychopathy measurement.....	26
2.5. Psychopathy as a dimension: Evidence of non-criminal psychopathy.....	32
2.6. Differentiating between primary and secondary psychopathy subtypes: The role of anxiety ...	36
2.7. Role of emotional deficits in psychopathy.....	44
2.7.1. Emotional Intelligence (EI) and psychopathy.....	49
2.7.2. Emotion regulation.....	50
2.7.3. Emotion manipulation.....	57
2.8. The interaction between emotion regulation, anxiety and psychopathy.....	60
2.9. Concluding summary of the literature.....	62
Chapter Three: Overview of Research.....	64
3.1. Aims and hypotheses of thesis.....	66
3.1.1. Study One aims.....	66
3.1.2. Study Two aims and hypotheses.....	66
3.1.3. Significance of the research.....	77
Chapter Four: Study One - Validation of the Levenson Self-Report Psychopathy Scale and Emotion Manipulation Scale.....	79

4.1. Introduction.....	79
4.1.1. Levenson Self-Report Psychopathy Scale (LSRP, Levenson et al., 1995).....	79
4.1.2. Emotion Manipulation Scale (EMS; Austin et al., 2007)	84
4.1.3. The current study	85
4.2. Methodology	86
4.2.1. Phase one: Item generation	86
4.2.2. Phase two – Scale validation.....	101
4.3. Results.....	105
4.3.1. Data file check and missing data.....	105
4.3.2. Levenson Self-Report Psychopathy Scale (LSRP) results.....	107
4.3.3. Emotional Manipulation Scale (EMS) results.....	121
4.4. Discussion	135
4.4.1. Summary of Study One.....	135
4.4.2. Secondary subscale of the Levenson Self-Report Psychopathy Scale (LSRP-S)	135
4.4.3. Poor Emotional Skills subscale of the Emotional Manipulation Scale (EMS)	137
4.4.4. Study strengths.....	139
4.4.5. Study limitations	140
4.4.6. Future research directions	141
4.4.7. Conclusion	141
Chapter Five: Study Two - Testing Intrapersonal Emotion Processing Models of Psychopathy	143
5.1. Introduction.....	143
5.1.1. Anxiety and psychopathy.....	143
5.1.2. Emotion processing and psychopathy	145
5.1.3. The interaction between emotion regulation, anxiety and psychopathy	148
5.1.4. Rationale and summary of hypotheses.....	149
5.2. Methodology	158
5.2.1. Research design.....	158
5.2.2. Participants and recruitment.....	159
5.2.3. Materials	161
5.2.4. Procedure	167
5.3. Results.....	168
5.3.1. Data file check and missing data.....	169
5.3.2. Rate of endorsement of LSRP items	169
5.3.3. Descriptive statistics for key measures	170
5.3.4. Confirmatory factor analyses (CFA).....	172

5.3.5. Model testing using structural equation modelling (SEM)	176
5.4. Discussion	192
5.4.1. Interpretation of model testing results.....	192
5.4.2. Study strengths.....	206
5.4.3. Study limitations	209
5.4.4. Theoretical implications.....	211
5.4.5. Applied implications	214
5.4.6. Future research suggestions	215
Chapter Six: General Discussion	219
6.1. Summary of Findings.....	219
6.1.1. Study One findings.....	219
6.1.2. Study Two findings.....	220
6.1.3. Evidence of psychopathy subtypes as personality dimensions	221
6.2. Wider implications.....	222
6.2.1. Theoretical implications.....	222
6.2.2. Applied implications	225
6.3. Strengths of thesis.....	227
6.3.1. Use of international online samples	227
6.3.2. Sophisticated analytical techniques	228
6.3.3. Support for contemporary view of psychopathy	228
6.4. Limitations of thesis.....	229
6.4.1. Sampling issues.....	229
6.4.2. Measurement limitations.....	229
6.5. Future research directions	230
6.5.1. Distribution of psychopathic traits in community samples.....	231
6.5.2. Investigating psychopathy in different cultures	231
6.5.3. Exploring psychopathy in the workplace.....	232
6.5.4. Exploring psychopathy in online communities.....	232
6.5.5. An integrative approach to investigating psychopathy	233
6.6. Concluding remarks	233
References.....	235

List of Figures

-
- Figure 3.1. Proposed ‘anxiety and emotion processing’ model of psychopathy
- Figure 3.2. Proposed ‘emotional process’ model of psychopathy in the high trait anxiety group
- Figure 3.3. Proposed ‘emotional process’ model of psychopathy in the low trait anxiety group
- Figure 4.1. The correlated 2-factor measurement model of the original LSRP
- Figure 4.2. Final revised correlated 2-factor measurement model of the LSRP
- Figure 4.3. Correlated 3-factor model of the original EMS
- Figure 4.4. Final revised correlated 3-factor measurement model of the EMS
- Figure 5.1. Proposed ‘anxiety and emotion processing’ model of psychopathy
- Figure 5.2. Proposed ‘emotional process’ model of psychopathy in the high trait anxiety group
- Figure 5.3. Proposed ‘emotional process’ model of psychopathy in the low trait anxiety group
- Figure 5.4. First ‘anxiety and emotion processing’ model of primary and secondary psychopathy
- Figure 5.5. Final ‘anxiety and emotion processing’ model of primary and secondary psychopathy
- Figure 5.6. Final simple predictor model with and without controlling for social desirability scores
-

List of Tables

Table 4.1.	Final list of potential LSRP items and their sources
Table 4.2.	Final list of potential EMS items and their sources
Table 4.3.	Websites used to host links to the online personality survey
Table 4.4.	Demographic characteristics of the samples of the Revised Levenson Self-Report Psychopathy Scale and the Emotion Manipulation Scale
Table 4.5.	Descriptive statistics and Kolmogorov-Smirnov values for all items of the LSRP ($N = 331$)
Table 4.6.	Goodness of fit statistics for the 1-factor and the correlated 2-factor model of the original LSRP ($N = 331$)
Table 4.7.	Iterative process of removing items from LSRP based on modification indices
Table 4.8.	Iterative process of adding error covariances to the revised LSRP for the purposes of improving model fit
Table 4.9.	Summary of descriptives of the final revised LSRP ($N = 331$)
Table 4.10.	Descriptive statistics and Kolmogorov-Smirnov values for all items of the EMS ($N = 294$)
Table 4.11.	Goodness of fit statistics for the 1-factor, correlated 3-factor and uncorrelated 3-factor models of the original EMS ($N = 294$)
Table 4.12.	Iterative process of removing items from EMS based on modification indices
Table 4.13.	Summary of descriptives for the final revised EMS ($N = 294$)
Table 4.14.	Iterative process of adding error covariances to the revised EMS for the purposes of improving model fit
Table 5.1.	Demographic characteristics of the sample ($N = 470$)
Table 5.2.	Descriptive statistics, comparison data and Cronbach's alpha for key measures

($N = 470$)

- Table 5.3. Tests of multivariate outliers across items in each measure and their influence on the analysis ($N = 470$)
- Table 5.4. Goodness of fit indices for each measure ($N = 470$)
- Table 5.5. Tolerance values across each total measure score ($N = 470$)
- Table 5.6. Partial correlation matrix of total measure scores for latent variables controlling for age, gender and social desirability scores ($N = 470$)
- Table 5.7. Path coefficients and statistical significance for the ‘anxiety and emotion processing’ model ($N = 470$)
- Table 5.8. Goodness of fit statistics for each proposed ‘anxiety and emotion processing’ model
- Table 5.9. Descriptive statistics for the high and low trait anxiety groups
- Table 5.10. Fit indices for types of parameter variance across high and low trait anxiety groups
- Table 5.11. Fit indices for multi-group analysis for structural model
- Table 5.12. Summary of contributions of predictor variables to prediction of psychopathy ($N = 470$)
-

List of Appendices

-
- Appendix 4.1. Study One participant information sheet
- Appendix 4.2. Study One questionnaire
- Appendix 4.3. Study One/Two debriefing page template
- Appendix 5.1. Study Two participant information sheet
- Appendix 5.2. Study Two questionnaire
- Appendix 5.3. Composition of parcels and their EFA factor loadings for SEM analyses
- Appendix 5.4. Correlation matrix for control variables and parcels representing latent criterion variables
- Appendix 6.1. Histograms illustrating distribution of LSRP scores in Study One and Two
-

Chapter One: General Introduction

1.1 Overview of the thesis

Psychopaths have been aptly described as “intraspecies predators” (Hare, 1996, p. 26) who are without a conscience, superficially charming and grandiose, while also lacking empathy and manipulating and intimidating others for their own self-gain (Hare, 1999). It has been said that approximately 1% of the population could be classified as psychopaths (Hare, 2006). Much of the general population are unaware, however, of the ‘forms’ of psychopathy that can manifest in everyday individuals, with the assumption being that all psychopaths have a reckless disregard for societal norms and are constantly violating such norms through avenues such as violent crime (Millon, Simonsen, Birket-Smith, & Davis, 1998). Hand in hand with this view is that psychopathy is taxonomic, that is, one is either psychopathic or non-psychopathic (Millon, Simonsen, Birket-Smith, et al.). In the academic world, however, psychopathy is rapidly becoming recognised as a dimensional personality trait, with it only classified as a disorder when an individual reaches established ‘cut-off’ points for such a distinction (Hare & Neumann, 2008). This is of particular relevance to studies concerning non-criminal psychopathy, where frequency of psychopathic traits is low (Levenson et al., 1995).

While the Psychopathy Checklist, now in its revised version (PCL-R; Hare, 2003) has long been considered a land mark scale of psychopathy measurement, it is a clinician-rated assessment tool which is time-consuming to administer. The importance of developing valid and reliable measures that reflect the dimensional nature of the construct and can be administered conveniently to large samples is becoming increasingly apparent. In response to the demand for less labour-intensive measures, a variety of self-report psychopathy scales were developed (e.g. LSRP; Levenson et al., 1995; PPI; Lilienfeld, 1990), however such

measures have been found to have flaws in their psychometric properties. As well as problems with psychopathy measurement, there are very few self-report scales which measure emotional manipulation. One existing scale is the Emotion Manipulation Scale (EMS; Austin et al., 2007) which in its current form is lacking in adequate psychometric properties. Therefore, the first and second aims of this dissertation (in the form of Study One) are:

- To develop a modified version of the Levenson Self-Report Psychopathy subscale (LSRP-S; Levenson et al., 1995) with improved internal consistency.
- To develop a modified version of the Poor Emotional Skills subscale of the Emotional Manipulation Scale (EMS; Austin et al., 2007) with improved internal consistency.

Such measures can then be used to investigate correlates of psychopathic personality traits, such as deficits in emotion processing, an area of research which has thrived in recent years (e.g. Del Gaizo & Falkenbach, 2008; Vitale, MacCoon, & Newman, 2011). While there has been a concentration on deficits in recognition of other individuals emotions in relation to psychopathy (see Steuerwald & Kosson, 2000 for review), limited research has examined intrapersonal emotion processing in relation to psychopathy (e.g. Grieve & Mahar, 2010). Primary and secondary subtypes of psychopathy have been proposed (Karpman, 1941), with evidence to suggest that differences between the two subtypes may be due to differences in levels of anxiety (Lykken, 1957, 1995). Therefore, aims three, four and five of this dissertation (Study Two) are:

- To add to the body of research that conceptualises psychopathy as a personality trait.
- To investigate within a community sample the relationship between psychopathy as a personality trait and emotion regulation and manipulation.

- To investigate if trait anxiety moderates the relationship between emotion regulation manipulation and psychopathy.

Addressing these aims through the outlined program of research will lead to a better understanding of the relationships between trait anxiety, emotional regulation and manipulation, and the two dimensions of psychopathy. Such understanding is important, as existing research has explored these areas but not yet in an integrated manner and in large, community samples. As much of the previous research has focussed primarily on forensic and clinical samples, it is hoped that findings obtained from the current study will provide unique insight into psychopathy and its relationships with other constructs in a sample that may not necessarily exhibit overt criminal behaviour.

1.2 Structure of the thesis

In this thesis, the research aims will be explored through two studies. Chapter Two will review the relevant literature. This will include an introduction to psychopathy as a construct, as well as a comprehensive evaluation and critique of literature pertinent to the aims of this thesis. This review will lead to the rationale for Studies One and Two, which is described in Chapter Three.

Study One will be presented in Chapter Four. This study examines whether the LSRP (a self-report measure of dimensional psychopathy) and the EMS (a self-report measure of emotion manipulation) can be improved through the addition of new items. A systematic approach was taken to generate new items for each scale. These new items were combined with the original scales in the form of an online survey; the data collected was then subjected to confirmatory factor analyses. This systematic process and results of generating new items and then validating the Revised LSRP and Revised EMS in a community sample is presented in more detail, as well as a discussion of these results.

Chapter Five will report Study Two, which consisted of proposing and testing intrapersonal emotion processing models of primary and secondary psychopathy. The revised measures from Study One as well as other emotion processing self-report measures were combined to form an online survey which was used to obtain a community sample. The first model tested was a simple predictor model testing the relative contributions of trait anxiety and other emotion processing variables in the prediction of primary and secondary psychopathy. The second model tested posited trait anxiety to be a moderator of the relationships between emotion processing variables and primary and secondary psychopathy. Results of testing these models of primary and secondary psychopathy are reported on, and then subsequently discussed.

Chapter Six is a general discussion section which will firstly summarise the key findings from both Study One and Two of this thesis. Following this there is an evaluation of the distribution of psychopathy levels across the two studies, while also comparing these distributions to previously published research. Implications for primary and secondary psychopathy as dimensional personality traits are discussed from both a theoretical and applied perspective. General strengths and limitations of the two studies will be highlighted, followed by suggestions for future research directions, many of which are centred around providing further support for primary and secondary psychopathy as dimensional personality traits. Finally, some concluding remarks will be made regarding the state of the current psychopathy research climate and how the current findings are positioned within this. The studies presented in this thesis add to the contemporary but fast-growing body of research that investigates psychopathy as a personality trait.

Chapter Two: Literature Review

2.1. Overview of Chapter Two

In this chapter I provide a critical review of the literature surrounding psychopathy as a personality trait, both in general and in relation to anxiety and emotion processing correlates. First, a brief history of psychopathy as an empirical construct will be provided. Second, the research literature on the factor structure of psychopathy will be reviewed, highlighting the most commonly accepted two-factor model. Third, measurement of psychopathy will be discussed, with a particular focus on self-report scales as appropriate measures for large non-clinical samples. This leads into the fourth section reviewing non-criminal psychopathy as a dimensional personality trait.

Specific correlates of psychopathy are the focus of the next sections, whereby psychopathy will be discussed in relation to anxiety, with an emphasis on empirical evidence that suggests anxiety can differentiate between primary and secondary psychopathy sub-types. Following this, deficits in emotion processing will be discussed in relation to psychopathy, with a focus on two aspects of emotion processing; emotion regulation and emotion manipulation; that have received limited attention. The final section involves a discussion of research that indirectly supports possible interactions between emotion processing, anxiety and primary and secondary psychopathy.

The final section of this chapter presents the rationale for the two proposed studies that comprise this thesis. The first is a measurement validation study which aims to improve upon the psychometric properties of self-report measures of psychopathy and emotion manipulation. The second study involves testing a proposed model of psychopathy that posits relationships between emotion processing, trait anxiety and primary and secondary psychopathy sub-types.

2.2. History of psychopathy as a construct

The following section outlines a brief history of the construct of psychopathy, highlighting its basis in clinical conceptualisations. One of the first instances in which attempts were made to classify antisocial individuals was by Pinel (1806) who described three cases of individuals displaying “insanity without delirium” (p. 151). Since this time, descriptions of psychopathy by researchers such as Partridge (1930) and Karpman (1941) provide evidence of recognition of psychopathy as a personality disorder. In his seminal book *The Mask of Sanity* (1964), Hervey Cleckley outlined one of the first clinical conceptualisations of psychopathy as a personality disorder. After examination of his own patients, he proposed 16 core personality characteristics that could be found in an individual with psychopathy:

1. Impersonal sex life
2. Failure to follow any life plan
3. Absence of nervousness
4. Unreliability
5. Untruthfulness and insincerity
6. Lack of remorse or shame
7. Inadequately motivated antisocial behaviour
8. Poor judgment/failure to learn by experience
9. Pathologic egocentricity and incapacity for love
10. Poverty in major affective reactions
11. Lack of insight
12. Interpersonal unresponsiveness
13. Suicide rarely carried out
14. Absence of delusions and other signs of irrational thinking

15. Superficial charm

16. Good intelligence

Modern conceptualisations have seen some of Cleckley's criteria rendered ineffective in diagnosing psychopathy, such as 'good intelligence' and 'suicide rarely carried out' (Millon, Simonsen, & Birket-Smith, 1998). Blackburn (1987) pointed out that Cleckley's criteria could be found dispersed throughout the DSM-III's diagnostic criteria for other personality disorders such as borderline, antisocial and histrionic classifications. Cleckley (1964) placed emphasis on distinguishing psychopathy from criminality, pointing out that an individual can exhibit psychopathic tendencies without engaging in criminal behaviour. Related to this point, Cleckley was also one of the first to emphasize that there are distinctions between psychopathy and antisocial behaviour, offering the beginnings of support for the personality-based approach to psychopathy in modern research (Lilienfeld, 1994). The second version of the American Psychiatric Association's DSM (DSM-II; 1968) was the first and last DSM to reflect such an approach, stating that "a mere history of repeated legal or social offenses is not sufficient to justify this diagnosis" (p. 43). For subsequent DSM versions, however, a behaviour-based approach prevailed with ASPD becoming a diagnostic category for overtly observable antisocial behaviours pertaining to criminality (e.g. theft, cruelty to animals) (Lilienfeld, 1998). This has appeared to pervade into the recently published DSM-5 (American Psychiatric Association, 2013). A dominant understanding of the relationship between ASPD and psychopathy is that the two constructs share some characteristics, but are also distinct, ASPD being a broader term which encompasses both behavioural and personality traits with a focus on behaviour (Ogloff, 2006). Subsequent research into psychopathy as a personality construct has considered this distinction.

Robert Hare's work (e.g. 1970; 1985; 1990; 2003) built upon Cleckley's work by reconceptualising his clinical descriptions and using these as the basis of what would

eventually become a landmark for psychopathy measurement, the Psychopathy Checklist (PCL; Hare, 1980), and its revision, PCL-R (Hare, 2003). Hares influential work, as well as that of researchers previously mentioned, has informed much of the current conceptualisation of psychopathy.

2.3. Factor structure of psychopathy

Throughout the span of research examining psychopathy, differing factor structures of the construct have been proposed and tested. The following section will discuss the most prominent of these factor structures, those being two and three factor and two factor-four facet models.

2.3.1. Two-factor model of psychopathy

Hare's Psychopathy Checklist (PCL; Hare, 1980) and its revised version, the PCL-R (Hare, 1990) signifies, arguably, the most important milestone in assessment of psychopathy. Further discussion of the PCL-R and its psychometric properties will be addressed in a forthcoming section (section 2.4.1.). It was through the development of the PCL by means of item generation and factor analyses that two moderately correlated but distinct factors of psychopathy were discovered, signifying the start of psychopathy being represented primarily by a two factor model (Lilienfeld, 1998). Factor 1 is comprised of many of the core traits of psychopathy related to personality, with the most recent revision of the measure (Hare, 2003) discriminating this factor into deficits of interpersonal style (such as superficial charm, pathological lying and a manipulative nature) and affectivity (such as shallow affect, callous behaviour and lack of empathy).

Factor 2, like Factor 1, has more recently been described as including two facets; impulsive lifestyle, which contains characteristics such as irresponsibility, proneness to boredom and a parasitic lifestyle; and social deviance, which comprises of characteristics

such as juvenile delinquency, poor behavioural control and criminal versatility (Hare, 2003). The addition of these social deviance characteristics to the PCL-R conceptualisation marks the difference between this and Cleckley's description of psychopathy, which did not overtly emphasise criminality. While Hare (2003) notes that criminal antisocial behaviour is not necessary for meeting the criteria for PCL-R psychopathy, the scale does include several items that relate directly to criminality. It should be noted at this point that subtypes of psychopathy, namely primary and secondary psychopathy, have been likened to Factor 1 and Factor 2 psychopathy respectively. These will be discussed in section 2.6.

Research has demonstrated these two factors are moderately related to each other (Hare, 2003) while also having distinct correlates. For example, age has been found to be negatively related to Factor 2 but not Factor 1 PCL scores (Harpur & Hare, 1994). Such a finding is expected given the trait-nature of Factor 1 elements, and the behavioural nature of Factor 2 components.

Evidence has continuously supported the 2-factor model using the PCL-R across cultures. Cooke (1995) demonstrated that the PCL-R factor structure is comparable across Scottish and North American male forensic samples. Hare and colleagues (2000) expanded on this, concluding that not only does the two factor structure hold cross-culturally across North American and European forensic samples, the predictive validity of the PCL-R has cross-cultural generalisability.

In certain homogenous samples, however, this factor structure has not been supported using exploratory analyses. In a sample of males and females with substance-dependence on methadone-maintenance, administration of the PCL-R resulted in extraction of a simple one-factor model (McDermott et al., 2000). This suggests that perhaps the behavioural component may be interpreted more subjectively than the personality component, resulting in different manifestations across different types of samples. It must also be noted, however, that the

administrators of the PCL-R in this study were all postgraduate students, and may not have had the necessary experience to consider the context in which they were interpreting antisocial behaviour (McDermott et al., 2000). A two factor structure was still broadly represented in a female correctional sample, however some items were found to cross-load or were loading onto the incorrect factors (Salekin, Rogers, & Sewell, 1997). The screening version of the PCL-R (PCL-R:SV) has failed to obtain clear two-factor solutions in a student sample, with this factor structure being particularly difficult to obtain in females when the data was split by gender (Forth, Brown, Hart, & Hare, 1996). The authors do acknowledge, however, the limited range of PCL-R:SV scores as a possible limitation to demonstrating clear factor structures. Using confirmatory factor analyses, Cooke and Michie (2001) concluded that in both offender and non-offender samples the two-factor model using the PCL-R was not sustainable, and as a result propose an alternative model.

2.3.2. Cooke and Michie's (2001) 3-factor model of psychopathy

Cooke and Michie's three-factor hierarchical model (2001) posits that PCL-R Factor 1 can be divided into 2 facets, Arrogant and Deceitful Interpersonal Style, and Deficient Affective Experience, and five of the items from PCL-R Factor 2 comprise the third facet labelled Impulsive and Irresponsible Behavioural Style (Cooke & Michie, 2001). It should be noted that remainder of the seven Factor 2 items that displayed inadequate factor loadings were those relating to the antisocial behavioural component (Cooke & Michie, 2001). Using data from the original PCL-R standardisation sample, all three factors were found to load onto a superordinate factor. This factor structure has since replicated this factor structure in two separate forensic samples (Cooke, Kosson, & Michie, 2001). Further validation of this model in relation to external correlates in a forensic sample has been conducted, with findings suggesting that each factor was related to expected correlates (the interpersonal

factor was related to social dominance, $r = .38$) providing support for criterion validity of the three-factor model (Hall, Benning, & Patrick, 2004). The three-factor model has only been effectively replicated using the PCL-R and its derivatives in homogenous samples. For example, Skeem and colleagues (2003) found support for the three-factor model in a psychiatric inpatient sample. To the author's knowledge, this model has yet to be reproduced in heterogeneous samples, so comments cannot be made regarding the applicability of the model to such samples.

Cooke and Michie (2001) further posit that the antisocial behaviour known to be associated with psychopathy is in fact a correlate rather than a component of psychopathy, as evidenced by seven of the 20 PCL-R items not represented in their three-factor model, all of which comprise the behavioural aspects of psychopathy. It has been said that these antisocial behavioural components have been excluded on the basis that they do not appropriately represent psychopathy as a personality trait (Skeem & Cooke, 2010). However, one could counteract this argument by pointing out that Cloninger (1998) considers personality to made up of both 'character' and 'temperament' dimensions, and therefore argue that the antisocial behavioural component makes up the 'temperament' facet of psychopathic personality. Further statistical criticism of the three-factor model relates to the use of 'testlets' in the hierarchical model, where composition of these testlets have resulted in statistically untenable parameters as a result of adding items that had poor EFA loadings and omitting items with poor to good loadings (Neumann, Vitacco, Hare, & Wupperman, 2005).

2.3.3. 2-Factor/4-facet model of psychopathy

In contrast, Hare (2003) has retained the idea that antisocial behaviour is a component of psychopathy and extended upon his original two dimensional theory of psychopathy, positing that the existing PCL-R factors can be further divided into two facets. Factor 1

comprises Interpersonal Manipulation (glibness/superficial charm; grandiose sense of self-worth; pathological lying; conning/manipulative) and Callous Affect (lack of remorse or guilt; shallow affect; callous/lack of empathy; failure to accept responsibility for own actions), and Factor 2 comprises Erratic Lifestyle (need for stimulation/proneness to boredom; parasitic lifestyle; lack of realistic, long-term goals; impulsivity, irresponsibility) and Antisocial Behaviour (poor behavioural controls; early behavioural problems; juvenile delinquency; revocation of conditional release; criminal versatility). Hare (2003) has indicated that Cooke and Michie's (2001) model is represented in this four-facet model, with the addition of most of the PCL-R items previously excluded by the 3-factor model. Neumann and colleagues (2005) have confirmed this four-facet model in a male offending sample, asserting that antisocial behaviour should not be considered a nuisance variable. They do, however, acknowledge the issue of limiting modelling of these four dimensions based solely on PCL-R measurement, and recognise the importance of replicating this four-facet model using other measures. In response to this, a four-factor structure similar to that of Hare's PCL-R (2003) was discovered and confirmed in an undergraduate sample during the process of revising the Self-Report Psychopathy Scale (Williams, Paulhus, & Hare, 2007).

To summarise, the current state of understanding of the factor structure of psychopathy is one under dispute, given that there is theoretical and some empirical support for 2-factor, 3-factor and 2-factor/4-facet models. However, based on the monopoly that the PCL-R has on the clinical measurement of psychopathy (see subsequent 'measurement of psychopathy' section), the most widely accepted factor structure is currently the two-factor model.

2.4. Measurement of psychopathy

The development of psychopathy scales that have sound psychometric properties is important for conducting high-quality research. Psychopathy can be measured using clinician ratings most often in institutional settings, or self-report measures. The following section will outline the clinician-rated psychopathy assessment (the PCL-R) and a selection of the most frequently used of both of these types of measures.

2.4.1. Clinician-rated assessment: *The Psychopathy Checklist (PCL-R; Hare, 2003)*

As previously discussed, the PCL-R is the most frequently used measure of psychopathy, as both a unitary and two-factor construct (Skeem, Johansson, Andershed, Kerr, & Louden, 2007). It is a 20-item rating scale that uses semi-structured interview, file and collateral information along with specific scoring criteria to measure traits and behaviours related to psychopathy (Hare & Neumann, 2006). Research suggests the PCL-R is reliable and valid for use in clinical and forensic settings, with high levels of inter-rater reliability (intraclass correlation coefficients ranging from .78 to .94) found in male forensic samples (e.g. D. Cooke et al., 2001; Hare et al., 1990). Both the full scale, (Cronbach's alpha = .85 to .89; D. Cooke et al., 2001; Hare et al., 1990) and each of the two PCL-R factors, (Cronbach's alpha = .73 to .91 for Factor 1 and .79 to .82 for Factor 2; Cooke et al., 2001; Skilling, Harris, Rice, & Quinsey, 2002) have satisfactory internal consistency. A meta-analysis of 18 studies concluded that total PCL-R scores were a good predictor of violent behaviour and criminal recidivism, with effect sizes of $d = .79$ and $d = .55$ respectively, which are medium to large effects according to Cohen's (1992) conventions, providing evidence of predictive validity (Salekin, Rogers, & Sewell, 2006).

While many researchers consider the PCL-R to be the landmark of psychopathy measurement, there are noted shortcomings in its use, besides the problem of assuming the

infallibility of the PCL-R (Skeem, Polaschek, Patrick, & Lilienfeld, 2011). It has been suggested that the PCL-R may not adequately measure primary psychopathy, based on the findings concerning primary psychopathy and anxiety (Schmitt & Newman, 1999), which are discussed in section 2.6. In addition, the nature of its administration calls for qualified clinicians that are adept in working within forensic settings and have been professionally trained in PCL-R use (Hare, 1998). Time of administration is lengthy (90 minutes), and gaining access to file information on an individual being assessed is often only available in forensic and clinical settings, with information still being scarce (Lilienfeld & Fowler, 2006).

2.4.2. Self-report psychopathy measurement

Self-report assessment has the advantage of removing the need for reliance on administrators, providing a more economic approach to psychopathy assessment, but may also be problematic. Certain response styles, such as malingering and positive impression management, may be particularly challenging among those classified as psychopaths, but may be detected if the self-report measure includes validity scales (e.g. Edens, Buffington, Tomicic, & Riley, 2001; Poythress, Edens, & Watkins, 2001). A fundamental disadvantage in self-report psychopathy measurement is that individuals classified as psychopaths tend to lie pathologically and do so with impunity (Hare, 1999). Accuracy of reporting is an issue for all psychological self-report measures for all types of respondents. However, the nature of lying of those with psychopathic tendencies is very different to the general population, and is further complicated where lying may largely depend on situational factors and therefore cannot be easily predicted (Lilienfeld & Fowler, 2006). In addition to this dishonesty, an individual with psychopathic traits may lack insight into their own behaviour (Hare, 1999), which one could argue limits the usefulness of self-report items. There is a common misconception, however, to equate factually inaccurate responses to diagnostically unhelpful

ones. For example, 'I can read people like a book' is an item with a true/false response format that appears in the Self-Report Psychopathy Scale (Hare, 1985). An individual who responds 'true' to this is unlikely to be reporting an objectively accurate description of themselves, however the fact that they respond in this way may be a valid indicator of psychopathy.

While self-report measures of psychopathy are not likely to ever be considered a prototypical example of measurement for diagnostic purposes, they may be appropriate for research on large community samples (see review of non-criminal psychopathy in section 2.5). Traditionally, psychopathy research has been conducted with either forensic or clinical samples, where the prevalence of psychopathic tendencies is higher than in the community and file information on individuals, which is relevant for PCL-R measurement, is much more readily available (e.g. Cooke, 1995; Hiatt, Lorenz, & Newman, 2002). This approach is problematic when transferred to community samples, as many of the findings may have limited generalisability to those with psychopathic tendencies residing in the community (Hall & Benning, 2006). Most self-report psychopathy scales were developed for this reason.

The most widely used self-report psychopathy scales are Hare's Self-Report Psychopathy Scale (SRP; Hare, 1985), the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), and the Levenson Self-Report Psychopathy Scales (LSRP; Levenson et al., 1995).

2.4.2.1. Hare's Self-Report Psychopathy Scale (Hare, 1985)

Hare's Self-Report Psychopathy Scale (SRP) was developed by generating an item pool of 75 items using empirical and rational approaches, which was reduced to a final set of 29 items representing psychopathic traits (Hare, 1985). In this original version, the SRP was a self-report scale that was found to only moderately correlate with the PCL ($r = .38$) and was particularly inadequate in measuring the affective components of psychopathy (Hare, 1985).

The SRP was subsequently revised to consist of 60 items, improving the correlation with the PCL (now the PCL-R) and improving the construct validity (Harpur, Hare, & Hakstian, 1989). The SRP-II was found to have two distinct factors, factor one assessing interpersonal and affective features and factor two assessing antisocial and impulsive lifestyle (Lilienfeld & Fowler, 2006). The total score of the SRP-II has consistently been found to be internally reliable in both prison samples (e.g. $\alpha = .80$; Widiger et al., 1996) and undergraduate samples (e.g. $\alpha = .91$; Lilienfeld & Penna, 2001). Internal consistency for the factors individually, however, have been marginal at best (factor one, Cronbach's $\alpha = .59$ and factor two, Cronbach's $\alpha = .72$; Lilienfeld & Penna, 2001). Williams and Paulhus (2004) have pointed out that the factor structure of the SRP-II has its limitations, largely in part due to the saturation of anxiety-related items and the lack of items concerning the antisocial behaviour component. In response to these flaws, further revisions were made to the SRP-II. The revised 31 item SRP-III is a four-factor measure which is correlated with the LSRP ($r = .53$) and PPI ($r = .60$), providing evidence for adequate construct validity. Internal consistency of both the total SRP-III scores (Cronbach's $\alpha = .88$) and each of the subscales (Cronbach's α range = .67 - .91) was satisfactory (Williams et al., 2007). Overall, through the process of revision, the SRP has been found to be an adequate self-report measure of psychopathy.

2.4.2.2. *Psychopathic Personality Inventory (PPI; Lilienfeld, 1990)*

The Psychopathic Personality Inventory (PPI) was originally developed by Lilienfeld (1990) to detect psychopathic personality traits rather than antisocial behaviours in non-criminal samples. Its subsequent use, however, has demonstrated its utility in both forensic and community settings. It consists of 187 items in a 4-point Likert scale format. In addition to being a global measure of psychopathy it also comprises eight subscales (Machiavellian

Egocentricity, Social Potency, Fearlessness, Coldheartedness, Impulsive Nonconformity, Blame Externalisation, Carefree Nonplanfulness, Stress Immunity) that assess different facets of psychopathy, and includes three validity scales designed to assess response styles that are considered specific to psychopathic respondents (Lilienfeld, 1990).

Frequent use of the PPI has demonstrated adequate internal consistency of the total scale in undergraduate (e.g. Cronbach's alpha = .90 to .93; Lilienfeld & Andrews, 1996) and criminal samples (e.g. Cronbach's alpha = .91; Poythress, Edens, & Lilienfeld, 1998). Test-retest reliabilities have also been found to be adequate in undergraduate populations across a one-month period, ranging from $r = .82$ to $.94$ (Lilienfeld & Andrews, 1996). Construct validity has been supported by a positive correlation of the PPI with the PCL-R in a forensic sample ($r = .54$; Poythress et al., 1998). Low or non-significant correlations with measures of unrelated constructs such as the Depression scale of the General Behaviour Inventory (GBI; Depue et al., 1981) have demonstrated divergent validity (Lilienfeld & Fowler, 2006). The individual subscales also have been found to have adequate psychometric properties, with Cronbach's alpha values ranging from .70 to .90 and test-retest reliabilities across a one-month interval ranging from $r = .82 - .94$ in an undergraduate sample (Lilienfeld & Andrews, 1996).

There is empirical evidence demonstrating that the eight subscales can map onto a two-factor structure conceptually similar to the PCL-R (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003). Benning and colleagues determined through the use of exploratory factor analyses that Social Potency, Fearlessness and Stress Immunity formed a factor similar to PCL-R Factor 1, whereas Machiavellian Egocentricity, Impulsive Nonconformity, Blame Externalisation and Carefree Nonplanfulness formed a factor similar to PCL-R Factor 2 (2003). The eighth subscale of Coldheartedness did not load onto either factor, which was surprising given that its items represent facets considered to be central to psychopathy such as

a lack of reaction to other individuals distress (Benning et al., 2003). What is further surprising is that the two PPI factors appear to be orthogonal, that is, uncorrelated with each other, which is unusual as much of the pre-existing psychopathy research has determined the construct to be comprised of two distinct but correlated factors, most often via the use of the PCL-R (e.g. Hare, 1996; Hare & Neumann, 2006).

The PPI has since been revised, removing items determined to be problematic and too culturally specific and lowering the required reading level of the remaining items (PPI-R; Lilienfeld & Widows, 2005). The online version of the PPI-R has similar reliability and validity as its paper-format counterpart (Sandler, 2007). The PPI-R, however, consists of a large number of items (154 items), increasing responding time to inappropriate levels (Sandler, 2007).

The factor structure and validity of the PPI-R has more recently been investigated in a large community sample ($N = 713$), with findings demonstrating evidence for both internal and external validity (Uzieblo, Verschuere, Van den Bussche, & Crombez, 2010). Subsequent research has attempted to address this lack of clarity regarding the factor structure of the PPI-R, suggesting that gender invariance may be influential (Anestis, Caron, & Carbonell, 2011). Findings suggested that neither the previously proposed one two nor three-factor models fit a mixed gender undergraduate sample. When factor structures were allowed to differ across gender, however, it was found that both a one-factor and two-factor model (which distinguishes between Fearless Dominance and Self-Centred Impulsivity but excluded the Cold-heartedness factor) were appropriate. The authors, however, do not make it clear which model appears to be more appropriate for which gender, therefore making it difficult to draw conclusions on the implications of these findings (Anestis et al., 2011). To summarise, the PPI-R has been demonstrated to be a very comprehensive measure of self-report

psychopathy, however its length (154 items) can be a deterrent for its use in non-institutional settings.

2.4.2.3. *Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995)*

Another prominent self-report measure is the Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995). The LSRP was developed by Levenson and colleagues (1995) to identify psychopathic features in non-institutional samples, with the Primary (LSRP-P) and Secondary (LSRP-S) subscales constructed to reflect Karpman's (1948) original hypotheses of primary and secondary psychopathy subtypes (see section 2.6). Further information regarding number of items in the relevant subscales can be found in the methods section of Study One. At its original conception the LSRP-P was found to have sufficient internal consistency ($\alpha = .82$), while the LSRP-S did not appear to have adequate internal consistency ($\alpha = .63$) in an undergraduate sample (Levenson et al., 1995). In subsequent studies in undergraduates, similar results for internal consistency have been found, with alpha coefficients ranging from .73 to .88 (mean = .82) for the LSRP-P, and from .57 to .71 (mean = .64) for the LSRP-S (e.g. Elwood, Poythress, & Douglas, 2004; Falkenbach, Poythress, Falki, & Manchak, 2007; Miller, Gaughan, & Pryor, 2008). In a male forensic population, Cronbach's alphas for LSRP-P and LSRP-S were .85 and .69 respectively (Brinkley, Schmitt, Smith, & Newman, 2001). It is evident that the current version of the secondary psychopathy subscale of the LSRP-S has consistently been lacking in reliability. Further information regarding the psychometric properties of the LSRP can be found in sections 4.1.1. and 4.2.2. It is also important to note that Levenson and his colleagues suggested that the Primary and Secondary subscales can be discriminated on the foundation of trait anxiety, that is, high Primary scores are relating to low anxiety and high Secondary scores are relating to high levels of anxiety (Levenson et al., 1995).

2.4.2.4. Summary of self-report measures

In summary, there is a variety of choice regarding methods of measuring psychopathy. The PCL-R is widely considered to be the prototypical tool of clinical measurement of psychopathy, however in more recent years the demand for measures that assess levels of psychopathy from a dimensional personality trait perspective has resulted in the development of self-report measures such as Hare's Self-Report Psychopathy Scale (SRP; Hare, 1985), the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), and the Levenson Self-Report Psychopathy Scales (LSRP; Levenson et al., 1995). These scales are the most commonly used self-report measures, and are particularly appropriate for use in community samples where administration of the PCL-R may not be feasible due to the lack of file information needed to obtain accurate scores. Such scales are also more appropriate for detecting psychopathy in non-criminal samples where levels of psychopathic traits are likely to be much lower than forensic settings. The following section will elaborate on the nature of non-criminal psychopathy and the importance of investigating this avenue of psychopathy research.

2.5. Psychopathy as a dimension: Evidence of non-criminal psychopathy

Psychopathy was traditionally conceptualised as taxonomical in nature, with use of the PCL-R featuring dominantly in this conceptualisation with its arguably arbitrary cut-off score used to determine if an individual is psychopathic or not. Taxometric analyses of the PCL-R in a male forensic sample have revealed empirical evidence supporting this taxonomy (Harris, Rice, & Quinsey, 1994), however such evidence could be argued as invalid due to the construct only being evident in antisocial and behavioural items of the PCL-R, and not the measure as a whole. Further, Harris and colleagues (1994) examined a psychiatric sample of

which only file data was available to score the PCL-R, limiting the interpretability of their findings.

Subsequent research has attempted to address these limitations and, as a result, have produced evidence of psychopathy as a dimension in an offender sample using the PCL-R (Edens, Marcus, Lilienfeld, & Poythress, 2006; Guay, Ruscio, Knight, & Hare, 2007) as well as in a community sample using the PPI (Marcus, John, & Edens, 2004). Of particular relevance is the evidence of dimensionality of psychopathy in a community sample, as the prevalence and manifestation of psychopathy outside of forensic settings has been of growing interest in more recent years. An advantage of investigating psychopathy in non-criminal samples is that such samples are free from negative effects of institutionalisation and other outcomes of residing in forensic settings (Lilienfeld & Penna, 2001).

It should be noted that subclinical levels of psychopathy, or 'successful' psychopathy is not a new concept, prominent theorists have long suggested the existence of individuals who display psychopathic personality traits without exhibiting the behavioural aspects that can manifest in criminal activity (Cleckley, 1964; Hare, 1970). Widom (1977) was one of the first to develop a method of studying non-criminal psychopathy in community settings. Non-pejorative descriptions of psychopathy were compiled and incorporated into a newspaper advertisement to recruit a sample of 23 males and five females who perceived they met psychopathic personality criteria. Presence of psychopathic traits were confirmed indirectly using MMPI subscales (Hathaway & McKinley, 1967), as direct measures of psychopathy had not yet been developed.

The success of this study influenced further research investigating psychopathy using non-institutionalised samples, much of which was conducted from three different perspectives. One view is that non-criminal psychopathy is a milder manifestation of

psychopathy seen in criminal samples. Another is that non-criminal psychopathy differs in type rather than degree, positing that psychopathy across all settings has the same underlying personality traits which are expressed differently depending whether classified as criminal or non-criminal psychopathy. A third is the dual-process perspective, which suggests that the interpersonal-affective psychopathy component is aetiologically different from the antisocial behaviour component. As a result, non-criminal psychopathy would be more representative of high interpersonal-affective traits but low in the antisocial behaviour component. This perspective is most reflective of the 2-factor model of psychopathy, or the primary and secondary psychopathy subtypes (discussed in section 2.6).

Non-criminal psychopathy as a sub-clinical form of psychopathy has been found to be related to other maladaptive behaviours such as illicit substance use (e.g. Benning et al., 2003; Forth et al., 1996), and histrionic personality disorder, particularly in females (Cale & Lilienfeld, 2002). Gustafson and Ritzer (1995) describe the concept of aberrant self-promotion (ASP) as a personality profile including narcissistic and psychopathic personality traits which tend to coincide with low socialisation and often low scores on social desirability measures. They suggest that ASP can be used to describe psychopathy in community samples, and infer from empirical evidence that approximately 10% of the population exhibit a personality profile reflecting ASP (Gustafson & Ritzer, 1995).

Others argue that the presence of psychopathic traits in non-criminals is no less than in a criminal population, however the external expression of psychopathy appears differently. Porter and Woodworth (2006) provocatively suggest that psychopathy and aggression may be moderated by intelligence, that is, those who are psychopathic with higher intelligence levels tend to express aggression more indirectly, which is less likely to lead to violent criminal behaviour. Clinically, there appears to be a high degree of similarity in the organisation of

psychopathic traits between age-matched incarcerated and non-incarcerated men, despite non-significant group differences in education (Benning et al., 2003).

DeMatteo and colleagues (2005) found a negative relationship between PCL-R scores and protective factors such as 'social support' and 'steady employment' in participants with high levels of psychopathic traits. Of those sampled, it was further noted that non-criminal participants endorsed more protective factors than criminal participants. The authors suggested that while the degree of psychopathy may be comparable across criminal and non-criminal samples, psychopathy may have different manifestations due to protective factors in place that help non-criminal psychopathic individuals evade contact with the criminal justice system (DeMatteo et al., 2005). It must be noted, however that a lack of contact with the criminal justice system does not necessarily equate to a lack of criminal behaviour, it may also be that there are mechanisms in place that allow 'non-criminal psychopaths' to carry out illegal behaviour while eluding detection by the legal system. In a subsequent study by the same authors, one third of non-criminal participants reported a history of violent behaviour (DeMatteo, Heilbrun, & Marczyk, 2006). This finding also offers a possible contradiction to Porter and Woodworth's (2006) previously mentioned suggestion that indirect rather than direct aggression is more likely in non-criminal psychopathy.

Regardless of whether non-criminal psychopathy differs from criminal psychopathy by degree or type, there has been considerable expansion of the body of research surrounding psychopathy in the community, and the quality of the methods used to evaluate non-criminal psychopathy has improved. For example, as previously mentioned, measures have been developed that are appropriate for use in non-forensic settings. By implementing such measures in non-criminal settings researchers have the opportunity to explore possible correlates of the construct. One such correlate that has received considerable attention is anxiety.

2.6. Differentiating between primary and secondary psychopathy subtypes: The role of anxiety

Karpman (1948) was the first to distinguish between primary and secondary psychopathy, the former exhibiting the classic psychopathic personality traits and the latter being somewhat 'neurotic' and engaging in antisocial behaviour due to extreme impulsivity. Primary psychopathy was labelled as idiopathic psychopathy identified by antisociality that is not driven by any identifiable motivation (Karpman, 1948). Secondary psychopathy, however, was referred to as symptomatic psychopathy whereby neurotic and psychotic motivations influenced antisocial behaviour (Karpman, 1948). The differentiation in anxiety levels across primary and secondary psychopathy has theoretical relevance to the conceptualisation of psychopathy. Karpman (1955) identified anxiety as a major phenotypic distinction between primary and secondary psychopathy, suggesting that a lack of anxiety marked the primary psychopath, whereas the secondary psychopath experienced chronic intense anxiety due to early psychosocial learning. It should be noted however that Karpman merely theorised these distinctions based on clinical case studies, rather than from empirical evidence. Consistent with Karpman's conceptualisation of primary psychopathy, Cleckley viewed primary psychopaths as "very sharply characterised by the lack of anxiety (remorse, uneasy anticipation, apprehensive scrupulousness, the sense of being under stress or strain) and, less than the average person, show what is widely regarded as basic in the neurotic" (1976, p. 257).

Investigators have traditionally matched their view of the primary psychopath with Cleckley's typical psychopathy characterisations (e.g. Newman & Brinkley, 1997). It is also said that Hare's PCL-R factors reflect primary (Factor 1) and secondary (Factor 2) psychopathy (Poythress & Skeem, 2006). Primary and secondary psychopathy have been described as comparable to Factor 1 and Factor 2 psychopathy, whereby primary

psychopathy is predominantly concerned with the personality aspects of psychopathy, while secondary psychopathy is characterised by the antisocial behavioural aspects of psychopathy (Poythress & Skeem, 2006).

Lykken (1957) extended Karpman's theory by attempting to provide empirical evidence that was previously lacking, postulating the 'low-fear hypothesis' that primary psychopaths would score lower on fearfulness than secondary psychopaths. 'Fearfulness' was an individual's willingness to participate in dangerous activities, and deviated away from traditional measures of anxiety that were based on neurotic qualities (Lykken, 1957). It was the testing of this hypothesis that began the empirical evidence that suggested levels of anxiety may phenotypically distinguish between primary and secondary psychopathy. Lykken describes his earlier research examining differences between a 'primary sociopathic group' (primary psychopathy), a 'neurotic sociopathic group' (secondary psychopathy) and a 'normal' control group in his book, *The Antisocial Personalities* (Lykken, 1995). In his book he outlines important predictions for testing the 'low-fear hypothesis', attempting to replicate his original findings from 40 years previous. Prediction one stated that primary psychopaths will score lower on a measure of fearfulness compared to secondary psychopaths and non-psychopaths. The second prediction posited that primary psychopaths would show poorer fear conditioning responses to electric shock stimuli in comparison to secondary psychopaths and non-psychopaths. The final prediction related to avoidance learning, whereby primary psychopaths would be less deterred by electric shocks as punishment to incorrectly completing a maze task than secondary psychopaths and non-psychopaths.

Lykken (1995) has stated that in his replication, all three predictions were supported, therefore providing evidence for the hypothesised distinctions between psychopathy subtypes. It must be noted however that in his original study Lykken (1957) used the Taylor Manifest Anxiety Scale (TMAS; Taylor, 1953) and the Welsh Anxiety Scale (WAS; Welsh,

1956) which failed to discriminate primary psychopathy from the non-psychopathic control group. In his replication, however, he used his own Activity Preferences Questionnaire (APQ; Lykken, Tellegen, & Katzenmeyer, 1973) as a measure of fearlessness and found significantly lower APQ scores in primary psychopaths. Subsequent research has supported Lykken's findings, where it has been demonstrated that in a male offender sample, primary psychopaths have larger deficits in passive avoidance learning, involving failing to inhibit punished responses, than low-anxious controls (Cohen's $d = .81$, indicating a moderately large effect), with levels of anxiety measured by the WAS a key variable that moderates these differences (Newman & Schmitt, 1998).

Lykken also saw parallels between his own low-fear hypothesis and Gray's (1987) conceptual model of the nervous system, part of the Reinforcement Sensitivity Theory (RST). Gray's RST is a well-recognised theory, positing that there are two motivational systems in an individual; the behavioural activation system (BAS) that is sensitive to reward cues, and the behavioural inhibition system (BIS) that is sensitive to punishment cues and is associated with passive avoidance (Gray, 1987). According to Lykken, primary psychopathy is associated with an average BAS and a hypo-reactive BIS, while secondary psychopathy is related to an average BIS and a hyper-reactive BAS (Lykken, 1995). That is, primary psychopaths should have deficits in passive avoidance while secondary psychopaths have high levels of impulsiveness and sensation seeking. Ross and colleagues (2007) tested Gray's model in a non-institutionalised sample using Carver and White's (1994) BIS/BAS scales, and found that primary psychopathy was negatively related to the BIS ($r = -.40$), while the BAS was positively related to both primary ($r = .46$) and secondary psychopathy ($r = .46$), not supporting Lykken's original hypothesis. Further research has supported the notion of high BAS as a central component of psychopathy as a whole (Ross, Benning, Patrick, Thompson, & Thurston, 2009). Similar findings have also been found using a dimensional

measure of psychopathy (the LSRP) rather than a taxonomic measure (PCL-R), that is, high BAS predicted both LSRP-P and LSRP-S scores (Hundt, Kimbrel, Mitchell, & Nelson-Gray, 2008). It should be noted however that Gray's original RST has been revised to include three neuropsychological systems (Gray & McNaughton, 2000). These comprise of the original BAS, the BIS which now is defined to represent anxiety, and the flight-fight-freeze-system (FFFS) which exclusively defines fear.

Such clarifications of Gray's theory have been seemingly ignored by psychopathy researchers. Poythress and his colleagues (2008) have criticised the use of Carver and White's (1994) BIS scale as a direct measure of fear. Their argument is one of semantics, suggesting that the BIS scale should be labelled a measure of anxiety rather than fear, (which underlies Lykken's original theory) and as a result the BIS scale lacks construct validity. Newman and Malterer (2009) responded to these statements, proposing that the problems cited by Poythress et al. (2008) are as much influenced by Lykken's model as Carver and White's measure. Within this argument there does not appear to be any acknowledgement of the distinctions now made between anxiety and fear within Gray's theory.

Other concerns have been expressed regarding Lykken's hypothesis. One concern is that Lykken made an a priori assumption that primary psychopathy is distinguished by low fear (Newman & Brinkley, 1997). Newman and Brinkley (1997) also questioned the indices of anxiety measurement used and the ability of the APQ to distinguish between primary and secondary psychopathy. The APQ is not a well-recognised measure of anxiety in psychopathy research or in general, usually used to measure social anxiety in general populations rather than detect psychopathology relating to anxiety in individuals (Blankstein, 1975). In their own research Schmitt and Newman (1999) reinforce these concerns with their own findings that anxiety and psychopathy appear to be independent constructs that are not significantly correlated. Lykken (1995) himself has recognised inconsistencies in attempts

made to replicate his findings, particularly using the APQ. Critics have also noted the crude methods of psychopathy measurement adopted involving diagnoses loosely based on Cleckley's (1964) criteria, as the PCL-R had not yet been developed during Lykken's original study (1957).

Researchers have also expressed concerns about Lykken using the terms 'anxiety' and 'fearlessness' interchangeably, suggesting that Lykken interpreted anxiety as fear (Newman & Brinkley, 1997). Schmitt and Newman (1999) have recognised that there is a diverse conceptualisation and measurement of anxiety as a construct in the field of psychopathy research, with some researchers interpreting anxiety as neuroticism (Hare, 1970) and others recognising neuroticism as important but not central to the construct (Gray, 1991). This point also relates to the previously outlined inconsistencies surrounding the use of the BIS/BAS scales to differentiate psychopathy subtypes.

Schmitt and Newman (1999) investigated the anxiety-psychopathy relationship using nine different self-report measures of anxiety, neuroticism and fear. Results suggested that once the antisocial lifestyle aspects of psychopathy were controlled for (PCL-R Factor 2), there appeared to be no significant relationships between total PCL-R scores and scores of well-validated 'pure' measures of anxiety (e.g. the Beck Anxiety Inventory, BAI; Beck, Epstein, Brown, & Steer, 1988) in two male offending samples (Schmitt & Newman, 1999). This finding supports the suggestion that the relationship between psychopathy and anxiety has been masked by negative consequences of an antisocial lifestyle (e.g. Lilienfeld, 1994), and suggests further investigation of secondary psychopathy and its relatedness to anxiety in more detail.

In other research, Newman defined primary psychopathy as those with high total PCL-R Factor 1 scores and low Welsh Anxiety Scale (WAS; Welsh, 1956) scores, and secondary psychopathy as those with both high PCL-R Factor 2 scores and WAS scores

(Newman, MacCoon, Vaughn, & Sadeh, 2005). Model-based cluster analyses have also distinguished between primary and secondary psychopathy using the PCL-R while demonstrating the expected differences in anxiety across the subtypes, as measured by the WAS (Hicks, Markon, Patrick, Krueger, & Newman, 2004).

Additional research, however, has failed to establish marked distinctions in anxiety levels across psychopathy subtypes in an undergraduate sample (Lilienfeld & Perna, 2001). The authors reported variables relationships between anxiety sensitivity measured by the Anxiety Sensitivity Index (Reiss, Peterson, Gursky, & McNally, 1986), and a variety of Factor 1 or primary psychopathy measures (Lilienfeld & Perna, 2001). For example, the LSRP-P was non-significantly positively correlated with ASI ($r = .13$), while Hare's Self-Report Psychopathy Scale Factor 1, however, was significantly negatively related ($r = -.44$). Positive, relatively weak relationships were reported between Factor 2 or secondary psychopathy measures and ASI scores (Lilienfeld & Perna, 2001). One explanation for these findings raised by the authors was the use of an undergraduate sample that may produce a restricted range of psychopathy scores and thus attenuate anxiety sensitivity-psychopathy relationships, however they go on to suggest that this may not be a complete explanation given that some of their obtained correlations were significant. In any case, these findings illustrate negligible differences in how anxiety sensitivity is related to subtypes of psychopathy, which is inconsistent with previously discussed research.

The research discussed thus far illustrates that there is much confusion relating to using anxiety versus fearlessness to distinguish between psychopathy subtypes. One could argue that older measures of anxiety have been less extensively validated and conceptually too broad and therefore unable to distinguish between situational physiological responses to anxiety-provoking situations (measured in experimental settings) and the predisposition to be anxious and neurotic across multiple contexts, that is, trait anxiety (measured via self-report).

More refined measures now distinguish between state and trait anxiety, for example the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970) which is known to be a well-established and widely used measure of anxiety.

Attempts have been made to explain the psychopathy-trait anxiety relationship using the STAI and other similar measures. Such avenues of research are more reflective of Karpman's (1941) hypotheses concerning trait anxiety and psychopathy subtypes. Further support for pursuing the psychopathy-trait anxiety relationship comes from Skeem and her colleagues (2007) who have stated that "trait anxiety is a promising place to look for variants of psychopathy" (p. 396).

The earliest known investigation of psychopathy and trait anxiety was conducted by Harpur and colleagues (1989) during the process of validating the construct validity of the PCL in a male criminal sample. Results showed significant negative correlations with PCL Factor 1 scores and the trait subscale of the STAI (STAI-T; Spielberger et al., 1970), and significant positive correlations between PCL Factor 2 and STAI-T scores, suggesting an inverse relationship between Factor 1 and 2 scores in regards to trait anxiety.

Contemporary research, however, has revealed mixed findings in regards to trait anxiety and psychopathy. Hale and colleagues (2004) examined possible relationships between STAI-T, ASI, WAS and PCL-R scores in male inmates (Hale et al., 2004). Factor 1 PCL-R psychopathy was not found to be significantly related to STAI-T or ASI scores, however there was a significant semi-partial correlation between Factor 1 psychopathy and WAS scores, after controlling for the other anxiety measures ($sr = -.17$). This suggests that interpersonal and affective facets of psychopathy may be more related to general negative affectivity rather than specific anxiety constructs, given that the WAS has been described as a measure of general maladjustment rather than anxiety specifically (Greene, 1999). Factor 2 psychopathy, however, had differing relationships with anxiety. Total STAI-T and WAS

scores, but not total ASI scores, were found to be positively related to Factor 2 psychopathy. When parsing the ASI into its subscales, however, relationships were found. The ASI subscale measuring physical concerns associated with anxiety was found to be negatively related to Factor 2 psychopathy when other anxiety measures were controlled for ($sr = -.20$), suggesting that decreased sensitivity to anxiety-related bodily sensations may contribute to antisocial behaviour (Hale et al., 2004). The mental incapacitation and social concerns ASI subscales were positively related to Factor 2 psychopathy ($r = .18$ and $r = .23$ respectively), however Hale et al. (2004) have suggested that explanations behind such relationships like these remain unclear.

These contradictions in findings across sample types could tentatively suggest that anxiety-psychopathy relationships may manifest themselves differently depending on the population type in question. It must also be noted, however, that different psychopathy measures were used across samples and could also contribute to the differences. That is, as previously mentioned, certain self-report psychopathy measures are designed to be more sensitive than the PCL-R to low levels of psychopathy (e.g. Levenson et al., 1995).

To summarise, findings on the anxiety-psychopathy relationship appear inconclusive. A promising but under-developed avenue of research appears to be regarding the psychopathy-trait anxiety relationship, particularly in the area of dimensional psychopathy rather than the psychopath/non-psychopath taxonomy. Much of the research specifically concerning primary and secondary subtypes has been in relation to Gray's BIS/BAS model, which does specifically focus on the trait aspect of the anxiety construct (e.g. Hundt et al., 2008).

It should also be noted that the majority of this research has been conducted on male offending samples. Particularly in relation to self-report measures, levels of fear and anxiety may be underreported in prison settings where individuals would be expected to suppress

such responses and exude 'toughness'. Such response bias coupled with the use of homogenous samples results in limited generalisability of findings to a non-criminal population.

While trait anxiety is a possible correlate of psychopathy that may differentiate between primary and secondary subtypes, there are other constructs that have been investigated in relation to psychopathy. One broad area is that of emotional processing deficits.

2.7. Role of emotional deficits in psychopathy

The following section will discuss deficits in emotion processing and their associations with psychopathy. Deficits in affect are commonly understood to be a core characteristic of psychopathy, with such deficiencies to have likely arisen from emotion processing difficulties (Rogstad & Rogers, 2008). Cleckley (1964) theorised that psychopaths suffer from a general poverty of emotions. He further clarified that while there is not necessarily a complete lack of emotional experience in the individual with psychopathic traits, there is a markedly shallow level of understanding of emotions, often only held at a cognitive level rather than an emotional 'feelings' level (Cleckley, 1964).

The fast-growing body of research surrounding emotion and psychopathy has led to an abundance of empirical evidence to support deficits in a vast range of aspects of emotion processing. One of the prominent themes in contemporary research relates to psychopathic individuals experiencing deficits in recognising and acknowledging emotion in others (e.g. Steuerwald & Kosson, 2000), as abnormalities in emotional responsiveness has been described as a defining feature of psychopathy (S.C. Herpertz & Sass, 2000). The findings related to responses to punishment-related stimuli in Lykken's (1957) seminal research investigating the low-fear hypothesis supports this description. Observations of individuals'

startle responses to aversive fear-related stimuli in a forensic sample with psychopathic tendencies have revealed the absence of normal response patterns (Patrick, Bradley, & Lang, 1993). Herpertz and colleagues (2001) found similar findings in a criminal sample, not only using stimuli related to fear, but other general emotional stimuli, suggesting a broad deficit of affective information processing when compared to a non-psychopathic control group. It should be noted, however, that the control group was from a non-criminal sample, raising possible group non-equivalence threats.

When investigating processing of emotionally laden verbal information in a criminal male sample, Williamson et al. (1991) discovered that psychopathy has associations with defective processing skills in relation to differentiating between neutral and emotionally valenced verbal stimuli. The authors suggest that psychopaths appear to have a lessened ability to connect with affective information, while also acknowledging the possibility that those with high levels of psychopathy may adopt other strategies to distinguish between affective and non-affective verbal material (Williamson et al., 1991). Habel and colleagues (2002) found that criminal offenders with psychopathic personalities appear to have poorer performance on emotion discrimination tasks compared to non-psychopathic controls, suggesting that there may be a relationship between discrimination of emotions and personality features of psychopathy. However, like Herpertz et al. (2001), the control group was recruited from a non-criminal population, introducing non-equivalence bias, making it difficult to argue for differences across psychopathy levels rather than presence of incarceration.

Further research exploring semantic and affective priming in incarcerated psychopaths indicates a deficit in affective but not semantic priming, suggesting that psychopathic individuals may not necessarily have deficits in recognising and labelling emotive language but may have a lack of emotional experience themselves when exposed to

such language (Blair et al., 2006). This discordance in expressed and experienced values of emotion within psychopathic individuals supports Cleckley's (1964) earlier theories. Emotion recognition deficits have also been found in identification of facial expressions of emotion, with psychopathic male inmates having a decreased recognition of displays of both positive and negative facial affect, and an increased difficulty when such displays were subtle (Hastings, Tangney, & Stuewig, 2008). Lateralisation of emotion processing in those high in psychopathy has been investigated through use of a dichotic listening task (Hiatt et al., 2002). A clear deficit in emotion asymmetry was observed, while psychopaths' language asymmetry appeared to be normal (Hiatt et al., 2002).

A much smaller body of research has focused on emotion processing and psychopathy in non-forensic samples. In an undergraduate sample of 32 participants, Montagne et al (2005) demonstrated differences in processing ability of fearful expressions, with a 'high psychopathy' group performing comparably worse than a 'low psychopathy' group. The psychopathy levels of these groups, however, were determined by scores on Carver and White's (1994) BIS/BAS scales. The authors cited evidence to suggest some form of rationale behind using such scales to determine levels of psychopathy, for example, high BAS and low BIS reflects a psychopathic personality, while low BAS and high BIS is indicative of a non-psychopathic personality (Kring & Bachorowski, 1999 as cited in Montagne et al., 2005). Using such criteria to measure psychopathy when there are readily available self-report psychopathy measures appropriate for non-clinical sample (e.g. LSRP; Levenson et al., 1995) limits the interpretability of these findings. In a sample of 55 male undergraduates split into high and low psychopathy groups based on PPI (Lilienfeld & Andrews, 1996) scores, high psychopathy was associated with less accuracy in a word decision task with negatively emotionally valenced words, however no differences in high and low psychopathy were seen when using positively valenced words (Long & Titone,

2007). This suggests that a lack of ability to process verbal forms of negative emotionality could be a defining characteristic of psychopathy outside of criminal samples where such findings have also been noted (e.g. Williamson et al., 1991).

The previously mentioned research appears to demonstrate broad empirical evidence to suggest a general emotional deficit associated with psychopathy, yet there are indications that some of these findings should be interpreted with caution. A recent meta-analysis of 22 studies concerning recognition of a range of emotions and psychopathy in both criminal and non-criminal samples suggests that the overall practical significance of these studies may have been overestimated (Wilson, Juodis, & Porter, 2011). Effect sizes were found on average to be extremely small, except those concerning sadness and fear, with the suggestion that the majority of studies in this field were likely to be underpowered to find such effects (Wilson et al., 2011).

Another limitation to research in both criminal and non-criminal populations is the measurement of psychopathy as a unitary construct. There is a very small but growing body of research investigating the possibility of emotion processing having differing relationships with primary and secondary psychopathy (see section 2.6. on discussion of the subtypes). This subfield of research has become necessary, as there has been a lack of speculation on whether personality characteristics or behavioural aspects of psychopathy are primarily associated with emotional deficits.

Individuals scoring high on primary psychopathy measured by the PPI in an undergraduate sample made few errors in recognition of fearful facial expressions, which makes sense given their predatory nature where recognising fear in others would aid their deviance (Del Gaizo & Falkenbach, 2008). The same authors, however, failed to find support for the hypothesis that secondary psychopathy scores would have a strong negative relationship with perceptual emotional deficits, which could possibly be attributed to the

largely non-antisocial, non-aggressive sample (Del Gaizo & Falkenbach, 2008). Another important finding in this study was that there seemed to be a stronger relationship between psychopathy subtypes and affective experience than emotion perception. This suggests that perhaps it may be more important to pursue the avenue of psychopathy research that involves intrapersonal emotion processing, that is, the inner experience of emotions, rather than how psychopathy relates to processing other individuals emotional expression.

In a predominantly female undergraduate sample, Ali and colleagues (2009) demonstrated differences in emotional experience across primary and secondary psychopathy measured by the LSRP. Primary psychopathy was found to be associated with positive affect when exposed to 'sad' stimuli ($r = .22$), which could suggest a link between primary psychopathy and sadism; experiences of pleasure as a result of others misfortune (see Baumeister & Campbell, 1999), however this assumption is premature as it is based on a single study (Ali et al., 2009). This study also demonstrated an association between secondary psychopathy and a tendency to experience negative affect as a result of exposure to neutral stimuli ($r = -.23$). Such results illustrate that differentiations can be made across psychopathy subtypes in terms of experience of basic emotions. Ali et al.'s (2009) findings were replicated and further extended in a similar sample also using the LSRP, finding primary psychopathy was more associated with inappropriate responses to both negative and positive emotional expression than secondary psychopathy (Wai & Tiliopoulos, 2012). It was also demonstrated that primary psychopathy but not secondary psychopathy appears to be related to deficits in identification of emotional expression in faces.

There is also further evidence to suggest differential relationships between constructs associated with emotional deficits and primary and secondary psychopathy. Alexithymia, defined as the inability to identify and describe one's own emotions (G. Taylor, 2000), has been demonstrated to be related to secondary but not primary psychopathy (Lander, Lutz-

Zois, Rye, & Goodnight, 2012). Emotion processing skills conceptualised as Theory of Mind have also been explored in relation to psychopathic subtypes (Ali & Chamorro-Premuzic, 2010). Results indicate that primary psychopathy seems more related to Theory of Mind deficits than secondary psychopathy, the authors relating such findings to Blackburn's (1993) suggestion that secondary psychopaths experience more emotion as a result of their emotional instability.

As a result of the evidence surrounding emotion processing deficits and psychopathy, there have been claims that perhaps a broader approach may be warranted in regards investigating influences of individual differences in psychopathic traits. It is reasonable then to suggest that emotional intelligence (EI) as a general construct may be an avenue worth investigating in relation to psychopathy.

2.7.1. Emotional Intelligence (EI) and psychopathy

While competing definitions of EI exist, one widely used definition is “the ability to monitor one's own and others' emotions, to discriminate among them, and to use the information to guide one's thinking and actions” (Salovey & Mayer, 1990, p. 189). Research concerning EI and psychopathy has been mixed, finding differing relationships between EI and primary and secondary psychopathy, or no relationships at all (Ali et al., 2009; Malterer, Glass, & Newman, 2008; Vidal, Skeem, & Camp, 2010; Visser, Bay, Cook, & Myburgh, 2010). It is not surprising, however, that such conflicting results have been found, as the construct of EI is one that has been met with strong criticism from many theorists and researchers. There is no consensus on a clear conceptualisation of EI, with trait, abilities-based and mixed models of EI proposed (Matthews, Roberts, & Zeidner, 2004). In addition to the lack of consensus over models, many EI measures do not provide adequate objective criteria for administrators to interpret responses accurately (Murphy, 2006). A recurring

criticism is that EI is simply a new name for existing constructs that have already been extensively studied, such as self-monitoring and social skills (Matthews et al., 2004). Furthermore, in terms of predicting outcomes such as school and workplace success, many EI measures do not account for additional variance, beyond that already accounted for by existing general intelligence and personality measures (Conte, 2005). Based on the ambiguity of EI as a construct, and consequently the questionable use of existing EI measures, it may be preferable to examine relationships of individual sub-components associated with emotion-related processes, rather than EI, with psychopathy. Processes that have been somewhat neglected in regards to their association with psychopathy are emotion regulation and emotion manipulation.

2.7.2. Emotion regulation

The expansive body of literature focussing on emotion regulation is multidisciplinary, and as a result, there is conflict over the definition of the construct (Koole, 2009). An integrated definition, however, has been offered which is that emotion regulation can be defined as “the set of processes whereby people seek to redirect the spontaneous flow of their emotions” (Koole, 2009, p. 5). Emotion regulation is critical as individuals may experience positive or negative emotions either too frequently or intensely or in inappropriate contexts and need to employ strategies that regulate both the internal experience and outward expression of their emotions (Werner & Gross, 2010). While it has been suggested that emotions can be regulated by both internal and external forces, and that the construct of emotion regulation includes regulation of both one’s own and other people’s emotions, this review focusses on the internal aspects of emotion self-regulation, as it is intrapersonal emotion processes that have lacked empirical scrutiny in relation to psychopathy (see rationale in Chapter Three).

When emotion self-regulation has a detrimental impact on an individual, it is often as a result of the individual consistently employing maladaptive regulatory strategies (Werner & Gross, 2010). Theorists suggest that long-term deficits in regulating emotions are key characteristics often used to describe general adult psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Emotion dys-regulation figures prominently in classifying psychopathology, characterising more than 75% of diagnostic categories of disorders outlined by the DSM-IV (Werner & Gross, 2010).

Aldao and colleagues (2010) conducted a thorough meta-analysis of studies implementing self-report measures of emotion regulation strategies and their relationship with particular psychopathologies. Results suggested that the relationship between regulatory strategies and psychopathologies varied depending on strategy and psychopathology type, particularly highlighting that maladaptive strategies had stronger associations than adaptive strategies.

As previously mentioned, a multidisciplinary approach to emotion regulation has spawned many competing theories. One dominant theory is the process model of emotion regulation (Gross, 1998). This model posits that an emotion may be regulated at one or more of the following five points in the emotion generative process: *situation selection* (choosing whether or not to enter an emotion-eliciting situation); *situation modification* (acting on the situation itself to modify the emotional impact); *attentional deployment* (choosing which aspects of the situation to focus on); *cognitive change* (modifying the way one construes the meaning of the situation); or *response modulation* (attempting to influence emotion response tendencies such as facial expression once they have already been elicited). The first four parts of the process involve strategies implemented before the emotional response starts and are referred to as antecedent-focused. Response modulation, however, occurs after the elicitation

of such a response and is therefore labelled a response-focused strategy (Werner & Gross, 2010).

Gross's research has focused on comparisons between adaptive and maladaptive strategies of regulation, namely, reappraisal (adaptive) and suppression (maladaptive) (e.g. Gross, 1998; 2001, 2002). Reappraisal involves an individual cognitively re-evaluating a situation to potentially decrease its emotional impact, thus making it antecedent-focused regulation (Gross, 2001). This is considered adaptive and more effective than response-focused strategies because of the involvement of cognitively neutralising emotional situations which require little cognitive effort as the potential emotion has not yet developed (Gross, 2002). It also allows for appropriate interpersonal behaviour between the individual and those interacting with them, which in turn permits others to perceive the individual as engaging and responsive (John & Gross, 2004).

Suppression, on the other hand, is response-focused in that an individual will inhibit any ongoing expressed emotional behaviour (Gross, 2001). As the experienced emotion has already developed, the strategy places more cognitive demands and does not assist in the reduction of the internal experience of the emotion, only its external expression (Gross, 2002). It is maladaptive because it requires an individual to exert effort to manage emotional responses as they continuously arise, not allowing for cognitive resources to be used in performance in social contexts where emotions may arise (John & Gross, 2004). The individual who suppresses still experiences the full impact of both positive and negative emotion, but does not allow him/herself the outlet in which to express it.

The consequences of chronic use of suppression have been suggested to be detrimental to an individual. In a physiological sense, those who continually inhibit their emotions tend to be more prone to disease than those who express their emotions (Gross & Levenson, 1993). What is most concerning from a psychological perspective is the potential

impacts of chronic suppression on behaviour and social interaction (Salters-Pedneault, Steenkamp, & Litz, 2010). Evidence suggests that chronic suppressors have difficulties controlling impulsive behaviour such as aggression, self-harm and attempted suicide (e.g. Nagtegaal & Rassin, 2004; Najmi, Wegner, & Nock, 2007). Impediments in the development and maintenance of emotionally close relationships also occur, and include a decreased capacity to develop rapport with others (Butler et al., 2003), and decreased levels of self-esteem and psychological adjustment (Nezlek & Kuppens, 2008). In addition, Nezlek and Kuppens (2008) found that individuals who frequently adopt reappraisal as an emotion regulation strategy have increased self-esteem and psychological adjustment levels in comparison to chronic suppressors. It should also be noted that findings from Aldao and colleagues' meta-analysis (2010) demonstrate that suppression is consistently more strongly associated with general psychopathology (medium to large effect sizes) than reappraisal (small to medium effect sizes).

While Gross's conceptualisations of reappraisal and suppression are widely adopted templates in which to investigate individual differences in emotion regulation, it is also important to acknowledge that types of emotional regulatory processes are wide and varied. Gratz and Roemer (2004) reviewed the body of literature and discerned four broad categories of regulatory processes; emotional awareness, emotional acceptance; ability to control impulsive behaviour in a socially appropriate manner when experiencing negative emotions, and ability to use appropriate emotion regulation strategies flexibly to modulate emotional responses. As a consequence of this review, the authors developed an integrative self-report measure of general emotion dys-regulation aptly named the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). This measure is discussed further in a subsequent section of this thesis (section 4.2.3.), however it should be noted that this measure

appears to have good psychometric properties of each of its subscales as well as the DERS as a whole.

The successful development of a measure such as the DERS offers support of the multidimensional conceptualisation of emotion regulation, while also demonstrating that a measure of general emotion dys-regulation can be reliable and valid. Recent empirical support has been found for the long-proposed role of general difficulties in emotion regulation in Borderline Personality Disorder (BPD; see Linehan, 1993) in a sample of outpatients diagnosed with BPD (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006). Results highlighted that in particular, BPD patients had difficulty expressing their willingness to experience distress when compared to a control group with no personality disorders.

There have also been demonstrations of the importance of emotional regulatory behaviours outside of clinical settings. For example, in an undergraduate sample it was found that general difficulties in emotion regulation accounted for a significant unique proportion of variance in binge eating, above and beyond that of other typical related behaviours such as food restriction and body shape over-evaluation (Whiteside et al., 2007). Such evidence demonstrates the relevance of investigations of the role of emotion regulatory strategies outside the bounds of Gross's (2002) model of emotion regulation.

2.7.2.1. Emotion regulation and psychopathy

While relationships between emotional experience (or lack thereof) and psychopathy have received significant attention, research directed towards understanding the direct function of emotion regulation in relation to psychopathy has been scarce. Indirect evidence has demonstrated that characteristics known to be associated with secondary psychopathy such as impulsivity and antisocial behaviour have been found to be related to a difficulty in mood maintenance and regulating negative affect (Stinson, Becker, & Sales, 2008). It should

be noted that Blackburn (1993) posited that BPD and secondary psychopathy are highly similar particularly in regards to emotional instability, with those high in secondary psychopathy often qualifying for BPD diagnoses, more so than primary psychopathy.

There is currently only a small body of research concerning emotion dys-regulation and psychopathy, most of which has measured suppression of emotion neurologically in experimental settings (e.g. Casey, Rogers, Burns, & Yiend, 2012; Harenski, Kim, & Hamann, 2009). Harenski and colleagues (2009) measured psychopathy using the PPI self-report measure in a non-criminal female sample ($N = 10$), predicting high psychopathy scores would be positively associated with abnormal neurological functioning when suppressing emotional responses to unpleasant pictures. This prediction was supported; however the study has limited generalisability due to the small sample size.

Casey and colleagues (2012) sampled violent offenders and divided them into 'high' and 'low' psychopathy measured by the PCL-R. They were then exposed to positive and negative picture stimuli, after which cardiovascular responsivity and subjective affective ratings to each stimulus was measured (Casey et al., 2012). Participants were instructed to either, 'look' (view the picture naturally), 'suppress' (view picture objectively like a photographer) or 'experience' (imagine themselves in the picture scene) each picture stimuli. Their most salient finding in terms of emotional regulatory processes illustrated that higher Factor 1 psychopathy levels were related to smaller heart rate increases when asked to 'experience' negative picture stimuli. Casey et al. (2012) suggest this could be a possible explanation for the inherent lack of empathy towards others. In regards to emotion suppression, however, the results reported were sparse or inconclusive, which suggests that perhaps emotional suppression and psychopathy need to be focussed on in subsequent studies. As previously mentioned, suppression of emotional responses is an important aspect

of emotional regulation, the outcome of which can often have detrimental psychological effects (e.g. Nagtegaal & Rassin, 2004; Najmi et al., 2007).

To the authors knowledge there has not been any published research to date that has been concerned with self-reported emotion regulatory processes and their relationship with psychopathy. One unpublished Masters dissertation was located, however, which explored the relationships between alexithymia, emotion regulation and primary and secondary psychopathy via self-report methods in an undergraduate sample (Ridings, 2011). Emotion regulation was measured via both the ERQ (Gross & John, 2003) and the DERS (Gratz & Roemer, 2004), while psychopathy was measured using the LSRP (Levenson et al., 1995). Results revealed that general dys-regulation measured by the DERS influenced the relationship between secondary psychopathy and alexithymia. This study also hypothesised that there would be no significant relationship between reappraisal measured by the ERQ and primary psychopathy. The author claimed this hypothesis was supported due to a very weak correlation between reappraisal and primary psychopathy ($r = .02$), however to accurately support hypotheses specifying non-significance, very large sample sizes are needed (Tabachnick & Fidell, 2007). With a sample size of 100 participants, this study failed to have adequate power to test this hypothesis. The authors also hypothesised negative correlations between suppression and secondary psychopathy, however this was not supported, with no significant correlation found ($r = -.01$).

To summarise, the broad realm of research concerning emotional deficits and psychopathy has received much attention, while narrower avenues of emotion processing are growing areas of investigation. Research concerning emotion regulatory strategies and their association with psychopathy is currently sparse and inconclusive. Other aspects of emotion processing are also important to consider in relation to psychopathy, such as ability to manipulate emotions.

2.7.3. *Emotion manipulation*

Emotion manipulation refers to positive or negative social influence involving the change of another person's perception or behaviour by the manipulator, using various tactics such as reasoning, coercion and charm (Buss, Gomes, Higgins, & Lauterbach, 1987). Research in the field of emotional manipulation has been relatively scarce, which is surprising given that natural selection favours those who successfully manipulate objects in their surroundings (Buss et al., 1987). The research that has been conducted has focused on studying the types of manipulation tactics individuals use in varied settings and interaction pairs. There is evidence to suggest that differing manipulation tactics used in close relationships have links with certain personality factors, for example, the tactic of reasoning is associated with the Intellect-Openness factor (Buss, 1992; Butkovic & Bratko, 2007). In the workplace, similar associations between personality factors and types of manipulation tactics used have been found (Caldwell & Burger, 1997), with the timing and variation of manipulation tactics partially dependent on the individual's position within the hierarchy of a corporate setting (Kipnis, Schmidt, & Wilkinson, 1980). It should also be noted that tactics of manipulation in individuals appears to vary across types of relationships (Buss, 1992).

Limited research has been conducted that conceptualises emotional manipulation as a holistic ability that can be measured. It is only recently that researchers have asked to what extent individuals read and manage the emotions of others in order to manipulate their behaviour (Austin et al., 2007). Further, few have pursued exploring individual differences in emotional manipulation from a non-prosocial perspective. The little empirical research that has been conducted has focussed on comparing individual differences in emotional manipulation to levels of Machiavellianism (MACH; characterised by a tendency towards emotionally manipulative behaviour), a related but distinct construct to psychopathy (Paulhus & Williams, 2002). Austin and colleagues (2007) examined associations between MACH,

self-report EI and Big Five personality factors and emotional manipulation using the newly developed self-report Emotion Manipulation Scale, or EMS (Austin et al., 2007). This measure comprises of 'general emotion manipulation', 'poor emotion skills' and 'emotional concealment' subscales (see section 4.2.2. for further detail regarding this measure). It was reported that the 'general emotion manipulation' EMS subscale was positively related to MACH but unrelated to EI, while it should be noted that a negative relationship was found between MACH and EI ($r = -.25$). These findings suggest that high levels of Machiavellianism are associated with endorsement of emotion manipulation-related items, but there may be a disconnect between individuals intentions to be emotionally manipulative and their ability to employ such strategies (Austin et al., 2007). It was also found that EI was uncorrelated with general emotion manipulation (but correlated with the other two EMS subscales), which could suggest distinct constructs, however this is more likely attributed to the lack of emotional manipulation items in self-report EI measures.

Associations between emotion manipulation and levels of sincerity and self-monitoring have also been established (Grieve, 2011), using the general emotion manipulation subscale from Austin et al.'s (2007) EMS. Sincerity was measured by the honesty-humility subscale of the HEXACO-60 measure of personality (Ashton & Lee, 2009), which was found, as hypothesized, to be a significant negative predictor of general emotional manipulation ($r = -.54$) in an Australian undergraduate sample (Grieve, 2011). This finding makes sense given that a lack of humility would likely facilitate an individual's manipulative nature. Findings also supported the hypothesis that self-monitoring, that is, the ability to monitor self-presentation of emotions, would be a positive predictor of emotion manipulation ($r = .48$) (Grieve, 2011). Overall these findings provide evidence for a 'darker side' of both emotion processing and personality that appear to be inter-related. Further, such relationships appear to be evident in a non-forensic setting.

There is also evidence to suggest that correlates of emotion manipulation appear to differ across males and females, particularly in relation to social skills. Grieve and Panebianco (2012) demonstrated that in males social information processing skills was a positive predictor of emotion manipulation ($\beta = .38$), while in females social awareness was a negative predictor of emotion manipulation ($\beta = -.17$). It should be noted however that the sample consisted of almost double the number of females than males.

2.7.3.1. Emotional manipulation and psychopathy

Very little published research has examined the relationship between emotion manipulation and both primary and secondary psychopathic traits. Grieve and Mahar (2010) conducted a study utilising an Australian undergraduate population, emotion manipulation was measured using the EMS (Austin et al, 2007). General emotional manipulation was significantly positively associated with both primary ($r = .53$) and secondary psychopathy ($r = .35$) in two separate studies, with a stronger relationship evident with primary psychopathy (Grieve & Mahar, 2010). The researchers stated that this was expected given the manipulative nature of psychopathy would theoretically be more apparent in primary psychopaths (Skeem et al., 2007). Poor emotion skills were positively related to secondary psychopathy ($r = .34$) but not primary psychopathy. This was also expected by the researchers as previous studies show secondary psychopaths have poorer emotion perception skills than primary psychopaths (Del Gaizo & Falkenbach, 2008). It was similarly hypothesised and supported that emotional concealment would be positively related to secondary psychopathy ($r = .26$) but not primary psychopathy, suggesting perhaps primary psychopaths experience lower levels of emotion that need to be concealed (Grieve & Mahar, 2010). The second follow up study was conducted to investigate the emotion manipulation-psychopathy relationship as a function of gender. Results suggested that in males primary (β

= .44) but not secondary psychopathy was a significant unique predictor of emotion manipulation, while in females both primary ($\beta = .31$) and secondary ($\beta = .24$) psychopathy predicted emotion manipulation (Grieve & Mahar, 2010). Explanations for these findings are tentative, however gender differences could be attributed to the notion that psychopathy manifests differently across gender (e.g. Nicholls & Petrila, 2005; Rogstad & Rogers, 2008).

2.8. The interaction between emotion regulation, anxiety and psychopathy

As previously mentioned, emotion dys-regulation, appears to be present in various forms of psychopathology (Werner & Gross, 2010). While to date no published research could be located on the trait anxiety-emotion regulation relationship, there has been research examining the relationship of trait anxiety to other emotion processing. For example, Miller and Patrick (2000) have illustrated in a non-clinical sample that higher levels of anxiety are associated with maladaptive emotional responses to threatening stimuli, whereby high trait anxiety (HTA) individuals exhibit maladaptive attentional biases and greater defensive emotional reactivity when exposed to threatening information. This is evidence to suggest that dys-regulation of emotions as a response to stimuli has a relationship with trait-based measures of anxiety.

In the absence of research literature directly assessing the relationship between trait anxiety and emotion regulation, empirical evidence can be drawn on that demonstrates associations between emotion regulation and Generalised Anxiety Disorder (GAD). Utilising an undergraduate student sample, Mennin and colleagues (2005) found that those with GAD reported a greater reactivity to negative emotional experience, more difficulty managing emotional reactions and less ability to self-soothe after negative emotions than controls (Mennin, Heimberg, Turk, & Fresco, 2005). In addition to this, a composite “emotion dys-regulation” score comprising subscales from the Affective Control Scale (Williams,

Chambless, & Ahrens, 1997) and the Toronto Alexithymia Scale (Bagby, Parker, & Taylor, 1994) significantly predicted the presence of GAD (Mennin et al., 2005). In a study attempting to make a comparison between GAD and social anxiety disorder on the basis of emotion regulation, individuals with either disorder reported similar abilities to repair a negative mood state (Turk, Heimberg, Luterek, Mennin, & Fresco, 2005). Further, neuroticism has been equated with trait anxiety, and neuroticism is considered to underlie much of general psychopathology (e.g. Jorm, 1989). Evidence has also demonstrated neuroticism to be a key influencing factor in general emotion dys-regulation (Kring & Sloan, 2009).

Within the field of psychopathy research, there is evidence that may support the possible interaction between anxiety, psychopathy and other forms of emotion processing not related to emotion regulation. In a male forensic sample it was demonstrated that the relationship between deficits in emotion facilitation and psychopathy are more prominent in those lower in anxiety levels (Lorenz & Newman, 2002). Similar evidence was found measuring emotional reactions in female psychopathic offender sample, where participants lower in anxiety had attenuated eye-blink startle reflex responses to unpleasant pictures, while those higher in anxiety exhibited an eye-blink pattern more typical of a non-psychopathic individual (Sutton, Vitale, & Newman, 2002). As already mentioned, these studies were not specifically designed to test anxiety as a moderator. As a consequence, inferences concerning anxiety as a moderator cannot be made from such findings, but they do offer support for subsequent research to explore this possibility. Further, there is evidence to suggest that anxiety moderates relationships between differing constructs. For example, anxiety is a moderator of the relationship between Borderline Personality Disorder (BPD) and impulsivity (Chapman, Leung, & Lynch, 2008). In the presence of high levels of anxiety,

high BPD participants has lower impulsivity, however this was not the case when anxiety was low.

It should be noted that the little research that has been conducted concerning psychopathy, emotion processes and anxiety has conceptualised psychopathy as a unitary construct. The current body literature has yet directly address trait anxiety as a possible moderator of the relationship between emotion regulation strategies and psychopathy subtypes.

2.9. Concluding summary of the literature

Psychopathy as a construct has come a long way in terms of its conceptualisation. Consistent with the movement from a type to trait approach in personality generally, the contemporary view is that psychopathy can be regarded as a personality trait with two dimensions: primary and secondary psychopathy, although to date little research has adopted such a stance. Recognising primary and secondary psychopathy as unitary constructs can partly be attributed to research that has observed distinctions between psychopathic subtypes based on levels of trait anxiety (e.g. Lykken, 1957). The measurement of psychopathy has also evolved over time, moving away from the clinical approach to measurement as exemplified by the PCL-R (Hare, 1990) which is reliant on file information and qualified administrators, to self-report based methods of assessment. The development of such methods, particularly the LSRP (Levenson et al., 1995), has occurred due to the recognition that psychopathy research conducted in large community samples is fundamental to furthering the understanding of psychopathy as a personality trait.

Deficits in emotion processing associated with psychopathy have been widely examined, with more recent research examining possible relationships between psychopathy and Emotional Intelligence (EI). Such research has produced contradictory findings, which

may be attributable to the dubious nature of the construct of EI in terms of both conceptualisation and measurement. An alternative line of inquiry is proposed, examining the possible relationship between primary and secondary psychopathy dimensions and specific emotion-related processes: emotion regulation and emotion manipulation, areas of research that have received limited attention. It is suggested that primary psychopathy may have a positive relationship with the reappraisal regulation strategy and general emotion manipulation, while secondary psychopathy may have a positive relationship with the suppression regulation strategy and the concealment and emotional deficit components of emotion manipulation. Associations between anxiety and emotion regulation strategies suggest the possibility that trait anxiety may have an influence on the relationship between regulation strategies and psychopathy, with one possibility of this influence being moderation.

Chapter Three: Overview of Research

The literature discussed in the previous chapter highlights the contested nature of psychopathy as a construct, particularly in terms of its dimensionality. As a consequence, measurement of the construct has proven to be difficult to reach consensus on, particularly in relation to self-report methods, which are more appropriate for use in non-forensic community samples. While one self-report measure in particular, the Levenson Self-Report Psychopathy Scale (LSRP), is showing promising use in non-criminal psychopathy research, it still exhibits flaws in its reliability, particularly for the Secondary Psychopathy subscale (LSRP-S).

As well as weaknesses in the self-report measurement of psychopathy, there are gaps in the research concerning other aspects of psychopathy research. Firstly, while there is a breadth of research concerning anxiety and psychopathy (e.g. Newman et al., 2005; Ross, Moltó, et al., 2007; Schmitt & Newman, 1999), there are clear avenues of this field which need to be clarified with further research, particularly in relation to trait anxiety and the partitioning of psychopathy into primary and secondary subtypes.

Second, in the area concerning emotion processing and psychopathy, investigations into emotional deficits in psychopathic individuals have primarily focussed on interpersonal relations with other individuals emotional states. Surprisingly, however, perceived ability to manipulate others emotions has only recently been included in this body of research (e.g. Grieve & Mahar, 2010). Additionally, the Emotion Manipulation Scale which has been frequently used in this area has been found to have poor psychometric properties of its Poor Emotional Skills subscale. Further, there is a dearth of empirical research illustrating the way in which psychopathy is related to emotion self-regulation. While there are the beginnings of published work in this area (e.g. Casey et al., 2012), there is potential for further empirical evidence regarding psychopathy and emotion regulation.

Finally, while there is literature exploring the relationships between anxiety and psychopathy, and emotional processing and psychopathy, there is currently no research examining the interaction of emotional processing and anxiety in relation to psychopathy. One way of investigating the possibility of interaction is by examining trait anxiety as a possible moderator of the relationships between emotion regulation strategies and psychopathy subtypes. For example, it is possible that the strength and direction of relationships between emotional regulation strategies and primary and secondary psychopathy vary according to whether the individual is high or low in anxiety. It should be noted however that due to the limited research addressing emotion processing, anxiety and psychopathy within the same study, this proposal for moderation is exploratory in nature. It is also possible that rather than a moderating relationship, there may be additive effects of trait anxiety and emotion processing, that is, emotion processes and trait anxiety may all have relative contributions to make in the prediction of psychopathy. These investigations could add to the existing body of literature by offering further explanation as to how primary and secondary psychopathy differ from each other.

These relationships will be investigated by recruiting a community sample. Lilienfeld (1994) cogently argued that a better understanding of psychopathy in the community is needed in order to identify factors that may be protecting individuals with high psychopathic levels from engaging in criminal antisocial behaviour. That is, such factors may protect those who score high on primary psychopathy from becoming high scorers on secondary psychopathy. By employing dimensional measures of psychopathic characteristics that have been specifically designed for non-forensic populations where levels of psychopathy are low (Levenson et al., 1995), the relationship between psychopathy dimensions, trait anxiety and emotion regulation strategies and manipulative abilities can be assessed.

3.1. Aims and hypotheses

The following is a summary of the aims of the current research. In order to address relationships between emotion processing, trait anxiety and psychopathy, first it is necessary to attempt to improve on the psychometric properties of self-report measures that are to be used in investigating such relationships. Consequently, the first two aims relate to measure development and will be addressed through Study One of this thesis:

3.1.1. Study One aims

1. To develop a modified version of the Secondary Psychopathy subscale of Levenson's Primary and Secondary Psychopathy Scales (LSRP-S; Levenson et al., 1995) with improved internal consistency.
2. To develop a modified version of the Poor Emotional Skills subscale of the Emotional Manipulation Scale (EMS; Austin et al., 2007) with improved internal consistency.

These two aims will be addressed by conducting a preliminary measurement validation study designed to address the flaws in the psychometric properties of the LSRP-S and the EMS-POS. For both measures this involves generation of new items deemed relevant for the measures based on an extensive review of the relevant literature. These new items along with the original LSRP and EMS items were validated in an online community sample, of which the data collected was subjected to analysis of their factor structure and reliability by means of confirmatory factor analyses and Cronbach's alpha analyses respectively. The revised versions of these measures, along with other measures, will then be used to address the next set of aims of this thesis addressed in Study Two.

3.1.2. Study Two aims and hypotheses

3. To add to the body of research that conceptualises psychopathy as a personality trait.

4. To investigate within a community sample the relationship between psychopathy as a personality trait, emotion regulation and manipulation and trait anxiety.
5. To investigate trait anxiety as a moderator of the relationship between emotion regulation and manipulation and psychopathy.

These three aims addressed in Study Two will be split into two phases, which will be tested through the use of structural equation modelling techniques of analysis. Such analyses will allow each set of the proposed hypotheses to be evaluated simultaneously, producing structural models which will demonstrate the strength of the hypothesised relationships.

3.1.2.1. Study Two – Phase one

The first phase of Study Two will involve testing a model (Figure 3.1) which posits that trait anxiety and the other emotion processing constructs will additively contribute to predicting primary and secondary psychopathy. The rationale for testing this model is to investigate the relative contributions of trait anxiety and emotion processing to the prediction of primary and secondary psychopathy traits.

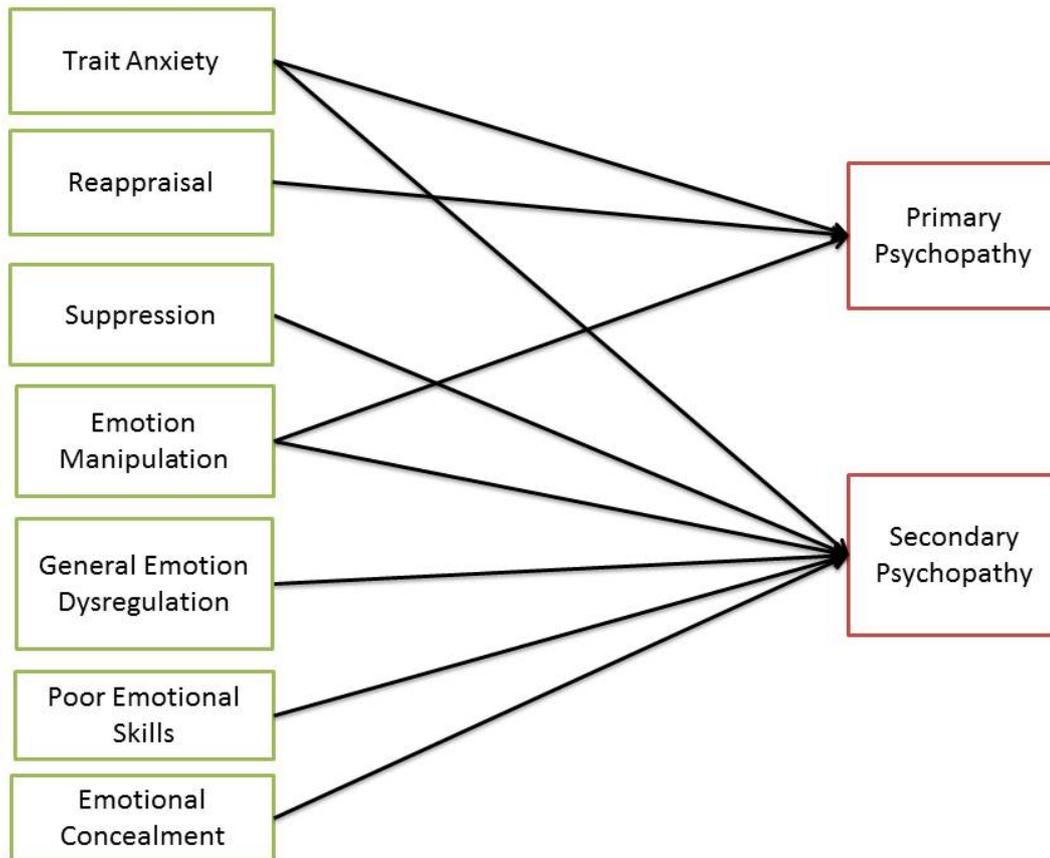


Figure 3.1. Proposed ‘anxiety and emotion processing’ model of psychopathy

Trait anxiety – primary psychopathy relationship

Trait anxiety is predicted to have a significant negative relationship with primary psychopathy. Traditional theories (Karpman, 1941, 1948; Lykken, 1957, 1995) have suggested a negative relationship between anxiety (broadly defined) and psychopathy, while newer findings have suggested that this relationship is not as clear-cut as originally proposed (e.g. Ross, Benning, & Adams, 2007; Schmitt & Newman, 1999). As previously mentioned, the contemporary field of research concerning anxiety and psychopathy has produced inconclusive findings. If a more specific approach is taken by narrowing the focus to trait anxiety, this may reduce the ambiguity surrounding anxiety and the psychopathy subtypes. The sparse research concerning trait anxiety does not reflect the previous suggestion that anxiety and primary psychopathy are negatively related (Hale et al., 2004; Lilienfeld &

Penna, 2001). Lilienfeld and Penna (2001) demonstrated in an undergraduate sample that trait anxiety influences the relationship between anxiety sensitivity and primary psychopathy, however this varied depending on the psychopathy measure used. In relation to the LSRP-P, however, it was demonstrated that there was a weak positive relationship with anxiety sensitivity, both before and after STAI-T scores were controlled for (Lilienfeld & Penna, 2001). Hale and colleagues (2004) examined direct correlations between trait anxiety measured by the STAI-T and PCL-R Factor 1 scores and demonstrated non-significant positive correlations. On the basis of previous research, it appears that trait anxiety is a weak predictor of primary psychopathy; however, this conclusion is based indirectly on only two studies. Given that there is still not enough evidence to refute the traditional claim that anxiety and primary psychopathy are negatively related, it is hypothesised that:

- H1: Trait anxiety will be a significant negative predictor of primary psychopathy.

Trait anxiety – secondary psychopathy relationship

Trait anxiety is proposed to have a significant positive relationship with secondary psychopathy. A positive association between anxiety and secondary psychopathy has been posited in traditional theory (Karpman, 1941, 1948; Lykken, 1957, 1995), however contemporary research concerning specifically trait anxiety and secondary psychopathy is sparse and inconclusive. Lilienfeld and Penna's (2001) investigation of anxiety sensitivity and trait anxiety in relation to secondary psychopathy produced inconclusive results, while Hale et al. (2004) demonstrated a moderate positive relationship between PCL-R Factor 2 scores and STAI-T scores, even after controlling for other measures of anxiety. In line with previous research findings, it is hypothesised that:

- H2: Trait anxiety will be a significant positive predictor of secondary psychopathy.

Reappraisal – primary psychopathy relationship

Reappraisal scores are predicted to have a significant positive relationship with primary psychopathy. Previous literature suggests that certain aspects of emotion processing differentially predict primary and secondary psychopathy (e.g. Ali et al., 2009; Ali & Chamorro-Premuzic, 2010). Although one unpublished study has investigated the reappraisal-primary psychopathy relationship and found no significant correlation (Ridings, 2011), this finding should be interpreted with caution in light of the previously mentioned flaws surrounding the study's methods. Unlike much other emotion processing research which has suggested primary psychopathy is more influenced by affective deficits than secondary psychopathy (e.g. Ali et al., 2009; Del Gaizo & Falkenbach, 2008), the opposite phenomenon is proposed when considering emotion regulation strategies. Non-criminal psychopathy is related to socially adaptive functioning (DeMatteo et al., 2005). By extension, one could infer that the way in which individuals high in primary psychopathy regulate their emotions may also be socially and cognitively acceptable. It is hypothesised that:

- H3: Reappraisal will be a significant positive predictor of primary psychopathy.

Suppression – secondary psychopathy relationship

Suppression scores are predicted to have a significant positive relationship with secondary psychopathy. Previous evidence suggests that chronic suppressors tend to have deficits in maintenance of interpersonal relationships such as a decreased likelihood of sharing emotional experiences with others (Gross & John, 2003). The inclination for individuals to be asocial towards others may be a precursor to antisocial behavioural tendencies which are central to secondary psychopathy (Hart & Hare, 1996). As previously mentioned, Casey et al.'s (2012) study did not produce conclusive findings in regards to suppression and psychopathy and noted that further research is warranted. Ridings' (2011)

unpublished research demonstrated a non-significant relationship between suppression and secondary psychopathy, however another investigation of this aspect of their study may potentially produce different results. These findings from Gross and John (2003), Casey et al. (2012) and Ridings (2011) justify the investigation of the relationship between suppression and secondary psychopathy in the current study. It is therefore hypothesised that:

- H4: Suppression will be a significant positive predictor of secondary psychopathy.

General emotion dys-regulation – secondary psychopathy relationship

As previously mentioned, research has demonstrated differences in emotion processing deficits across primary and secondary subtypes (e.g. Ali et al., 2009; Del Gaizo & Falkenbach, 2008). It could be inferred that such deficits may also be evident in deficits of emotion regulation.

The relevance of including a measure of general difficulties in emotion regulation along with reappraisal and suppression strategies (Gross & John, 2003) stems from the evidence in the literature that there are a wide range of emotion regulation strategies that potentially have a relationship with specific personality disorders (Werner & Gross, 2010). By extension, it could be inferred that these relationships could still stand in more moderate, non-clinical levels of a given personality trait, in this case, psychopathy. The inclusion of a measure of general emotion dys-regulation, as well as a measure of perceived ability in two specific emotion regulatory strategies, in the model will enable the differentiation of global and specific aspects of emotion regulation in relation to psychopathic subtypes. It is therefore hypothesised that:

- H5: General emotion dys-regulation will be a significant positive predictor of secondary psychopathy.

Poor emotional skills – secondary psychopathy relationship

As mentioned previously, only one other published study has demonstrated poor emotion skills to be positively correlated with secondary but not primary psychopathy (Grieve & Mahar, 2010). Other research has also more strongly associated secondary psychopathy with poorer emotion perception than primary psychopathy (Del Gaizo & Falkenbach, 2008). It is therefore hypothesised that:

- H6: Poor emotional skills will be a positive predictor of secondary psychopathy.

Emotional concealment – secondary psychopathy relationship

Emotional concealment is also proposed to have a significant positive relationship with secondary psychopathy. This proposal is based on the notion that individuals with primary psychopathy have an unemotional demeanour and therefore do not have the need to conceal emotions in order to manipulate others as much as secondary psychopaths may need to (Levenson et al., 1995). As mentioned previously, more contemporary research has found emotional concealment to be positively correlated with secondary, but not primary, psychopathy (Grieve & Mahar, 2010). It is therefore hypothesised that:

- H7: Emotional concealment will be a significant positive predictor of secondary psychopathy.

Emotion manipulation – psychopathy relationship

The remaining pathways in the model build on findings from the one previous study that has examined the emotion manipulation-psychopathy relationship (Grieve & Mahar, 2010). As previously stated, emotional manipulation was significantly positively correlated with both primary and secondary psychopathy. Given that manipulative and deceptive

behaviour are said to encompass psychopathy as a unitary construct (Hare, 1996), it is therefore hypothesised that:

- H8: Emotion manipulation will be a significant positive predictor of primary psychopathy.
- H9: Emotion manipulation will be a significant positive predictor of secondary psychopathy.

3.1.2.2. Study Two – Phase two

The second phase of Study Two will test models of the possible moderating effect of trait anxiety on the relationships between emotion regulation and primary and secondary psychopathy. Figures 2.2 and 2.3 depict the proposed emotional process model of psychopathy to be tested, specifying that the relationships between reappraisal, suppression and general emotion dys-regulation and primary and secondary psychopathy will differ in strength or direction, depending on the presence of either high or low levels of trait anxiety. Pathways depicted as dotted lines in each model represent a proposed weaker relationship than the other model, whereas full lines represent pathways proposed as stronger relationships than the other model. For example, the dotted line depicted in Figure 2 illustrates that the relationship between Reappraisal and Primary Psychopathy is proposed to be weaker in the high trait anxiety model than in low trait anxiety model. General emotion manipulation is also proposed to have a relationship with psychopathy that isn't moderated by trait anxiety, and as such, the proposed relationships between these constructs will not differ across high and low trait anxiety models. Each of the pathways in the models is expanded on below.

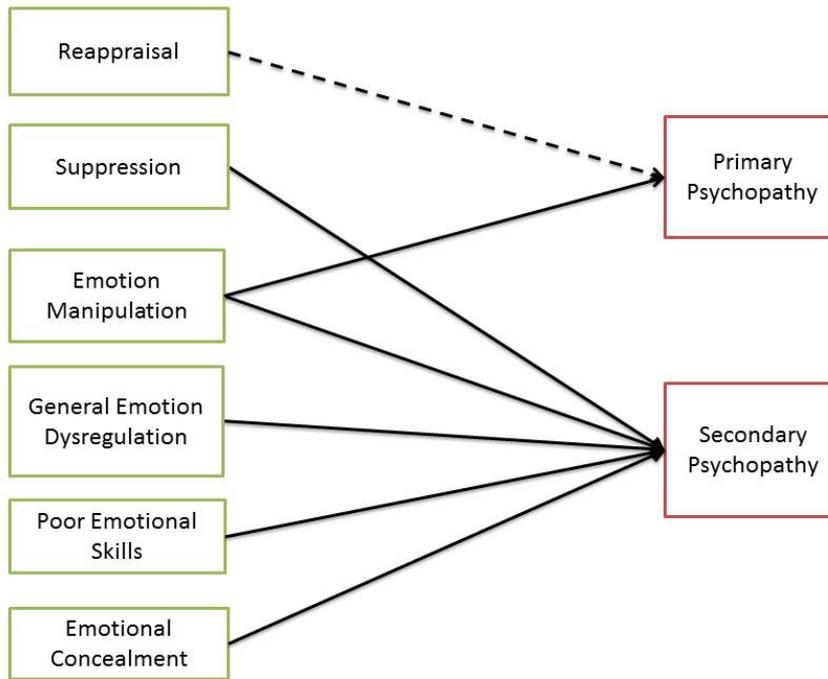


Figure 2.2. Proposed 'emotional process' model of psychopathy in the high trait anxiety group

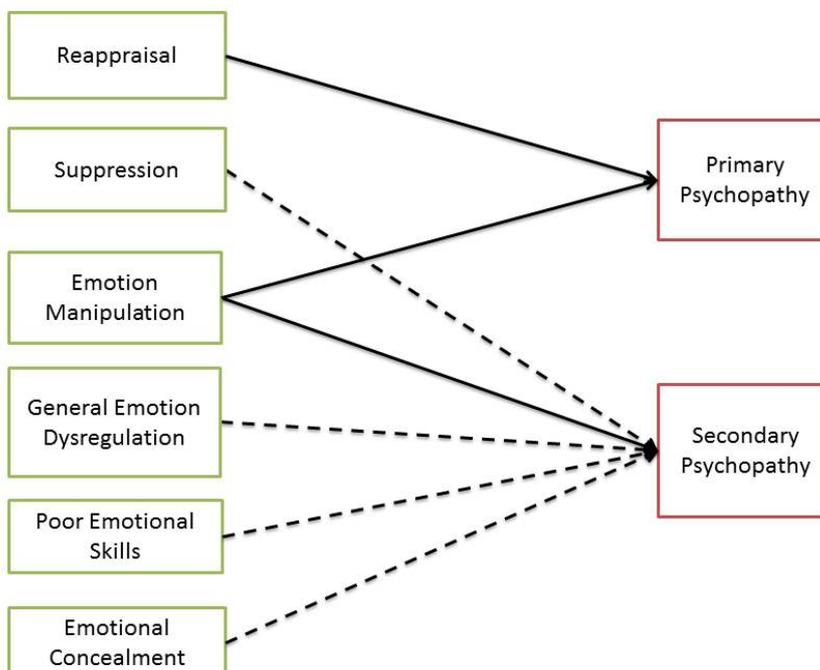


Figure 2.3. Proposed 'emotional process' model of psychopathy in the low trait anxiety group

Reappraisal – primary psychopathy relationship

Reappraisal scores are predicted to have a relationship with primary psychopathy that may be moderated by trait anxiety. That is, the relationship between reappraisal and primary psychopathy will vary in strength depending on whether trait anxiety levels are high or low. It is difficult to propose a direction to this moderating relationship given that there has been no published research concerning adaptive emotion regulation strategies and psychopathy. However, one could argue that individuals lower in anxiety are more likely to use adaptive strategies to regulate their emotions hence the relationship between reappraisal and primary psychopathy will be stronger when trait anxiety is low. To reiterate, components of the proposed moderating model are exploratory due to the lack of direct supporting evidence; the proposed reappraisal-primary psychopathy relationship is one such component.

Suppression – secondary psychopathy relationship

Suppression scores are predicted to have a relationship with secondary psychopathy that may be moderated by trait anxiety. That is, the relationship is proposed to be stronger in the presence of high levels of trait anxiety than when trait anxiety is low. There is currently no published research that directly supports this proposal, however indirect support could be drawn from empirical research reporting differing associations between maladaptive emotion regulation, anxiety and secondary psychopathy. As previously mentioned, there is indirect evidence for suppression and secondary psychopathy having a possible positive relation (Gross & John, 2003). There is also evidence that suggests there are associations between maladaptive emotion regulation and generalised anxiety disorder (e.g. Turk et al., 2005). Further, it is well established that anxiety and secondary psychopathy are positively related to each other (e.g. Hale et al., 2004; Lykken, 1957, 1995). Finally, research has demonstrated that relationships between deficits in other forms of emotion processing and psychopathy

differ depending on anxiety levels (Lorenz & Newman, 2002; Sutton et al., 2002). When considering all this evidence as a whole, one could argue that the next logical step in the investigation would be to explore the interaction between suppression as a maladaptive regulation strategy, trait anxiety and secondary psychopathy. One possible way that this interaction could occur is by trait anxiety acting as a moderator of the relationship between suppression and secondary psychopathy.

General emotion dys-regulation – secondary psychopathy relationship

General emotion dys-regulation is also proposed to have a relationship with secondary psychopathy that may be moderated by trait anxiety. As previously mentioned, research has demonstrated that relationships between deficits in other forms of emotion processing and psychopathy differ across high and low anxiety levels (Lorenz & Newman, 2002; Sutton et al., 2002). It is possible however, that such a finding is largely attributed to the affective characteristics of psychopathy, which are argued to be part of primary psychopathy. The proposed model, however, posits that when high levels of trait anxiety are present, there will be a stronger relationship between general dys-regulation and secondary psychopathy than when trait anxiety is low. Such a proposal is based on the well-established notion that secondary psychopathy is positively associated with anxiety (Lykken, 1957), as well as based on evidence that deficits in emotion regulation are a core underlying psychopathology of anxiety-related disorders (Werner & Gross, 2010).

Poor emotional skills – secondary psychopathy relationship

The current research also posits that the relationship between poor emotional skills and secondary psychopathy will be stronger in the presence of high levels of trait anxiety than in the presence of low trait anxiety. Although previous research suggests deficits in emotion processing and psychopathy differ across anxiety levels (Lorenz & Newman, 2002; Sutton et

al., 2002) again these findings have not parsed psychopathy into primary and secondary subtypes.

Emotional concealment – secondary psychopathy relationship

Emotional concealment is also proposed to have a relationship with secondary psychopathy that is stronger in the presence of high trait anxiety than in the presence of low trait anxiety. The rationale for this possible moderating relationship is essentially the same as the rationale for the previously mentioned poor emotional skills – secondary psychopathy pathway, which is that evidence needs to be generated showing relationships between emotion processing and psychopathy subtypes rather than as a unitary construct at differing levels of trait anxiety.

Emotion manipulation – psychopathy relationship

As depicted in the proposed models, it is not expected that these relationships will differ across levels of trait anxiety, that is, it will not moderate the relationship between emotion manipulation and psychopathy.

3.1.3. Significance of the research

The proposed research will contribute significantly to psychopathy research, further adding to the growing body of research related to the prevalence and degree of psychopathy in community samples by addressing several unique questions. To date, no published research related to psychopathy has accessed an international sample through the use of online methods. It is envisioned that the current study will lead to a better understanding of the relationships between trait anxiety, emotional regulation and manipulation, and the two dimensions of psychopathy.

In order to explore proposed pathways between these multiple predictors and the psychopathy subtypes, structural equation modelling (SEM) will be employed. SEM is a sophisticated multivariate analysis technique that allows multiple causal pathways between latent variables to be proposed and tested while accounting for measurement error (Kline, 2005). Previous research has primarily adopted research designs that do not allow for inferences to be made about predictors of psychopathy (e.g. Ali et al., 2009; Del Gaizo & Falkenbach, 2008; Hale et al., 2004; Levenson et al., 1995; Visser et al., 2010). This may increase understanding of the aetiology of psychopathy. Furthermore, the results may provide a stepping-stone for preliminary investigation into cultural differences within psychopathic dimensions, due to the international nature of the sample. They may also allow for dialogue to develop relating to gender differences in psychopathy within community samples, given that the nature of the sampling technique adopted allows for both male and female participants to make up the sample. Contributions will also be made through improving the psychometric properties of existing measures of psychopathy and emotion manipulation.

Chapter Four: Study One - Validation of the Levenson Self-Report Psychopathy Scale and Emotion Manipulation Scale

4.1. Introduction

The following chapter will describe a study that involved the revision and validation of two measures, the Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995) and the Emotion Manipulation Scale (Austin et al., 2007). These two measures were revised due to their inadequate psychometric properties, therefore this validation process is important to both the subsequent study (Chapter 5) of this thesis, as well as wider research in psychopathy and emotion processing. This chapter will include an introduction into the two scales being validated, describing their existing psychometric properties and the rationale behind improving such properties. Following this, the two-phase methodology will be outlined; phase one was the process of item generation, and phase two was actual validation of the measures through distribution of the proposed newly revised measures as a questionnaire. The next section will present the results of the analyses involved in determining the appropriate factor structure and item combinations for both measures, while the last section will involve discussion of these results, highlighting the appropriateness of the revised LSRP and EMS scales for use in further study.

4.1.1. Levenson Self-Report Psychopathy Scale (LSRP, Levenson et al., 1995)

Traditionally, psychopathy research has been conducted with either forensic or clinical samples, where the prevalence of psychopathic tendencies is higher than in the community (e.g. Cooke, 1995; Hiatt et al., 2002). This approach is problematic, as many of the findings may have limited generalisability to those with psychopathic tendencies residing in the community (Hall & Benning, 2006). Most self-report psychopathy scales were developed for this reason, one of the most common being the Levenson Self-Report

Psychopathy Scale (LSRP; Levenson et al., 1995). The 26 item LSRP has been used extensively in psychopathy research in both forensic and non-forensic samples (e.g. Book, Holden, Starzyk, Wasylkiw, & Edwards, 2006; Falkenbach et al., 2007; Gummelt, Anestis, & Carbonell, 2012; Vitale, Smith, Brinkley, & Newman, 2002), however it must be noted that the purpose of its conception was for use primarily in non-institutional samples. Levenson and colleagues hypothesised that the PCL-R factors 1 and 2 reflected Karpmans (1948) description of primary and secondary psychopathy respectively, and as a result developed self-report items that would reflect primary and secondary psychopathy traits. Exploratory factor analyses revealed two factors reflecting these subtypes, and as such are used as two separate subscales. The LSRP-P (16 items) was devised to measure the core affective and interpersonal characteristics, which align with the PCL-R Factor 1 characteristics. The original LSRP-S subscale was created to assess social deviance, which is associated with PCL-R Factor 2 scores. Higher scores on these subscales indicate greater primary and secondary psychopathic traits respectively (see Methods section for further detail on scoring).

Other self-report inventories exist that are intended for use in non-institutionalised samples such as the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) and screening version of the PCL-R (PCL:SV; Hart, Cox, & Hare, 1995). However, the authors note that at the time of its development, the LSRP was the only self-report measure that has been constructed based on the assumption that psychopathy is dimensional (Levenson et al., 1995). Further, it has been noted that the PCL:SV seems to have weakened sensitivity to measuring psychopathy in non-incarcerated samples (Skeem & Cooke, 2010).

Findings have consistently shown the LSRP-P and LSRP-S to be moderately correlated, r ranging between .40 to .43 (e.g. Brinkley et al., 2001; Douglas, Bore, & Munro, 2011; Levenson et al., 1995; Lynam, Whiteside, & Jones, 1999). Suggestions as to why this moderate correlation exists are varied. Lilienfeld and Fowler (2006) suggest that if the two

scales are considered lower order markers of psychopathy as a higher construct, then perhaps this might be evidence of convergent validity of the two subscales. Conversely, it may suggest questionable discriminant validity of the scales, given that Karpman (1948) suggested the two constructs are distinct from one another.

There is evidence of construct validity for both the whole LSRP and the subscales separately. Acknowledging that risk-taking has been specified as being central to psychopathy as a construct, Levenson and colleagues (1995) provide evidence for the convergent construct validity of the original LSRP, based on significant positive correlations of both subscales with boredom susceptibility (LSRP-P $r = .39$; LSRP-S $r = .27$) and disinhibition (LSRP-P $r = .34$; LSRP-S $r = .16$). Non-significant correlations with Experiencing Seeking and Thrill and Adventure Seeking subscales indicate discriminant validity (Levenson et al., 1995). Lynam and colleagues (1999) have provided extensive evidence of construct validity through a range of studies. Significant correlations were evident between total LSRP scores and prevalence of serious delinquency in the past year ($r = .31$) in an undergraduate sample; however these same external criterion failed to provide evidence of discriminant validity of the LSRP subscales. Convergent validity was also established using Hare's Self-Report Psychopathy Scale (SRP-II; Hare, 1985), with the SRP-II scores being moderately correlated with the total LSRP, the LSRP-P and the LSRP-S scores. Lastly, psychophysiological indices that are known to differentiate between PCL-R-based levels of psychopathy were used to provide indications of construct validity, which were computer-based tasks measuring passive avoidance and "the automatic interruption of goal-directed behaviour by cues for punishment" (Lynam et al., 1999, p. 123). Results showed LSRP total and subscale scores were related to passive avoidance errors and low response interference.

Further evidence for construct validity of the LSRP can again be seen in an undergraduate psychology student sample. Facets of the Five Factor Model of personality as measured by Goldberg's International Personality Item Pool (IPIP; Goldberg et al., 2006) have been shown to be correlated with LSRP-P and LSRP-S scores (Douglas et al., 2011). Strong negative relationships with LSRP-P scores were observed, as expected, between Agreeableness ($r = -.68$) and Empathy ($r = -.44$). Conversely, LSRP-S scores were strongly positively associated with Neuroticism ($r = .54$) and strongly negatively associated with Conscientiousness ($r = -.69$).

The study of Lynam and colleagues (1999) also supports the notion of the 2-factor model, with confirmatory factor analyses demonstrating adequate model fit, but only after letting several errors of measurement correlate. The researchers did however at least partially base this decision on theoretical rather than solely empirical grounds, allowing measurement errors to correlate only between items with seemingly theoretical similarities. Douglas and colleagues' (2011) findings also support the 2-factor model of psychopathy, as opposed to the currently competing theory of the 3-factor model. It should be noted that Douglas and colleagues express their unwillingness to allow the measurement error of items to be correlated, explicitly stating that Lynam and colleagues' (1999) method was without theoretical justification. Douglas et al. (2011) have failed to note that Lynam and colleagues (1999) did in fact base their decisions on theory, for each measurement error correlation they allowed "...it was clear that the items shared content beyond that related to the underlying construct" (p. 118).

Assessing convergent validity of the LSRP with the PCL-R is understandably imperative to empirically establish, given the LSRP's conception was borne from inspiration drawn from the PCL-R (Levenson et al., 1995). One study has examined convergent validity in a mixed-gender forensic sample. Significant, albeit weak to moderate, correlations were reported

between the LSRP-P and PCL-R factor 1 ($r = .23$) and the LSRP-S and PCL-R factor 2 ($r = .29$) (Poythress et al., 2010). While there is a weak positive correlation between the LSRP and PCL-R scales, the convergence that can be seen in these results can only be considered tenuous. Further, the use of a forensic sample to examine such validity defeats the primary purpose for which the LSRP was developed, that is, for use in non-forensic community samples.

While the construct validity of the LSRP has been further investigated (Sellbom, 2010) it has been done so within the framework of Cooke and Michie's (2001) 3-factor model which has not been the framework for the current study. The majority of evidence supporting the 3-factor LSRP model has been based on institutionalised samples (e.g. Brinkley, Diamond, Magaletta, & Heigel, 2008; Sellbom, 2010), with only preliminary evidence to suggest the appropriateness of the 3-factor model of the LSRP in non-incarcerated samples (Sellbom, 2010).

Test-retest reliability of the LSRP has been examined sparsely, perhaps as it has been historically suggested that test-retest correlations are not a true test of reliability which is affected by temporal instability and measurement error (Heise, 1969). In order for a measure to be valid it must be reliable, however it has been historically noted that since its conception, one subscale of the LSRP commonly comes up short in regards to its internal consistency; the Secondary Psychopathy subscale (LSRP-S). The LSRP-P was determined to have satisfactory internal consistency at its conception ($\alpha = .82$; Levenson et al., 1995) and across subsequent research ($\alpha = .73$ to $.88$; Elwood et al., 2004; Falkenbach et al., 2007; Miller et al., 2008). Researchers, however, have consistently noted the poor reliability of the LSRP-S, with Cronbach's alpha values ranging from grossly inadequate ($\alpha = .57$) to marginal ($\alpha = .71$) in subsequent undergraduate studies (e.g. Elwood et al., 2004; Falkenbach et al., 2007; Gummelt et al., 2012; Walters, Brinkley, Magaletta, & Diamond, 2008).

4.1.2. *Emotion Manipulation Scale (EMS; Austin et al., 2007)*

The second measure that requires validation is the Emotion Manipulation Scale (EMS; Austin et al., 2007). Earlier self-report measurement of emotion manipulation has involved assessing manipulation tactics in specific contexts (e.g. Buss, 1992; Buss et al., 1987) or has included a combination of self and observer reports (Butkovic & Bratko, 2007). The EMS was generated as a result of the need for a self-report measure of general emotion manipulation that does not focus on specific contexts. However, like the LSRP, the EMS (Austin et al., 2007) also has weaknesses in psychometric properties, specifically in the Poor Emotional Skills subscale.

The EMS (Austin, et al., 2007) measures the extent to which an individual believes they can emotionally manipulate others, as well as self-perception of their levels of their emotional skills (including how well they can conceal their own feelings from others). The pilot version of this scale began with 41 items, first validated on a British undergraduate sample, with factor analysis revealing 18 of the 41 items loading onto three factors. Two of these factors, Emotional Manipulation (EM) and Emotional Concealment (EC) were found to have sufficient internal consistency (.88 and .73 respectively). The Poor Emotional Skills (POS) factor has unacceptable internal consistency (.66) for research purposes. There has been only one other published study that has used the full 18-item version of this scale (Grieve & Mahar, 2010). In an Australian undergraduate sample, the same three factors were revealed, again with poor internal consistency of the POS scale (Cronbach's alpha = .57; Shum, O'Gorman, & Myors, 2006). EM and EC, however, appeared to have strong internal consistency (.90 and .83 respectively). Two other published studies have used the 10-item EM subscale of the EMS. In a study investigating relationships between emotion manipulation and self-monitoring in university students and community members, Grieve

(2011) found reliability of the EM subscale to be excellent (Cronbach's $\alpha = .90$). Grieve and Panebianco (2012) further supported this in research using the EM subscale (Cronbach's $\alpha = .93$) to test relationships between emotion manipulation, psychopathy and other emotional and cognitive processes. Due to the lack of published research using all subscales of the EMS, there is currently no known information regarding the scale's validity, particularly for the EC and POS subscales.

4.1.3. The current study

Most research using the both the LSRP and EMS has noted the weak internal consistency of the subscales rather than attempt to improve reliability. The aim of the current research was to improve the internal consistency of the LSRP-S and EMS-POS through a preliminary measurement study. This involved the generation and testing of additional items to enhance the psychometric properties of the LSRP-S and the EMS-POS.

It should be noted that the decision to improve reliability of these two scales is based on both empirical and theoretical arguments. This has been particularly the case for the LSRP given that psychopathy measurement is much more contentious in the literature. Schmitt (1996) argues that even relatively low alpha coefficients do not necessarily attenuate validity, even when considering that low reliability indicates high measurement error which weakens observed relationships between variables (Schmidt & Hunter, 1996). However, researchers are still debating whether secondary psychopathy is in a fact a 'real' construct or if those who classify as 'secondary psychopaths' are even psychopathic given that the current paradigm considers the primary psychopathy characteristics as more related to the classic description of psychopathy (Skeem et al., 2011). This debate highlights the need to investigate whether secondary psychopathy has been initially mischaracterised, which can be done by adding to existing measurement other facets which research has suggested to be part of secondary

psychopathy, for example the presence of guilt associated with an individual's antisocial behaviour (Morrison & Gilbert, 2001). In regards to measurement of deficits in emotional skills, it is clear that the scope of the POS scale of the EMS is lacking in terms of the breadth of emotion processing, which has warranted the addition of new items.

4.2. Methodology

The first phase of Study One involved generating new items for the purposes of improving the reliability of the Secondary Psychopathy subscale of the Levenson Self-Report Psychopathy Scale (LSRP-S; Levenson et al., 1995) and the Poor Emotional Skills subscale of the Emotional Manipulation Scale (EMS-POS; Austin et al., 2007). The second phase involved the recruitment of the participant sample and collection of responses necessary to test the appropriateness of the new items, for the purpose of scale validation.

4.2.1. Phase one: Item generation

The process involved in generating new items for both the LSRP-S and the EMS-POS have been based on DeVellis' (2003) guidelines for scale construction, which are briefly outlined in the following steps;

1. Providing a clear definition of the construct the scale will be measuring.
2. Generate a pool of items, while considering issues such as item redundancy, positively versus negatively worded items and the response format of the items.
3. Administer items to a validation sample for evaluation.

The process of item generation commenced after the Curtin University Human Research Ethics Committee granted ethics approval. The item generation process was theory-based, so initially a thorough examination of the relevant research was conducted ensuring that all literature pertinent to each scale was accumulated.

After this, generation of the item pool commenced, by designing and writing new items in relation to findings from the literature search (the details for these searches can be seen in the following two sections). Item pools of 11 and 15 new items were generated for the ‘secondary psychopathy’ and ‘poor emotional skills’ subscales respectively, and each item was edited to an acceptable item length of approximately seven to 15 words (DeVellis, 2003). During this process, wording and readability was considered, adhering to similar reading levels of the existing measures. Before being subjected to validation via data collection and factor analysis, the items were evaluated for their relevance to their respective scales by a panel of two experts whose experience lies within personality and individual differences and clinical psychology.

4.2.1.1. Scale development plan – ‘Secondary Psychopathy’ subscale

Item generation was conducted first for the ‘secondary psychopathy’ subscale of the LSRP (Levenson et al., 1995). Firstly, as per De Vellis’ (2003) first step, Secondary Psychopathy was clearly defined as a continuous, dimensional personality trait as per Levenson and colleagues’ (1995) initial descriptions which state that the original items of the LSRP-S were “designed to assess impulsivity and a self-defeating lifestyle” (p. 152). This relatively broad definition reflects the way in which Lykken (1957) describes secondary psychopathy as a heterogeneous combination of conditions characterised majorly by high impulsivity and neuroticism.

A review of relevant literature was then conducted. A search was conducted using PsycINFO and Google Scholar to find articles, book chapters, and unpublished and published dissertations from 1990 to 2010. The lower-bound cut-off point was selected as it was approximately the beginning of the 1990’s where researchers began to publish research that examined the taxonomic versus dimensional structure of psychopathy (e.g. Harris et al.,

1994). The search terms used were 'secondary psychopathy', 'unsuccessful psychopathy' (as these two terms are used interchangeably by some), 'high-anxious psychopathy', 'community psychopathy', and 'non-institutional psychopathy'. Reference lists of articles were also searched for any additional articles that may have had relevance.

An initial brief evaluation of the abstracts of the PsycINFO and Google Scholar database results was conducted to determine relevance and therefore exclusion/inclusion into/out of the review of the literature. Excluded articles were those that had largely or exclusively adopted institutionalized samples or forensic samples, as the purpose of the LSRP is to measure psychopathy in non-institutional settings (Levenson et al., 1995). After this exclusion criterion was implemented, a total of 63 resources were determined to be appropriate for review. Each selected resource was reviewed, after which it was determined that ten of the 63 resources did not have any relevant information and were excluded from further consideration.

In addition to the database search, other known psychopathy measures were included in the review. These are listed as follows; The Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) the Interpersonal Measure of Psychopathy (IM-P; Kosson, Steuerwald, Forth, & Kirkhart, 1997), the Psychopathy Checklist Revised (PCL-R; Hare, 1990) the Self-Report Psychopathy scale (SRP; Hare, 1985), the Triarchic Psychopathy Measure (TriPM; Patrick, 2010) and the Hare P-SCAN (P-SCAN; Hare & Herve, 1999). Items were adapted from some of these existing measures on the basis of whether or not they addressed aspects of secondary psychopathy that had not been addressed by the LSRP-S original items, as long as they did not specifically address aspects of the construct that were uniquely relevant to criminal behaviour.

Items were generated based on information gleaned from each reference read, that is, information addressing themes not already covered or poorly covered in the LSRP-S. Each

item written was either inspired by content of one or more references, or adapted from an existing psychopathy measure to be appropriate for self-report format. Details of the source of the individual items can be found in Table 1. Development of the new LSRP-S items adhered to the original authors' process of item development, that is, "they were constructed using an antisocial-desirability manipulation, which consisted of phrasing them in a way that does not signal disapproval of pro-trait endorsement" (Levenson et al., 1995, p. 152).

Readability and reading grade level of each item was considered, DeVellis (2003) suggests to aim for a 6th grade reading level, which is typical of most measures used in the general population. All the new items met this requirement. In keeping with these guidelines, the total item pool consisted of approximately three times the required amount of items, to allow for possible redundancies that may be found in factor analysis. The first draft item pool consisted of 23 new items.

Once the first draft of the item pool had been generated, the accompanying notes that have been produced were reviewed and fundamental themes deemed important to be covered by the measure were collated. These themes were then assigned a shorthand code (e.g. AGGRESSION). Each item in the existing item pool was designated the most relevant theme code (e.g. 'I have been described as a bully' was assigned the 'AGGRESSION' code). These codes were also assigned to the original measure items to illustrate the overall representation of each theme in the final revised measure. There were a total of six themes that were supported by the literature. 'AGGRESSION', 'IMPULSIVE' and 'IRRESPONSIBLE' are themes that are well established as constructs within secondary psychopathy, whereas 'GUILT', 'LOW ESTEEM' and 'MISTRUST' are new themes included in the item generation process.

'AGGRESSION' refers to any overtly aggressive behaviour that can be characterised as domineering over the person on the receiving end of that aggression (Berkowitz, 1962).

Aggression as part of antisociality has been described as part of the behavioural characteristics which form secondary psychopathy (Blackburn & Lee-Evans, 1985).

'IMPULSIVE' refers to presence of impulsivity, short attention span and the inability to control one's own behaviour, which is said to be a core component of secondary psychopathy (Lykken, 2006). 'IRRESPONSIBLE' refers to lack of responsibility for one's own actions, which has also been agreed upon as an existing core component of secondary psychopathy (Lykken, 2006).

'GUILT' refers to proneness to guilt or shame. Interpretation of previous research findings has led to the belief that feelings of guilt and disgust in relation to an individual's own undesirable behaviour appear to be a part of what makes up the 'secondary psychopath' (Morrison & Gilbert, 2001). Blackburn (1975) suggested that proneness to guilt is a characteristic of secondary psychopathy, and subsequent research implied that secondary psychopaths appeared to have higher levels of guilt than both primary psychopaths and a non-psychopathic control group (Gudjonsson & Roberts, 1983). It was suggested that this guilt manifests itself as a result of low self-esteem brought on by constant disapproval from others of their antisocial behaviour (Gudjonsson & Roberts, 1983). This research, however, is out-dated and relied on inadequate measures of guilt and previously diagnosed instances of psychopathy in a clinical sample. Nonetheless, similar findings suggesting differences in instances of shame, perceived social rank and general self-loathing between primary and secondary psychopaths, (Morrison & Gilbert, 2001) support Gudjonsson and Roberts' (1983) albeit out-dated evidence that these instances assist in describing secondary psychopathy.

While this previous research has not examined psychopathy from a dimensional trait perspective, measuring self-loathing as a part of secondary psychopathy was deemed relevant given the evidence available. As a result, items were generated that reflected these ideas.

'LOW ESTEEM' refers to low self-esteem, which was acknowledged to be a necessary

aspect of secondary psychopathy but has been seemingly lost in contemporary measurement development (Blackburn, 1975). 'MISTRUST' refers to being mistrusting of others. Inclusion of this theme was spawned from the finding that particular maladaptive traits such as mistrust and hostility appear to more related to secondary psychopathy than primary psychopathy (Ross, Bye, Wrobel, & Horton, 2008).

When deciding on the final item list, items with themes that lacked representation in the original LSRP-S were more heavily considered than others. This final review was conducted in consultation with research supervisors who provided expert review. For example, there was no measurement of mistrustfulness of others within the scale, therefore two 'MISTRUST' items were included. It was deemed necessary to have such items in the scale as some previous research has suggested that one of the components of secondary psychopathy is the experience of suspicious feelings and a general sense of mistrust towards others (Ross et al., 2008).

Items that did not make the final list for validation were excluded for a number of reasons (see Table 4.1). When the problem of items being too similar to each other arose, similar items were compared and those accepted were kept based on readability and wording quality of the items. The final list comprised of 11 items to be tested.

Table 4.1.

Final list of potential LSRP items and their sources

Item	Theme	References/Sources	Reason for Acceptance/Deletion
I have been described as a bully*	AGGRESSION	Adapted from P-SCAN ^a (Hare & Herve, 1999)	represents theme well
I enjoy a good physical fight*	AGGRESSION	Adapted from TriPM (Patrick, 2010)	represents theme well
At times, I feel guilty about my behaviour toward others*	GUILT	(Campbell & Elison, 2005; Gudjonsson & Roberts, 1983)	represents theme well
If I fail at something, I tend to feel anger and disgust towards myself*	GUILT	(Campbell & Elison, 2005; Gudjonsson & Roberts, 1983)	represents theme well
I often act without thinking when I am upset*	IMPULSIVE	(Lynam & Derefinco, 2006)	represents theme well
I have lost a friend because of the irresponsible things I've done*	IRRESPONSIBLE	Adapted from TriPM (Patrick, 2010)	represents theme well
I think I am worthy of praise from others (neg. worded)*	LOW ESTEEM	(Morrison & Gilbert, 2001)	represents theme well
I think of myself as self-assured and confident (neg. worded)*	LOW ESTEEM	Adapted from SRP (Hare, 1985)	represents theme well
I have a tendency to be mistrusting of others*	MISTRUST	(Ross, Lutz, & Bailley, 2004)	represents theme well
I am often suspicious of other peoples motives*	MISTRUST	(Ross et al., 2004)	represents theme well
I wish I were more assertive*	LOW ESTEEM	Adapted from SRP (Hare, 1985)	represents theme well
When I'm in relationships, I have been physically abusive at times	AGGRESSION	(Falkenbach, Poythress, & Creevy, 2008)	too specific
I return insults	AGGRESSION	Adapted from TriPM (Patrick, 2010)	questionable theme relevance
I taunt people just to stir things up	AGGRESSION	Adapted from TriPM (Patrick, 2010)	questionable theme

I have robbed someone	AGGRESSION	Adapted from TriPM (Patrick, 2010)	relevance more related to criminal psychopathy
If I fail at something, I try to hide that failure from others	GUILT	(Campbell & Elison, 2005)	high similarity to other items
People who know me describe me as hot-headed	IMPULSIVE	(Lilienfeld & Fowler, 2006)	high similarity to other items
I can often be cool, calm and collected (neg. worded)	IMPULSIVE	(Levenson, 1992)	high similarity to other items
At times I find it hard to focus on the task at hand	IMPULSIVE	(Levenson, 1992)	high similarity to other items
I have a tendency to do things 'on impulse' rather than making plans	IMPULSIVE	(Hicklin & Widiger, 2005)	high similarity to other items
I often act on immediate needs	IMPULSIVE	Adapted from TriPM (Patrick, 2010)	high similarity to other items
I usually feel quite confident when meeting new people (neg. worded)	LOW ESTEEM	Adapted from SRP (Hare, 1985)	questionable theme relevance
I am very good at things I try to do (neg. worded)	LOW ESTEEM	Adapted from SRP (Hare, 1985)	high similarity to other items

Note. Items marked with * are those included in the final questionnaire for validation

4.2.1.2. Scale development plan – ‘Poor Emotional Skills’ subscale

The second subscale for item generation was EMS-POS (Austin et al., 2007). The original definition of this construct was “self-perception of lacking emotional skills” (Austin et al., 2007, p. 184). The original items were all worded in a direction measuring poor emotional skills that indicate emotional deficit, with no items worded in the reverse direction. This conceptualization was kept, but instead the intention was to purposively word some of the new items in a positive direction, in order to balance the amount of positively and negatively worded items.

A second PsycINFO database search was conducted for relevant resources published between 1990 and 2010. The time frame was selected in order to keep only the most current perspectives on emotional processes within the frame of the research. The search terms used were ‘emotional skills’, ‘emotional abilities’ and ‘emotional competence’. Again, reference lists of found articles were searched for any additional relevant resources. The same resource evaluation method applied to the ‘secondary psychopathy’ subscale process was used in this instance. Excluded articles were those that related to emotion in children or adolescents. In total, there were 70 relevant references used in the review process. The item generation process followed was also the same as that followed for the LSRP-S, where items were written based on inspiration or adapted from other related measures that appeared in the literature search. Seven themes emerged from the literature search with the first draft item pool consisted of 37 items. The themes are outlined as follows; ‘APPROPRIATE’ refers to appropriateness of emotional responses to situations; ‘EMPATHY’ refers to identifying with other people’s emotions and empathizing with them; ‘EXPRESS’ refers to the ability to express emotion; ‘OTHER-RECOG’ refers to the ability to

recognize emotion in others; 'SELF-MANAGE' refers to how well one can manage their own emotions; and 'OTHER-MANAGE' refers to the ability to manage other people's emotions. As for the psychopathy scale, items that did not make the final list for validation were excluded for a variety of reasons (see Table 4.2). When the problem of items being too similar to each other arose, similar items were compared and those accepted were kept based on readability and wording quality of the items. The final new item list for the 'Poor Emotional Skills' subscale consisted of 15 new items.

Table 4.2.

Final list of potential EMS items and their sources

Item	Theme	Reference/Source	Reason for Acceptance/Deletion
Sometimes the way I express myself emotionally is not appropriate for the situation I'm in*	APPROPRIATE	(Riggio & Reichard, 2008)	represents theme well
I've been known to take out my frustrations on others who didn't deserve it*	APPROPRIATE	(Mikolajczak, 2009)	represents theme well
When others are happy, I am pleased for them (neg .worded)*	EMPATHY	Adapted from Social Emotional Questionnaire (Bramham, Morris, Hornak, Bullock, & Polkey, 2009)	represents theme well
When another person tells me about an event in their lives, I almost feel as though I have experienced this event myself (neg. worded)*	EMPATHY	Adapted from Self Report EI Test (Schutte et al., 1998)	represents theme well
I think I can adequately communicate the way I am feeling to other people without speaking (neg. worded)*	EXPRESS	(Byrne, Dominick, Smither, & Reilly, 2007)	represents theme well
I don't like to share my emotions with others*	EXPRESS	Adapted from Self Report EI Test (Schutte et al., 1998)	represents theme well

I can recognise when something I've said or done has upset someone (neg. worded)*	OTHER-RECOG	Adapted from Emotional subscale of Patient Competency Rating Scale (Sveen, Mongs, Røe, Sandvik, & Bautz-Holter, 2008)	represents theme well
I find it hard at times to tell how other people are feeling*	OTHER-RECOG	(Bänziger, Grandjean, & Scherer, 2009)	represents theme well
I notice when other people are happy (neg. worded)*	OTHER-RECOG	Adapted from Social Emotional Questionnaire (Bramham et al., 2009)	represents theme well
Sometimes I find it hard to 'keep it together' emotionally*	SELF-MANAGE	(Riggs, Jahromi, Razza, Dillworth-Bart, & Mueller, 2006)	represents theme well
When I'm excited about something I get really excited and find it hard to calm down*	SELF-MANAGE	(Ciarrochi & Scott, 2006)	represents theme well
When I experience a positive emotion, I know how to make it last (neg. worded)*	SELF-MANAGE	Adapted from Self Report EI Test (Schutte et al, 1998)	represents theme well
Sometimes I have feelings which I don't know how to describe*	SELF-RECOG		represents theme well
I am aware of the non-verbal messages I send to others (neg. worded)*	SELF-RECOG	Adapted from Self Report EI Test (Schutte et al, 1998)	represents theme well

I know why my emotions change (neg. worded)*	SELF-RECOG		represents theme well
At times I feel like my emotions don't fit the situations I find myself in	APPROPRIATE	(Riggio & Reichard, 2008)	high similarity to other items
Sometimes the way I feel emotionally isn't appropriate for the environment I'm in	APPROPRIATE	(Denham, Blair, Schmidt, & DeMulder, 2002)	high similarity to other items
I get excited when I experience positive life-changing events (neg. worded)	APPROPRIATE	(Eisenberg, 2001)	questionable theme relevance
I can easily adjust emotionally to any social situation (neg. worded)	APPROPRIATE	Adapted from Revised Social Skills inventory (Groves, 2005)	questionable theme relevance
I express my feelings appropriately in public (neg. worded)	APPROPRIATE	Adapted from Social Emotional Questionnaire (Bramham et al., 2009)	high similarity to other items
It is sometimes difficult for me to make sense of why another person seems angry/sad/happy	EMPATHY	(Bänziger et al., 2009)	questionable theme relevance
When others are sad, I comfort them (neg. worded)	EMPATHY	Adapted from Social Emotional Questionnaire (Bramham et al., 2009)	high similarity to other items
It is difficult for me to understand why people feel the way they do	EMPATHY	Adapted from Self Report EI Test (Schutte et al.,	questionable theme relevance

		1998)	
I don't feel confident in my ability to calm someone down when they are angry	OTHER-MANAGE	(Freudenthaler & Neubauer, 2005)	high similarity to other items
I think I am good at calming others down when they are feeling stressed (neg. worded)	OTHER-MANAGE	(Freudenthaler & Neubauer, 2005)	high similarity to other items
I help other people feel better when they are down (neg. worded)	OTHER-MANAGE	Adapted from Self Report EI Test (Schutte et al., 1998)	high similarity to other items
Sometimes I can't tell whether a person is angry or sad	OTHER-RECOG	(Lopes, Salovey, Côté, Beers, & Petty, 2005)	high similarity to other items
I find it hard to read peoples facial expressions	OTHER-RECOG	(Lopes et al., 2005)	high similarity to other items
I find it difficult to read other peoples body language	OTHER-RECOG	(Hoffman, 2009)	questionable theme relevance
I notice when other people are disgusted (neg. worded)	OTHER-RECOG	Adapted from Social Emotional Questionnaire (Bramham et al., 2009)	too specific
I find it hard to understand the non-verbal messages of other people	OTHER-RECOG	Adapted from Self Report EI Test (Schutte et al., 1998)	questionable theme relevance

I know what other people are feeling just by looking at them (neg. worded)	OTHER-RECOG	Adapted from Self Report EI Test (Schutte et al., 1998)	high similarity to other items
Sometimes I feel myself getting worked up and I can't do anything to stop it	SELF-MANAGE	(Denham et al., 2002)	high similarity to other items
I can keep my emotions from affecting my ability to go about daily activities (neg. worded)	SELF-MANAGE	Adapted from emotional subscale of Patient Competency Rating Scale (Sveen et al., 2008)	questionable theme relevance
I often struggle to keep my emotions in check	SELF-MANAGE	(Ochsner, 2008)	high similarity to other items
I have control over my emotions (neg. worded)	SELF-MANAGE	Adapted from Self Report EI Test (Schutte et al., 1998)	high similarity to other items
I am aware of my emotions as I experience them (neg. worded)	SELF-RECOG	Adapted from Self Report EI Test (Schutte et al., 1998)	high similarity to other items

Note. Items marked with * are those included in the final questionnaire for validation

4.2.2. Phase two – Scale validation

4.2.2.1. Research design

This study employed a cross-sectional correlational design to assess the factor structure and internal consistency of the revised LSRP and EMS scales.

4.2.2.2. Participants and recruitment

There were no exclusion criteria for participants other than they were to be over the ages of 18 years. Convenience sampling methods used included both online and offline recruitment strategies. Flyers providing a brief summary of the study were distributed among personal and professional networks of the researcher (Participant Information Sheet - Appendix 4.1). Links to the questionnaire were posted on a number of research-hosting websites (see Table 4.3), and social networking sites Facebook and MySpace.

Table 4.3.

Websites used to host links to the online personality survey

Website Title	URL
The Inquisitive Mind: Social Psychology For You	http://beta.in-mind.org/online-research
The Web Experiment List	http://www.wexlist.net
Online Psychology Research	http://www.onlinepsychresearch.co.uk
Psychological Research on the Net	http://psych.hanover.edu/research/exponnet.html

To encourage participation, participants were given the chance to win one of three \$50 Amazon.com vouchers. Incentives such as this have previously been found to be effective in both gaining initial survey responses, as well as preventing attrition during survey completion (Görizt, 2006).

In total, 361 individuals accessed the survey. Ten participants had no recorded responses and therefore were deleted from the sample. Missing values analyses were conducted on the LSRP and the EMS as separate data files, and cases with influential amounts of data missing were deleted (see Results section in this chapter for further detail). This left 331 and 294 participants for factor analysis of the LSRP and EMS respectively. As it was necessary to treat the two factor analyses as distinct from one another, two sets of demographic characteristics of the sample were obtained (see Table 4.4).

Table 4.4.

Demographic characteristics of the samples of the Revised Levenson Self-Report Psychopathy Scale and the Emotion Manipulation Scale

Demographic characteristics	Emotion Manipulation Scale ($N = 294$)	Levenson Self-Report Psychopathy Scale ($N = 331$)
Mean age (std. deviation)	28.17 (12.4)	28.62 (13.4)
Gender	69.9% female	70% female
Country of origin	68.4% Australia/NZ 10.5% UK 9.9% Asia 11.2% other ^a	67.6% Australia/NZ 10.5% UK 10.2% Asia 11.7% other ^a
English as 1 st language	88.7%	88.3%
Education level	63.3% completed some or all of undergraduate degree	
Occupation (2 most common)	42.9% - Student 13.3% - Healthcare	42.5% - Student 13.3% - Healthcare
Employment status	82.4% some form of employment	81.4% some form of employment

Note: ^a other countries include the North American, African and European countries

4.2.2.3. *Materials*

The following measures were included in the questionnaire with the newly developed items, and seven demographic questions (age, gender, country of origin, whether English is their first language, highest level of education completed, current occupation and employment status), bringing the item total to 80 items. A copy of the final questionnaire can be seen in Appendix 4.2.

4.2.2.3.1. *Revised Levenson Self-Report Psychopathy Scale (LSRP)*.

This version of the LSRP consists of the 26 original items, plus the additional 11 items developed for the LSRP-S through the process of item generation (see Phase One procedure). The original LSRP consists of two subscales; the LSRP-P and the LSRP-S. As previously mentioned (see section 2.4.2.3.), the LSRP-P comprises 16 items and was designed to measure personality aspects of psychopathy. An example item of the original LSRP-P is “success is based on survival of the fittest; I am not concerned about the losers” (Levenson et al., 1995, p. 153). The 10 items of the original LSRP-S measures the antisocial behaviour associated with psychopathy. An example of an item is “I find myself in the same kinds of trouble, time after time” (Levenson et al., 1995, p. 153). Each of the items are rated on a four-point Likert scale ranging from “disagree strongly (1)” to “agree strongly (4)”, giving a possible score range of 16 – 64 and 10 – 40 for the LSRP-P and LSRP-S subscales respectively. Higher scores on these subscales indicate greater primary and secondary psychopathic traits. Total LSRP scores can also be appropriately interpreted as a score of general psychopathic traits. Information regarding the original LSRP can be found in section 2.4.2.3.

The additional 11 items developed through the process of item generation (see section 3.2.1.) that were to be tested for possible inclusion in the LSRP-S were included. An example

of an item added for pilot testing is “I have lost a friend because of the irresponsible things I’ve done”. The full set of items was presented in Table 3.1. The LSRP-P subscale was included to ensure the items load onto the correct factors.

4.2.2.3.2. *Emotional Manipulation Scale (EMS)*.

As previously stated, the EMS (Austin et al., 2007) measures the extent to which an individual believes they can emotionally manipulate others, as well as self-perception of their levels of their emotional skills (including how well they can conceal their own feelings from others). Each item is measured on a five-point Likert scale with responses ranging from “strongly disagree (1)” to “strongly agree (5)”. The EMS consists of three subscales, Emotional Manipulation (10 items), Emotional Concealment (4 items) and Poor Emotional Skills (4 items). An example of an Emotional Manipulation item is “I know how to embarrass someone to stop them behaving in a particular way” (Austin et al., 2007, p. 185). Possible scores on this scale range from 10 to 50, with higher scores indicating elevated levels of perceived emotional manipulation skills. An example of an Emotional Concealment item is “when someone has made me upset or angry, I tend to downplay my feelings” (Austin et al., 2007, p. 185). The possible score range on this scale is 4 – 20, with higher scores suggesting a higher level of concealing emotions from the individual. The original Poor Emotional Skills subscale has items such as “I am not very good at motivating people” (Austin et al., 2007, p. 185). The current possible score range on this subscale is 4 -20, with a higher score indicating a lower level of perceived general emotional skills.

Fifteen new items were generated to potentially load onto the Poor Emotional Skills factor. An example of one of the new items is “sometimes I find it hard to ‘keep it together’ emotionally”. Table 3.2 summarises all 15 new items. The other two subscales were included to ensure the items load onto the correct factors.

4.2.2.4. Procedure

Before the study begun, ethics approval was obtained from the Curtin University Human Research Ethics Committee. Both original and newly written items for both scales, as well as demographic questions, were collated as a questionnaire. An account was set up on Qualtrics, an online survey design website, and the full questionnaire was formatted as per the websites instructions. The questionnaire was made available via a link from the Participant Information Sheet housed on the Curtin University server. The survey took approximately 20 minutes to complete. Informed consent was assumed upon completion and submission of the questionnaire. Upon submission, each participant was automatically redirected to a debriefing page (Appendix 4.3) housed on the Curtin University server and given the option of providing their email address for entry into the prize draw. The questionnaire was available for a period of approximately two months, after which the data collected was downloaded from the website for subsequent analysis in the Statistical Package for the Social Sciences (SPSS) version 19.0 and LISREL 8.80. Prizes were drawn at this point whereby the winning participants received \$50 Amazon.com gift vouchers.

4.3. Results

4.3.1. Data file check and missing data

As per the recommendations outlined by Tabachnick and Fidell (2007) the accuracy of the data file was checked before evaluation of missing data was conducted. One participant had entered a value of '1991' as their age in years, this was corrected to '20' based on the assumption that the question was misread and 1991 was their year of birth. No other problems of accuracy were identified. Screening was also conducted for multiple submissions, of which there were none.

From an initial sample of 361 participants, 10 participants did not answer any questions and their data were subsequently deleted. The remaining data were split into two sets, one for factor analysis of the LSRP items and one for the EMS items. A Missing Values Analysis (MVA) was conducted on each set. Cases missing more than 10% of data were deleted (20 and 34 cases in the LSRP and EMS files respectively). There were now 331 and 317 participants remaining in the LSRP and EMS files respectively. An MVA was rerun on each file to examine the pattern of missing data for the remaining missing data points. In the LSRP file there were 31 missing data points on 22 variables. None of the 26 participants with missing data had more than three missing data points, Little's MCAR test determined that this pattern of missing data was missing completely at random, $\chi^2(661) = 697.49, p = .158$. After rerunning an MVA for the EMS file, there remained 31 data points missing on 19 variables. In total there were 27 participants with missing data, none of whom had more than three missing data points. This pattern of missing data was also missing completely at random according to Little's MCAR test, $\chi^2(636) = 684.07, p = .091$. The remaining missing data on both files were therefore replaced using mean substitution. While this replacement method is increasingly losing favour to the more rigorous methods of replacing missing data, it is an acceptable, conservative means of replacement when the amount of missing data is low, as is the case here (Tabachnick & Fidell, 2007).

4.3.2. Levenson Self-Report Psychopathy Scale (LSRP) results

Confirmatory factor analyses were conducted to evaluate factor structure and model fit of the revised LSRP. The use of such analyses was appropriate given that the new items were developed from a theoretical perspective to specifically load onto a particular factor. It was therefore reasonable to apply CFA given the a priori predictions formed during the item generation process, as CFA processes are grounded in theory (Jackson, Gillaspay Jr, & Purc-Stephenson, 2009).

4.3.2.1. Assumption testing for confirmatory factor analysis

As a general estimate, in order to obtain a reliable CFA solution at least five participants are required for each parameter that needs to be estimated from the data; 10-20 participants per parameter would be ideal (Kline, 2005). The most complex potential measurement model (a two-factor correlated model consisting of the 26 original items and the 11 potential new items) has 77 parameters; 37 indicator error variances, 37 indicator factor loadings, 1 correlation among the factors and 2 factor variances. Such a model generates a minimum sample size of 385. The final sample size for the LSRP ($N = 331$) fell just short of the minimum requirements.

Kolmogorov-Smirnov tests of univariate normality indicated that all items were not normally distributed; however the low skewness and kurtosis values (reported in Table 4.5) indicated that these normality violations were trivial and did not require transformations (Tabachnick & Fidell, 2007). Significance tests for skewness and kurtosis have been conducted; Caution is needed in interpreting the results as for samples of 100 or more cases, the decrease in standard errors associated with large samples can lead to skewness and kurtosis values attaining significance when they represent only slight departures from normality and therefore pose no threat to the reliability of the analysis (Tabachnick & Fidell,

2007). Visual inspection of normal probability plots and detrended expected probability plots showed that the actual distribution did not deviate, or only marginally deviated, from the expected distributions (Tabachnick & Fidell, 2007). In order to check linearity a random selection of bivariate scatterplots was examined. No curvilinear trends were observed.

Table 4.5.

Descriptive statistics and Kolmogorov-Smirnov values for all items of the LSRP (N = 331)

Item	Mean (SD)	Skewness	Kurtosis	Kolmogorov-Smirnov
Success is based on survival of the fittest; I am not concerned about the losers	2.00 (.86)	0.280	-0.988	0.216
For me, what's right is whatever I can get away with.	1.52 (.75)	1.263	0.734	0.374
In today's world, I feel justified in doing anything I can get away with to succeed	1.66 (.85)	1.086	0.264	0.329
My main purpose in life is getting as many goodies as I can.	1.74 (.85)	0.893	-0.096	0.294
Making a lot of money is my most important goal.	1.92 (.85)	0.411	-0.899	0.238
I let others worry about higher values; my main concern is with the bottom line.	1.60 (.70)	0.776	-0.402	0.323
People who are stupid enough to get ripped off usually deserve it.	1.92 (.84)	0.461	-0.728	0.230
Looking out for myself is my top priority.	2.16 (.91)	0.174	-0.972	0.204
I tell other people what they want to hear so that they will do what I want them to do.	1.93 (.91)	0.496	-0.674	0.241

I would be upset if my success came at someone else's expense	1.91 (.83)	0.273	0.567	0.224
I often admire a really clever scam	2.12 (.98)	1.163	0.325	0.218
I make a point of trying not to hurt others in pursuit of my goals	1.54 (.68)	1.233	0.554	0.335
I enjoy manipulating other people's feelings.	1.54 (.79)	1.495	0.701	0.379
I feel bad if my words or actions cause someone else to feel emotional pain	1.56 (.83)	0.764	0.664	0.364
Even if I were trying very hard to sell something, I wouldn't lie about it.	1.77 (.83)	1.145	0.301	0.277
Cheating is not justified because it is unfair to others.	1.59 (.77)	0.034	-0.443	0.342
I find myself in the same kinds of trouble, time after time.	2.25 (.89)	-0.012	0.376	0.223
I am often bored.	2.48 (.99)	0.383	-0.776	0.203
I find that I am able to pursue one goal for a long time	2.13 (.87)	0.102	-0.483	0.243
I don't plan anything very far in advance.	2.41 (.93)	0.138	-0.312	0.213
I quickly lose interest in tasks I start.	2.32 (.78)	0.360	-0.866	0.265
Most of my problems are due to the fact that other people just don't understand me.	2.08 (.88)	0.537	-0.487	0.219
Before I do anything, I carefully consider the possible consequences	1.99 (.74)	1.018	0.506	0.296
I have been in a lot of shouting matches with other people.	1.73 (.91)	0.607	-0.669	0.317
When I get frustrated, I often "let off steam" by blowing my top.	1.88 (.88)	1.046	0.328	0.248
Love is overrated.	1.70 (.91)	1.513	0.592	0.337

I have been described as a bully	1.46 (.77)	1.981	-0.663	0.415
I enjoy a good physical fight	1.41 (.79)	-0.359	-0.234	0.442
At times, I feel guilty about my behaviour toward others	2.72 (.82)	-0.400	-0.493	0.287
If I fail at something, I tend to feel anger and disgust towards myself	2.76 (.89)	-0.053	-0.238	0.269
I often act without thinking when I am upset	2.50 (.81)	0.773	0.764	0.240
I have lost a friend because of the irresponsible things I've done	1.81 (.95)	0.642	0.843	0.313
I think I am worthy of praise from others	2.06 (.72)	0.487	0.663	0.326
I think of myself as self-assured and confident	2.23 (.81)	-0.049	0.654	0.306
I have a tendency to be mistrusting of others	2.52 (.92)	-0.178	-0.764	0.216
I am often suspicious of other peoples motives	2.58 (.92)	-0.156	-0.567	0.239
I wish I were more assertive	2.87 (.83)	-0.465	-0.435	0.277

Note. All Kolmogorov-Smirnov values are sig. at .05

Data were inspected for both univariate and multivariate outliers. Boxplots indicated that there were no influential univariate outliers. A maximum Mahalanobis distance of 86.12 was calculated by conducting a regression analysis with the LSRP items as predictors and participant ID as the dummy dependent variable. This value exceeds the critical χ^2 value of 69.35 for $df = 37$ at $\alpha = .001$, which indicates the presence of multivariate outliers, of which there were eight. None of these multivariate outliers appeared to distort the CFA solution (tested by comparing results with and without outliers) so they were retained. Multivariate normality was tested using LISREL 8.80 for the LSRP; this produced significant results indicating violations of multivariate normality. Violations of multivariate normality inflate

the chi-square statistic that is normally used to test model fit (Joreskog & Sorbom, 1989). As a result, model fit for each measure was tested with a chi-square statistic that corrects for the inflation, the Satorra-Bentler χ^2 (Jöreskog & Sörbom, 2006). Tolerances values for each variable were all greater than .1, indicating that multicollinearity was not a concern (Tabachnick & Fidell, 2007).

4.3.2.2. Preliminary analyses

There are two plausible factor structures for the original LSRP; a 1-factor structure and a correlated 2-factor structure. CFA's were conducted using LISREL 8.80 in order to test and compare the competing factor models. Fit indices (Normed χ^2 = Satorra-Bentler χ^2 divided by its degrees of freedom, Comparative Fit Index, Non-Normed Fit Index, Standardised Root Mean Square Residual, Root Mean-Square Error of Approximation and Akaike's Information Criterion) were used to determine the degree to which each model fit the data. These indices were chosen to ensure full representation of incremental, absolute and predictive fit indices, the recommended best practice for CFA reporting (Worthington & Whittaker, 2006). Although neither of the models fit particularly well (see Table 4.6) a χ^2 difference test indicated that the correlated 2-factor model provided a significantly better fit than the 1-factor model, $\chi^2_{\text{diff}}(1) = 279.57, p < .001$. This was expected given that widespread research has established psychopathy not to be a unitary construct (e.g. Hare, 1980; Lilienfeld, 1998; Lykken, 1995) and also because previous CFA's of the LSRP have allowed the two factors to correlate and produced models that fit the data well (Brinkley et al., 2001; Lynam et al., 1999). Figure 4.1 depicts the correlated 2-factor model of the original LSRP. Factor loadings are located on the arrows between the factor and the indicators (items); the values on the extreme left of the diagram represent measurement errors (i.e. the error inherent

in measuring a latent variable with an observed variable); and the value on the double-headed arrow that joins the two factors represents the between-factor correlation.

Table 4.6.

Goodness of fit statistics for the 1-factor and the correlated 2-factor model of the original LSRP (N = 331)

	1-factor model	2-factor correlated model
Normed χ^2 ^a	6.63	5.25
CFI ^b	.81	.84
NNFI ^c	.79	.82
SRMR ^d	.099	.092
RMSEA ^e	.13	.11
AIC ^f	2085.94	1670.38

Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 2005); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003) c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003);d: Standardised Root Mean Square Residual; values less than .08 indicate good fit (Marsh, Hau, & Wen, 2004) e: Root Mean Square Error of Approximation; values less than or equal to .08 indicate a good fit (Marsh et al., 2004)f: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit (Akaike, 1987).

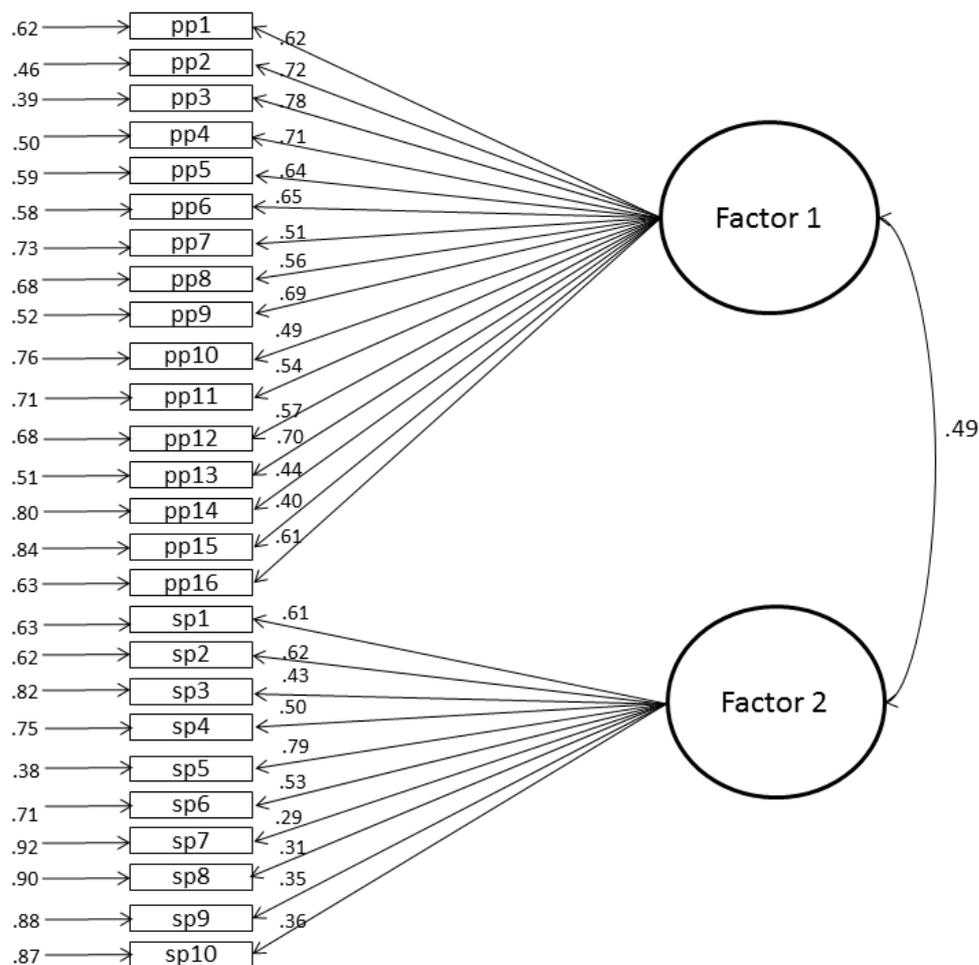


Figure 4.1. The correlated 2-factor measurement model of the original LSRP

4.3.2.3. Confirmatory factor analysis of original LSRP plus new items

CFA using LISREL 8.80 was conducted on the original scale plus all the newly developed items in order to determine whether the inter-item correlations could be adequately explained in terms of the correlated 2-factor model. All new items were specified to load on the LSRP-S factor. The process of deleting items one at a time was conducted on the basis of the LISREL modification indices. As the new items were theoretically justified, the process of eliminating redundant items was based on modification index values from LISREL output. Modification indices estimate the decrease in χ^2 that would be expected if a given parameter was to be excluded from the model, with more influential parameters being indicated by large

modification indices (Schumacker & Lomax, 2010). Table 4.7 below provides fit indices for each item combination that was tested.

Table 4.7.

Iterative process of removing items from LSRP based on modification indices

Item combination	Normed χ^2 ^a	CFI ^b	NNFI ^c	SRMR ^d	RMSEA ^e	AIC ^f	Item removal (χ^2 decrease)
LSRP-S original + new items 1-11	5.46	.79	.78	.11	.12	3577.08	remove nsp1 (46.9)
LSRP-S original + new items 2-11	5.14	.80	.78	.10	.11	3193.78	remove nsp2 (43.9)
LSRP-S original + new items 3-11	5.07	.80	.79	.099	.11	2973.64	remove nsp8 (25.9)
LSRP-S original + new items 3-7, 9-11	4.85	.82	.80	.093	.11	2686.55	remove nsp7 (21.2)
LSRP-S original + new items 3-6, 9-11	4.86	.82	.80	.094	.11	2634.01	no removal, fit indices didn't improve or worsened

Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003) c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003); d: Standardised Root Mean Square Residual; values less than .08 indicate good fit (Marsh et al., 2004) e: Root Mean Square Error of Approximation; values less than or equal to .08 indicate a good fit (Marsh et al., 2004) f: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit (Akaike, 1987).

Using this process, a correlated 2-factor model was obtained that involved deleting three of the 11 new items (highlighted in bold in Table 4.7). This final item combination provided the optimal fit in the sense that the deletion of more items did not produce a better fit. Even though the correlated 2-factor model fit this combination of items better than other combinations, the fit was still below threshold. The modification indices from the LISREL output indicated that the addition of certain error covariances would improve fit. The addition of these error covariances allows for the estimated error between indicators to covary. Error covariances were only added, however, if they were theoretically relevant, that is, if the items were deemed similar enough to argue that error variances could be shared. Based on this argument, only items within a subscale were allowed to have correlated error terms. For example the items '*I would be upset if my success came at someone else's expense*' and '*I make a point of trying not to hurt others in pursuit of my goals*' are both negatively worded items that speak to the callousness that characterises primary psychopathy. It has been suggested that decisions on allowing indicators to share error variance should primarily be based on conceptual similarities between indicators rather than statistical criteria such as a large decrease in the chi-square value of the model (Schumacker & Lomax, 2010). Allowing error variances to covary is a practice that has been implemented in previous uses of the LSRP (Lynam et al., 1999).

After all recommended error covariances were added, model fit improved and all relevant goodness of fit statistics reached threshold. Table 4.8 summarises the details of each step in the process of adding error covariances. Values in the last row (in bold) indicate the goodness of fit indices for the final revised model of the LSRP after all error covariances were added. Figure 4.2 depicts the final revised model of the LSRP that will be used in Study Two. Note that error covariances between items have been omitted for clarity.

Adequate model fit has also been confirmed based on inspection of the correlation between the two factors, as well as an examination of how well the indicators fit their relevant factors, as this has been suggested to be good practice in model fit evaluation (Williams & O'Boyle Jr, 2011). The relatively moderate factor correlation of .51 suggests that while there is some form of linear relationship between the two subtypes of psychopathy (which should be expected), they are not so highly correlated as to cause any concern regarding overlap of the two constructs. Primary and secondary psychopathy constructs as measured by the LSRP appear to be distinct in this particular sample, which reflects previous research that suggests the two subtypes are conceptually distinct (e.g. Lykken, 1957). The squared multiple correlations from the LISREL output are values that illustrate the magnitude of the relationship between each indicator and its relevant factor. As they are squared correlations they can be thought of as similar to reliability coefficients. There is high variability among these values (ranging from 0.03 to .60), suggesting that further validation will be needed to confirm how appropriate the items are in other samples.

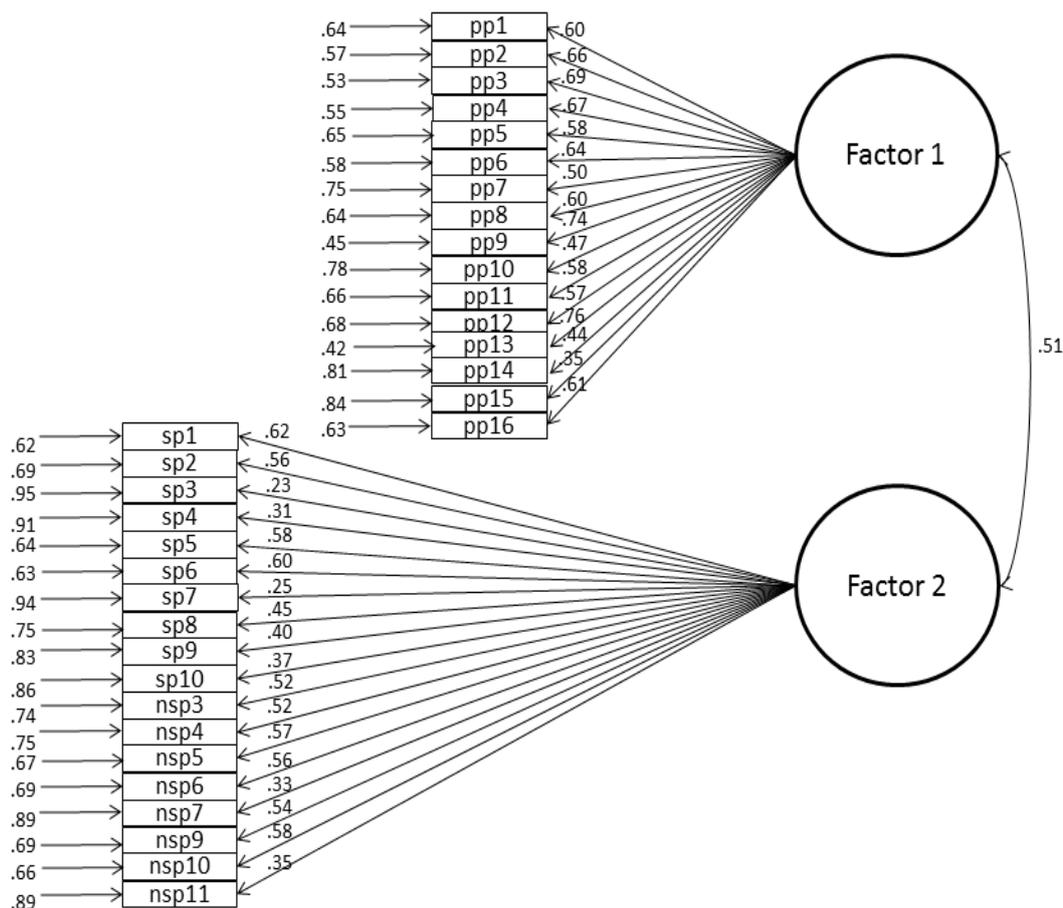


Figure 4.2. Final revised correlated 2-factor measurement model of the LSRP

4.3.2.4. Reliability analyses

Internal consistency for each sub-scale was measured using Cronbach's alpha. The LSRP-P produced Cronbach's alpha value of .87, which is considered sufficient for research purposes (Shum, O'Gorman, & Myers, 2006). The LSRP-S also had adequate internal consistency (Cronbach's alpha = .84), which was a substantial improvement on the inadequate internal consistency of the original LSRP-S (Cronbach's alpha = .71).

Construct reliability can also be quantified (Hair, Anderson, Tatham, & Black, 1998) using a formula which is as follows;

$$\text{Construct reliability} = \frac{(\text{SUM}(sl_i))^2}{(\text{SUM}(sl_i))^2 + \text{sum}(e_i)}$$

The sl_i are the standardized loadings for individual indicators that contribute to the construct, and e_i are the standardized error terms for the indicators, both of which can be found on Figure 3.2. Construct reliability, by convention, should be at least .7 (Hair et al., 1998). Construct reliability of the LSRP-P and LSRP-S are .89 and .83 respectively.

Table 4.8.

Iterative process of adding error covariances to the revised LSRP for the purposes of improving model fit

Error Covariance	Goodness of fit statistics						
	Decrease in χ^2	Normed χ^2 ^a	CFI ^b	NNFI ^c	SRMR ^d	RMSEA ^e	AIC ^f
<i>I am often suspicious of other peoples motives - nsp10 and I have a tendency to be mistrusting of others - nsp9</i>	170.7	4.51	.84	.83	.089	.10	2694.33
<i>In today's world, I feel justified in doing anything I can get away with to succeed - pp3 and For me, what's right is whatever I can get away with - pp2</i>	142.4	4.31	.85	.84	.087	.10	2591.22
<i>Even if I were trying very hard to sell something, I wouldn't lie about it* - pp15 and Cheating is not justified because it is unfair to others* - pp16</i>	72.4	4.12	.86	.85	.087	.097	2489.75
<i>When I get frustrated, I often "let off steam" by blowing my top - sp9 and I have been in a lot of shouting matches with other people- sp8</i>	71.5	3.95	.87	.86	.086	.095	2388.48
<i>I quickly lose interest in tasks I start - sp5 and I find that I am able to pursue one goal for a long time* - sp3</i>	54.4	3.77	.87	.86	.084	.092	2301.47
<i>Making a lot of money is my most important goal - pp5 and My main purpose in life is getting as many goodies as I can - pp4</i>	50.9	3.64	.88	.87	.083	.089	2263.33
<i>Before I do anything, I carefully consider the possible consequences* - sp7 and I don't plan anything very far in advance - sp4</i>	37.2	3.60	.88	.87	.082	.089	2238.72
<i>I quickly lose interest in tasks I start - sp5 and I am often bored – sp2</i>	27.9	3.48	.89	.88	.081	.087	2203.95
<i>Even if I were trying very hard to sell something, I wouldn't lie about it* - pp15 and I make a point of trying not to hurt others in pursuit of my</i>	28.2	3.43	.89	.88	.081	.086	2198.76

goals* - pp12

<i>People who are stupid enough to get ripped off usually deserve it - pp7 and Success is based on survival of the fittest; I am not concerned about the losers - pp1</i>	24.9	3.43	.89	.88	.081	.086	2088.82
<i>I quickly lose interest in tasks I start - sp5 and I don't plan anything very far in advance - sp4</i>	24.8	3.29	.90	.89	.079	.083	2069.35
<i>I don't plan anything very far in advance - sp4 and I find that I am able to pursue one goal for a long time* - sp3</i>	35.3	3.19	.90	.89	.078	.082	2057.28
<i>I let others worry about higher values; my main concern is with the bottom line - pp6 and In today's world, I feel justified in doing anything I can get away with to succeed - pp3</i>	23.7	3.16	.90	.89	.078	.081	2042.59
<i>I make a point of trying not to hurt others in pursuit of my goals* - pp12 and I would be upset if my success came at someone else's expense* - pp10</i>	21.1	3.16	.90	.89	.078	.081	2028.96
<i>I feel bad if my words or actions cause someone else to feel emotional pain* - pp14 and I would be upset if my success came at someone else's expense* - pp10</i>	21.3	3.07	.90	.89	.077	.079	2011.12
<i>Making a lot of money is my most important goal - pp5 and In today's world, I feel justified in doing anything I can get away with to succeed - pp3</i>	20.9	3.03	.90	.89	.077	.078	2007.54
<i>Success is based on survival of the fittest; I am not concerned about the losers - pp1 and I let others worry about higher values; my main concern is with the bottom lin. - pp6</i>	20.4	2.99	.91	.90	.077	.078	2001.99

Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003) c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003); d: Standardised Root Mean Square Residual; values less than .08 indicate good fit (Marsh et al., 2004) e: Root Mean Square Error of Approximation; values less than or equal to .08 indicate a good fit (Marsh et al., 2004) f: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit (Akaike, 1987).

Table 4.9 summarises the descriptive information of the final revised LSRP scale, illustrating the mean and range of LSRP scores. Note that the new version of the LSRP-S with the additional new items is now labelled with the acronym 'LSRP-S-R'.

Table 4.9.

Summary of descriptives of the final revised LSRP (N = 331)

	LSRP-P	LSRP-S-R
Mean (S.D.)	28.50 (7.67) out of 64	40.79 (7.65) out of 72
Minimum	16	20
Maximum	56	64

4.3.3. Emotional Manipulation Scale (EMS) results

4.3.3.1. Assumption testing for confirmatory factor analysis

As previously mentioned, in order to obtain a reliable CFA solution at least five participants are required for each parameter that needs to be estimated from the data; 10-20 participants per parameter would be ideal (Kline, 2005). Applying this general ratio to the most complex measurement model (a three-factor correlated model consisting of the 18 original items and the 15 potential new items) has 72 parameters; 33 indicator error variances, 33 indicator factor loadings, 3 correlations among the factors and 3 factor variances. Such a model generates a minimum sample size of 360. The final sample size for the EMS ($N = 294$) fell short of the minimum requirements.

Kolmogorov-Smirnov tests of normality indicated that items were not normally distributed; however low skewness and kurtosis values indicated only slight departures from normality, and this was confirmed by the histograms which showed no discernible deviations

from a normal curve. Normalising transformations were therefore not required (Tabachnick & Fidell, 2007). Kolmogorov-Smirnov, skewness and kurtosis values are reported in Table 4.10.

Significance tests for skewness and kurtosis could have been conducted; however, this is not recommended for samples of 100 or more cases, as the decrease in standard errors associated with such large samples can lead to skewness and kurtosis values attaining significance when they represent only slight departures from normality and therefore pose no threat to the reliability of the analysis (Tabachnick & Fidell, 2007). Visual inspection of normal probability plots and detrended expected probability plots indicated that the actual distribution did not deviate from the expected normal distribution, or only marginally deviated (Tabachnick & Fidell, 2007). In order to check linearity, a random selection of bivariate scatterplots was examined. No curvilinear trends were observed.

Data were inspected for both univariate and multivariate outliers. Boxplots indicated that there were no influential univariate outliers. A maximum Mahalanobis distance of 75.18 was calculated by conducting a regression analysis with the EMS items as predictors and participant ID as the dummy dependent variable. This value exceeds the critical χ^2 value of 63.87 for $df = 33$ at $\alpha = .001$, indicating the presence of multivariate outliers, of which there were three. None of these multivariate outliers appeared to distort the CFA solution (tested by comparing results with and without outliers) so they were retained. Multivariate normality was tested using LISREL 8.80 for the EMS; this produced significant results indicating violations of multivariate normality. As previously stated, violations of multivariate normality inflate the chi-square statistic that is normally used to test model fit (Joreskog & Sorbom, 1989). As a result, model fit for each measure was tested with a chi-square statistic that corrects for the inflation, the Satorra-Bentler χ^2 (Jöreskog & Sörbom, 2006). Tolerances

values for each variable were all greater than .1, indicating that multicollinearity was not a concern (Tabachnick & Fidell, 2007).

Table 4.10.

Descriptive statistics and Kolmogorov-Smirnov values for all items of the EMS (N = 294)

Item	Mean (S.D.)	Skewness	Kurtosis	Kolmogorov -Smirnov
I know how to embarrass someone to stop them behaving in a particular way	2.98 (1.27)	-.21	-1.17	.232
I know how to make another person feel uneasy.	3.21 (1.25)	-.48	-1.01	.296
I know how to play two people off against each other.	2.54 (1.32)	.31	-1.21	.205
I know how to make someone feel ashamed about something that they have done in order to stop them from doing it again	3.13 (1.28)	-.36	-1.12	.268
I know how to 'wind up' my close family and friends.	3.44 (1.27)	-.57	-.81	.276
I can use my emotional skills to make others feel guilty.	2.99 (1.33)	-.16	-1.32	.253
I can make someone feel anxious so that they will act in a particular way.	2.48 (1.18)	.33	-.97	.208
I can pay someone compliments to get in their 'good books'	3.37 (1.19)	-.63	-.75	.324
I am good at reassuring people so that they're more likely to go along with what I say.	3.36 (1.13)	-.59	-.58	.293
I sometimes pretend to be angrier than I really am about someone's behaviour in order to induce them to behave differently in future	2.74 (1.34)	.11	-1.39	.231
I am not very good at motivating people.	2.26 (1.08)	.81	-.12	.304
I feel that I lack emotional skills.	2.17 (1.21)	.87	-.29	.264

I'm not very good at changing someone's mood, even if doing so would make them more likely to behave in a way that I want them to.	2.29 (.98)	.72	-.09	.313
I am not very good at giving positive encouragement to others.	1.84 (1.01)	1.34	1.30	.271
Sometimes the way I express myself is not appropriate for the situation I'm in	3.09 (1.23)	-.34	-1.17	.288
I've been known to take out my frustrations on others who didn't deserve it	2.66 (1.28)	.16	-1.34	.227
When others are happy, I am pleased for them	1.57 (.78)	1.81	2.13	.322
When another person tells me about an event in their lives, I almost feel as though I have experienced this event myself	2.66 (1.13)	.56	-.61	.282
I think I can adequately communicate the way I am feeling to other people without speaking	2.41 (1.09)	.64	-.49	.303
I don't like to share my emotions with others	3.02 (1.28)	.01	-1.33	.246
I can recognise when something I've said or done has upset someone	1.64 (.72)	1.33	2.72	.281
I find it hard at times to tell how other people are feeling	2.45 (1.16)	.49	-.88	.284
I notice when other people are happy	1.50 (.60)	1.13	2.16	.337
Sometimes I find it hard to 'keep it together' emotionally	2.89 (1.32)	-.07	-1.39	.255
When I'm excited about something, I get really excited and find it hard to calm down	3.02 (1.28)	.04	-1.34	.256
When I experience a positive emotion, I know how to make it last	2.56 (1.10)	.49	-.70	.288
Sometimes I have feelings which I don't know how to describe	3.41 (1.19)	-.43	-.95	.284
I am aware of the non-verbal messages I send to others	2.25 (1.02)	.86	.11	.326
I know why my emotions change	2.32 (1.09)	.80	-.13	.305
When someone has made me upset or angry, I tend to downplay my feelings.	3.61 (1.17)	-.76	-.38	.311

When someone has made me upset or angry, I often conceal my feelings.	3.54 (1.18)	-.59	-.79	.316
I often conceal feelings of anger or distress from others.	3.61 (1.18)	-.64	-.74	.309
I don't believe in telling others about my problems – I keep them to myself.	3.08 (1.32)	-.09	-1.34	.252

Note. All Kolmogorov-Smirnov values are sig. at .05

4.3.3.2. Preliminary analyses

There are three plausible factor structures for the original EMS: A 1-factor structure, a correlated 3-factor structure, and an uncorrelated 3-factor structure. CFAs, as implemented through LISREL 8.80, were conducted in order to test and compare the competing factor models. Goodness of fit indices (Normed χ^2 = Satorra-Bentler χ^2 divided by its degrees of freedom, Comparative Fit Index, Non-Normed Fit Index, Standardised Root Mean Square Residual, Root Mean-Square Error of Approximation and Akaike's Information Criterion) are reported in Table 4.11. Although none of the three models showed acceptable fit both the correlated and uncorrelated 3-factor models fit the data better than the 1-factor model. According to the χ^2 difference test, the correlated 3-factor model fit the data significantly better than the 1-factor model, $\chi^2_{\text{diff}}(3) = 1089.13, p < .001$. The choice to look at the difference between these particular two models was because the 1-factor model can be considered to be 'nested' within the correlated 3-factor model by having a constraint placed on one or more of the parameters (Kline, 2005). The difference between the 3-factor uncorrelated and the 1-factor model cannot be tested this way as both models have the same number of parameters (and therefore the same degrees of freedom). Model AIC values, however, indicate the 3-factor uncorrelated model to be of better fit than the 1-factor model.

Another χ^2 difference test comparing the correlated and uncorrelated 3-factor models showed that the correlated model fit significantly better, $\chi^2_{\text{diff}}(3) = 12.1, p < .001$. This finding is empirically supported, as previous factor analysis with this scale allowing oblique

rotations produced satisfactory results (Austin et al., 2007; Black, 2006). Figure 4.3 depicts the original correlated 3-factor EMS model. Factor loadings are located on the arrows between the factors and the indicators; the values on the extreme left of the diagram represent measurement errors; and the value on the double-headed arrow that joins the two factors represents the between-factor correlation.

Table 4.11.

Goodness of fit statistics for the 1-factor, correlated 3-factor and uncorrelated 3-factor models of the original EMS (N = 294)

	1-factor model	3-factor uncorrelated model	3-factor correlated model
Normed χ^2 ^a	12.96	3.98	4.02
CFI ^b	.74	.93	.93
NNFI ^c	.71	.92	.92
SRMR ^d	.16	.093	.083
RMSEA ^e	.19	.097	.098
AIC ^f	1822.26	609.41	570.22

Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003) c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003); d: Standardised Root Mean Square Residual; values less than .08 indicate good fit (Marsh et al., 2004) e: Root Mean Square Error of Approximation; values less than or equal to .08 indicate a good fit (Marsh et al., 2004) f: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit (Akaike, 1987).

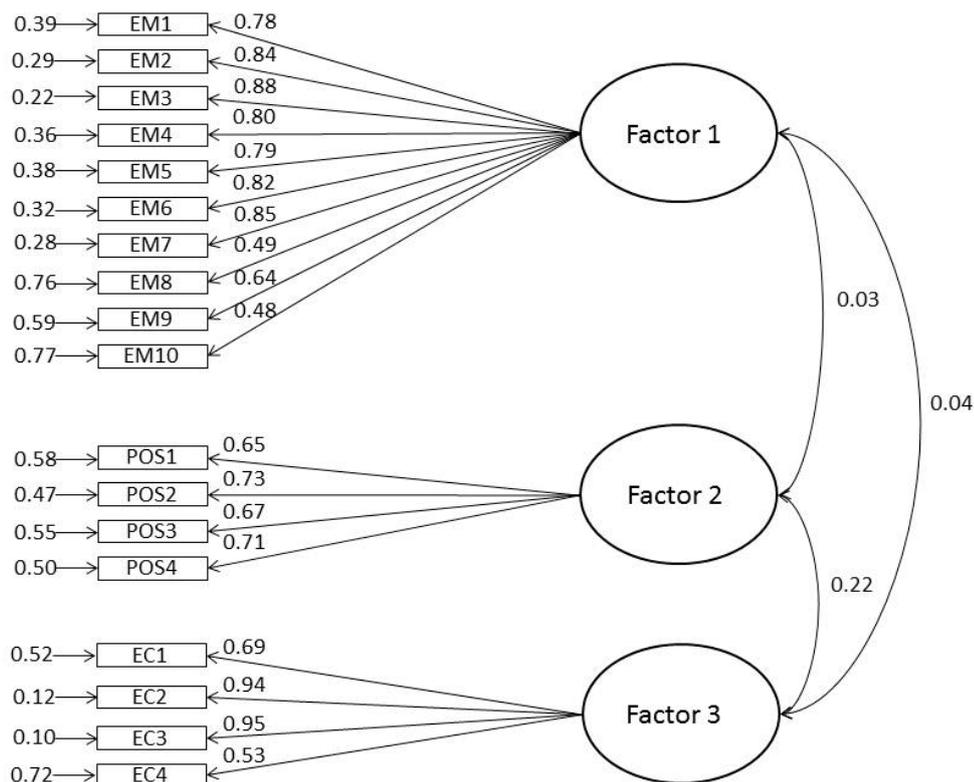


Figure 4.3. Correlated 3-factor model of the original EMS

4.3.3.3. Confirmatory factor analysis of original EMS plus new items

CFA using LISREL 8.80 was conducted on the original scale plus the newly developed items in order to determine whether the inter-item correlations could be adequately explained in terms of the correlated 3-factor model. All new items were specified to load on the EMS-POS factor. The process of deleting items one at a time was conducted on the basis of the LISREL modification indices. As all new items were theoretically justified, the process of eliminating redundant items was based on modification index values from LISREL output. Modification indices estimate the decrease in χ^2 that would be expected if a given parameter was to be excluded from the model, with more influential parameters being indicated by larger modification indices (Schumacker & Lomax, 2010). These results can be seen in Table 4.12.

Table 4.12.

Iterative process of removing items from EMS based on modification indices

Item combination	Normed χ^2 ^a	CFI ^b	NNFI ^c	SRMR ^d	RMSEA ^e	AIC ^f	Item removal (χ^2 decrease)
EMS original + new items 1-15	4.14	.82	.81	.11	.10	2174.33	remove npos6 (76.0)
EMS original + new items 1-5, & 7-15	3.99	.84	.82	.10	.10	1976.32	remove npos2 (25.5)
EMS original + new items 1,3-5 & 7-15	3.89	.84	.83	.098	.099	1809.01	remove npos3 (23.4)
EMS original + new items 1,4,5 & 7-15	3.79	.85	.84	.094	.098	1649.91	remove npos1 (22.3)
EMS original + new items 4,5 & 7-15	3.72	.86	.84	.091	.096	1515.33	remove npos8 (19.8)
EMS original + new items 4,5,7 & 9-15	3.70	.86	.85	.090	.094	1392.00	no more suggestions for removal

After deletion of item 11 as suggested by Cronbach's alpha results:

EMS original + new items 4,5,7,9,10 & 12-15	3.60	.87	.86	.086	.094	1268.13	
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Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003) c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003); d: Standardised Root Mean Square Residual; values less than .08 indicate good fit (Marsh et al., 2004) e: Root Mean Square Error of Approximation; values less than or equal to .08 indicate a good fit (Marsh et al., 2004) f: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit (Akaike, 1987).

Using this process, a correlated 3-factor model was obtained that involved deleting Items 1, 2, 3, 6 and 8 and retaining the remaining nine new items for the Poor Emotional Skills subscale. Reliability analysis (see below) suggested removing new Item 11 to improve on internal consistency. This also improved model fit (see last row of Table 4.12); however, the addition of error covariances was once again needed in order to push the goodness of fit indices beyond threshold. The addition of these error covariances allows for the estimated error between indicators to covary. The LISREL modification indices identified the error covariances that would most improve fit. As with the LSRP, error covariances were only added between conceptually similar items. For example, the error variances of *I am aware of the non-verbal messages I send to others* and *I think I can adequately communicate the way I am feeling to other people without speaking* were allowed to covary as these are both items from the Poor Emotional Skills subscale which measure perceived ability to read non-verbal emotional cues. Following the inclusion of the additional error covariances, model fit improved and almost all relevant goodness of fit statistics reached threshold (Standardised RMR was still above the .08 cut-off). See Table 4.14 for details of each step in the process of adding error covariances. Values in the last row (in bold) indicate the goodness of fit indices for the final revised model of the EMS after all error covariances were added. Figure 4.4 depicts the final revised model of the EMS to be used in Study Two. Note that error covariances have been omitted for clarity.

As previously suggested, model fit should be evaluated not only by goodness of fit indices but also by inspection of the correlation between the factors and an examination of how well the indicators fit their relevant factors (Williams & O'Boyle Jr, 2011). As depicted in Figure 4.4, the between-factor correlations are relatively low for Factors 2 and 3, and even lower for Factor 1 and each of the other two factors. This reflects the theoretical similarities and differences between the factors; Factors 2 (Poor Emotional Skills – EMS-POS) and 3

(Emotional Concealment – EMS-EC) have underlying similarities based on deficits in emotion processing, whereas Factor 1 (Emotion Manipulation – EMS-EM) is more conceptually distinct. The squared multiple correlations from the LISREL output are values that illustrate the magnitude of the relationship between each indicator and its relevant factor. As they are squared correlations they can be thought of as similar to reliability coefficients. Like the LSRP, these values are quite varied (between .05 and .9) suggesting that further validation will be required to confirm the representativeness of each item to their respective factors.

Table 4.13 summarises the descriptive information for the final revised EMS scale, illustrating the mean and range of EMS scores.

Table 4.13.

Summary of descriptives for the final revised EMS (N = 294)

	EMS-EM	EMS-POS	EMS-EC
Mean (S.D.)	30.24 (9.14)	30.22 (7.10)	13.83 (3.90)
Minimum	10	14	4
Maximum	50	57	20

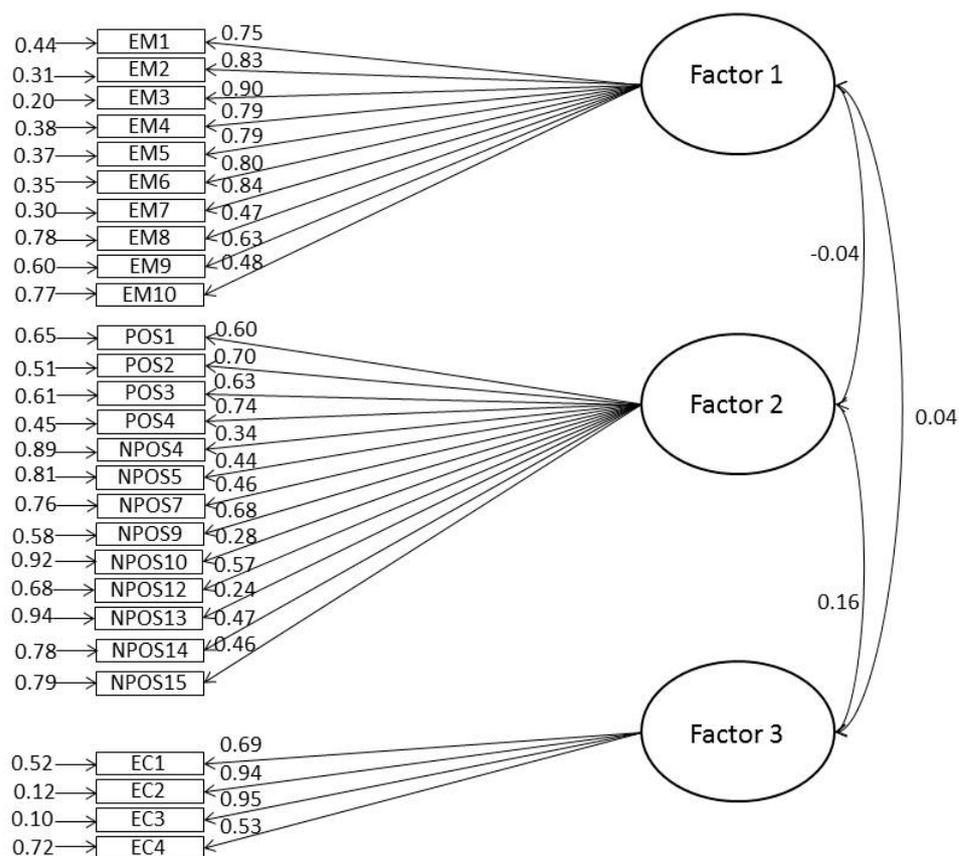


Figure 4.4. Final revised correlated 3-factor measurement model of the EMS

4.3.3.4. Reliability analyses

Internal consistency for each sub-scale was measured using Cronbach's alpha. The EMS-EM subscale produced a Cronbach's alpha of .90, which is considered more than sufficient for research purposes (Shum et al., 2006). The EMS-EC subscale also appeared to have adequate internal consistency (Cronbach's alpha = .82). The original 4-item EMS-POS subscale had inadequate internal consistency (Cronbach's Alpha = .69). The Revised EMS-POS now had sufficient internal consistency (Cronbach's alpha = .75); however, the reliability analysis at this point suggested removing npos11 to improve Cronbach's alpha to .77. This suggestion was implemented and in turn the overall model fit of the measure

improved. Construct reliability was also computed by applying the previously mentioned formula (section 4.3.2.4.) to values shown in Figure 3.4. The EMS-EM, EMS-EC and Revised EMS-POS all had construct reliability values of .92, .87 and .82 respectively.

Table 4.14.

Iterative process of adding error covariances to the revised EMS for the purposes of improving model fit

Error Covariance	Goodness of fit statistics						
	Decrease in χ^2	Normed χ^2 ^a	CFI ^b	NNFI ^c	SRMR ^d	RMSEA ^e	AIC ^f
<i>I am good at reassuring people so that they're more likely to go along with what I say - gen9; and I can pay someone compliments to get in their 'good books' - gen8</i>	68.5	3.42	.88	.87	.082	.091	1211.26
<i>I can recognise when something I've said or done has upset someone* – npos7; and I notice when other people are happy* - npos9</i>	49.4	3.18	.88	.87	.084	.089	1169.41
<i>I can make someone feel anxious so that they will act in a particular way - gen7; and I can use my emotional skills to make others feel guilty - gen6</i>	48.1	3.15	.89	.88	.084	.086	1121.63
<i>Sometimes I have feelings which I don't know how to describe - npos13; and Sometimes I find it hard to 'keep it together' emotionally - npos10</i>	29.6	3.08	.89	.88	.083	.084	1098.81
<i>I am aware of the non-verbal messages I send to others* - npos14; and I can recognise when something I've said or done has upset someone* - npos7</i>	30.6	2.99	.90	.89	.083	.083	1071.91
<i>I know how to make someone feel ashamed about something that they have done in order to stop them from doing it again - gen4; and I know how to embarrass someone to stop them behaving in a particular way - gen1</i>	18.3	2.75	.91	.90	.081	.077	1060.41

<i>I know how to make another person feel uneasy - gen2; and I know how to embarrass someone to stop them behaving in a particular way - gen1</i>	24.9	2.69	.91	.90	.081	.076	1042.32
<i>Sometimes I have feelings which I don't know how to describe - npos13; and I feel that I lack emotional skills - pos2</i>	12.4	2.64	.91	.90	.080	.075	1025.67
<i>I am aware of the non-verbal messages I send to others* - npos14; and I think I can adequately communicate the way I am feeling to other people without speaking* - npos5</i>	11.9	2.61	.91	.90	.080	.074	1018.45
<i>I can recognise when something I've said or done has upset someone* - npos7 and I'm not very good at changing someone's mood, even if doing so would make them more likely to behave in a way that I want them to - pos3</i>	11.3	2.61	.92	.90	.079	.074	1016.35

Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003) c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003); d: Standardised Root Mean Square Residual; values less than .08 indicate good fit (Marsh et al., 2004) e: Root Mean Square Error of Approximation; values less than or equal to .08 indicate a good fit (Marsh et al., 2004) f: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit (Akaike, 1987).

4.4. Discussion

4.4.1. Summary of Study One

The goal of this study was to improve the psychometric properties of two measures; the Secondary subscale of Levenson's Psychopathy Scale (LSRP-S; Levenson et al., 1995) and the Poor Emotional Skills subscale of the Emotion Manipulation Scale (EMS-POS; Austin et al., 2007). This goal has been achieved as a result of the addition of eight and nine new items to the LSRP-S and the EMS-POS respectively; the discussion will focus on each measure individually below.

4.4.2. Secondary subscale of the Levenson Self-Report Psychopathy Scale (LSRP-S)

Previous research into psychopathy as a personality dimension has been hampered by the absence of a reliable measure of secondary psychopathy. An attempt to fill this absence saw the process of improving the reliability of the LSRP-S by adding eight new items. Internal consistency was improved, increasing from Cronbach's $\alpha = .71$ of the original LSRP-S to $.84$ of the final LSRP-S-R. This is a considerable improvement on the internal consistency of the original subscale, as its use in previous research has seen Cronbach's alpha values ranging between from $.57$ to $.71$ (mean = $.64$) for the LSRP-S in non-forensic samples (e.g. Elwood, Poythress, & Douglas, 2004; Falkenbach, Poythress, Falki, & Manchak, 2007; Miller, Gaughan, & Pryor, 2008). These improvements are perhaps due to the bolstering of already existing themes in secondary psychopathy as a measured construct, as well as the addition of previously unmeasured themes in the construct. As a result, an important contribution to the literature has been made as construct validity has also been improved by taking a more encompassing view of secondary psychopathy. Taking such a view ensures that

the description of secondary psychopathy as a fairly heterogeneous construct (Lykken, 1957) is being perpetuated in current psychopathy research.

Items measuring impulsive and irresponsible behaviours pertaining to secondary psychopathy were already present in the original LSRP-S, however these particular themes appear dominant in secondary psychopathy research and as such should be reflected dominantly in its measurement (e.g. Blackburn & Lee-Evans, 1985; Ross, Benning & Adams, 2007). New items representing these themes that are included in the final LSRP-S-R are '*I often act without thinking when I am upset*' and '*I have lost a friend because of the irresponsible things I've done*'.

During the item development stage a thorough literature review revealed new themes of secondary psychopathy that are neglected in the original LSRP-S. Three of these themes are represented in the final LSRP-S-R by six new items; 'GUILT' ('*At times, I feel guilty about my behaviour toward others*' and '*If I fail at something, I tend to feel anger and disgust towards myself*'), 'MISTRUST' ('*I have a tendency to be mistrusting of others*' and '*I am often suspicious of other peoples motives*') and 'LOW ESTEEM' ('*I wish I were more assertive*' and '*I think I am worthy of praise from others [negatively worded]*').

The introduction of items intended to reinforce existing themes as well as items addressing new themes resulted in adequate model fit, which was determined based on acceptable fit indices, good correlations between indicators and their relevant factors, and a reasonable correlation between the primary and secondary psychopathy factors ($r = .51$). This is consistent with previous evidence that has also shown moderate factor correlations ($r = .40-.67$) in a community sample (Douglas et al., 2011; Lynam et al., 1999; Ross et al., 2004). This finding provides support for Lilienfeld and Fowlers (2006) suggestion that perhaps the

LSRP is best represented by a higher-order factor model with LSRP-P and LSRP-S scales representing 'general psychopathy' as a higher-order construct.

Acceptable model fit was achieved by allowing error variance to correlate amongst items that shared theoretical similarities, not only within the subscale that the items were part of, but also in the more specific facets of what the subscale measured. This is a more conservative approach to that of Lynam and his colleagues (1999) who allowed error terms to correlate across subscales. While perhaps this could be deemed acceptable given the inter-relatedness of the two subscales, there are still distinctions to be made between primary and secondary psychopathy which should not be permitted to covary.

4.4.3. Poor Emotional Skills subscale of the Emotional Manipulation Scale (EMS)

The EMS is a relatively new scale which was originally developed to measure the 'dark side' of emotional intelligence (Austin et al., 2007) and to the authors knowledge has only been used in published research once in the area of psychopathy research (Grieve & Mahar, 2010). In both its pilot stage and in Grieve and Mahar's (2010) research, the EMS-POS had poor internal consistency (Cronbach's alpha = .66 in both instances). The current research saw 9 new items added to the original EMS-POS which improved internal consistency of the original scale; Cronbach's alpha increased from .69 (original POS) to .77 (Revised POS). Note that the revised EMS-POS is now referred to using the acronym 'EMS-POS-R'.

Through the process of reviewing literature in the item development stage, it was determined that the original –EMS-POS items did not appear to cover all facets of the construct of poor emotional skills, as they appeared to only be concerned with managing others emotions. Much of the empirical evidence regarding emotional skills suggests that there is a wider scope of emotion processing that includes self-management and recognition

of one's own emotions, recognition of others emotions, expression of emotion and empathy (e.g. Brackett & Mayer, 2003; Mayer, Roberts, & Barsade, 2008).

The importance of considering emotion skills in regards to self-management was highlighted, given that emotion management is said to play a core role in manifestations of many psychiatric disorders (e.g. Friedman et al., 2003; Kring & Sloan, 2009; Riggio & Reichard, 2008). Measurement of these aspects has been neglected in the original –EMS-POS. As a result, the new themes that contribute the most items to the EMS-POS-R are self-management (*'sometimes I find it hard to 'keep it together' emotionally'*, and *'when I experience a positive emotion, I know how to make it last [negatively worded]'*) and self-recognition of emotions (*'sometimes I have feelings which I don't know how to describe'*, *'I am aware of the non-verbal messages I send to others [negatively worded]'* and *'I know why my emotions change [negatively worded]'*).

Recognition of emotion in others was also found to be a dominant theme within the literature. Emotion processing research supports this, stating that in order for interpersonal interactions to successfully occur, one must have the cognitive ability to process another individual's emotional expression (e.g. Kring & Sloan, 2009). Two items that reflect this are now a part of the revised POS, *'I can recognise when something I've said or done has upset someone (negatively worded)'* and *'I notice when other people are happy (negatively worded)'*. Having empathy for others is also an inherent part of an individual's set of cognitive and affective emotional skills (Davis, 1983), so it was important for this to be represented in the EMS-POS-R. Results confirmed that one such item fit in this subscale, *'When another person tells me about an event in their lives, I almost feel as though I have experienced this event myself (negatively worded)'*. Finally, expression of one's own emotions was represented in the EMS-POS-R with one item, *'I think I can adequately communicate the way I am feeling to other people without speaking (negatively worded)'*.

Model fit of the Revised EMS (EMS-R) was determined to be satisfactory due to the addition of these nine new items to the EMS-POS-R subscale which, like the Revised LSRP (LSRP-R), resulted in acceptable fit indices and acceptable correlations between indicators and their relevant factors. There were marginal correlations between each factor in the EMS-R. This finding is empirically supported, as previous factor analysis with this scale allowed oblique rotations with satisfactory results (Austin et al., 2007; Black, 2006).

4.4.4. Study strengths

There are some strengths of the methodology employed in this study. First, the use of an international online sample allows some generalizability of the findings to the general population. More specifically, it could be suggested that the fit of the proposed models for each measure has applicability in general populations due to the diversity of the sample obtained, particularly with respect to the international nature of the sample. This suggestion is supported by Casler and colleagues (2013) who asserted that online recruitment and testing can be superior to offline methods as it increases the chances of samples being more demographically diverse. Additionally, research has demonstrated that the potential for participant attrition due to sensitivity of survey items appears to be lessened in online data collection compared to offline methods (Kays, Gathercoal & Buhrow, 2012). In addition, although the sample size for each analysis did not reach 'ideal' cut-offs of 10-20 participants per parameter, they did meet the minimum five participants per parameter requirement (Kline, 2005). This allowed for the model fit indices to be plausibly interpreted.

The use of sophisticated confirmatory factor analyses to examine the factor structure of both scales is also a strength. It was ideal to employ these methods rather than use exploratory factor analysis techniques, given that clear theoretical reasoning was used to make decisions on which items would potentially belong to which latent variables. It is well

established within the research methodology literature that employing theory-driven rather than data-driven techniques is always ideal to maintain good scientific rigour (Hurley et al., 1997). While modification indices were used to identify which new items could be removed to improve the overall model fit for each scale (which is arguably a data-driven technique) the basis for item inclusion was theory-driven. In addition, other modification indices that suggested the addition of error covariance between items to improve model fit were only employed where there were theoretical similarities between the items. By doing this the process was a largely theory-driven process.

4.4.5. Study limitations

The primary limitation in this study pertains to the LSRP validation in that only one of several possible factor structures was tested. The current study adopted the widely used conceptualisation of psychopathy as comprising two factors: primary and secondary psychopathy. However, other researchers have suggested alternative factor structures of psychopathy (see section 2.3). Sellbom (2010) has investigated this issue using the original LSRP, reporting that Cooke and Michie's (2001) 3-factor model appears to be the best-fitting model in three different samples. Sellbom (2011) does however highlight that the secondary factor of the LSRP appears problematic and suggests that refinement of this factor may be warranted, as the current study has done. Previous researchers have also proposed alternative 4-factor (Vitacco, Neumann, & Jackson, 2005) and 5-factor models (Widiger & Lynam, 1998). These alternative conceptualisations of psychopathy are currently data driven conceptualisations based on empirical evidence, with no theoretical rationale provided, and were not tested in the current study. However, given that previous literature suggests a range of possible factor structures for the LSRP, investigation of other possible factor structures of psychopathy as measured by the LSRP-R may be warranted. This re-evaluation of the factor

structure should be conducted in both homogenous samples such as clinical and forensic settings, as well as heterogeneous community samples, in order to determine generalizability.

It should also be noted that specific tests of construct validity such as convergence or predictive validity were not conducted. Further investigation of construct validity should be conducted to more comprehensively assess the psychometric properties of both the LSRP-R and the EMS-R. During such research it would be pertinent to also investigate other failings of the psychometric properties of the LSRP, for example, the noted lack of discriminant validity of the LSRP-P (see Lilienfeld & Fowler, 2006). Due to limited resources available, addressing these other aspects was beyond the scope of this study.

The EMS has had limited use in previous research (e.g. Grieve, 2011; Grieve & Mahar, 2010). As a result, it may be hard to gauge whether inadequacies in model fit in this sample are due to possible error, or whether the EMS-R still needs improvement.

4.4.6. Future research directions

Future research should include the further validation of these two scales involving a re-examination of the factor structure and model fit of both scales in heterogeneous samples to confirm generalizability. Research conducted in more homogenous samples will assist in confirming the suitability for use of these scales in clinical and forensic settings. As already suggested, further investigation should also be conducted on the validity of the scales (e.g. content and predictive validity) as this has been particularly neglected in research using the EMS. The equivalence of online and offline versions of these scales also need to be investigated to determine if these revised versions maintain their psychometric properties in an offline format.

4.4.7. Conclusion

In this study the LSRP-R and EMS-R were developed and determined to be satisfactory for use in further research. Internal consistency and construct validity was improved of the original LSRP and EMS through the addition of eight and nine new items respectively. By improving these measures, significant contributions to the existing body of literature on psychopathy and emotion processing have been made. These contributions will assist in reliably measuring psychopathy and emotion manipulation processes via self-report in both research and applied settings. The revised measures are now suitable for use in testing emotion processing models of primary and secondary psychopathy in Study Two.

Chapter Five: Study Two - Testing Intrapersonal Emotion Processing Models of Psychopathy

5.1. Introduction

The following chapter will describe a study that tests emotion processing models of psychopathy using the revised measures validated in Study One. This study addresses aims three, four and five of this thesis, which are restated as follows;

3. To add to the body of research that conceptualises psychopathy as a personality trait.
4. To investigate within a community sample the relationship between psychopathy as a personality trait, emotion regulation and manipulation and trait anxiety.
5. To investigate trait anxiety as a moderator of the relationship between emotion regulation and manipulation and psychopathy.

This chapter will firstly include a brief restatement of the literature supporting the proposed models, followed by the rationale of the study and the relevant hypotheses. Second, the methodology involved in obtaining the data needed to test the model pathways is outlined. The third section will present the results of the model testing, followed by a fourth section interpreting the results and discussing theoretical and applied implications of the final model, as well as an outline of strengths and limitations of the study.

5.1.1. *Anxiety and psychopathy*

As previously outlined, a wide body of research has examined the relationship between anxiety and psychopathy, particularly with regards to differing levels of anxiety across primary and secondary psychopathy. Karpman (1941) theorised clear differentiations in anxiety, suggesting that primary psychopathy is marked by a lack of anxiety, whereas secondary psychopathy is associated with chronic intense anxiety. Lykken (1957) provided

empirical support for Karpman's theory by equating 'fearfulness' with anxiety, then positing and testing his 'low-fear hypothesis'. A series of experiments indicated that primary and secondary psychopathy did indeed reflect low and high anxiety respectively. Much contemporary research has provided further evidence that supports differences in anxiety across psychopathic subtypes (e.g. Hale et al., 2004; Lilienfeld & Perna, 2001), but this research is not without its criticisms. There are disagreements regarding whether it is in fact anxiety that differentiates primary and secondary psychopathy, given that studies have conceptualised anxiety in different ways and as a consequence produced different results (Hale et al., 2004; Lilienfeld & Perna, 2001). Other criticisms involve the anxiety measures themselves, with some questioning the validity of scales used to measure anxiety across studies (e.g. Poythress et al., 2008).

In response to some of these criticisms, attempts to streamline the field of research were made by focussing on trait anxiety specifically. This is advantageous for current research conceptualising psychopathy as a dimensional personality trait, rather than the dichotomous 'psychopath/non-psychopath' taxon, and investigating psychopathy in non-criminal community settings. Much of the previous anxiety-psychopathy research has been concerned with anxious states manipulated in experimental settings; such designs do not lend themselves to larger community samples as they do to smaller institutionalised samples. Measuring trait anxiety via self-report methods allows the investigation of anxiety in relation to psychopathic subtypes to be feasibly opened up to larger, more heterogeneous samples. The most widely used measure of trait anxiety is the Trait subscale of the State-Trait Anxiety Inventory (STAI-T; Spielberger et al., 1970). Hale and colleagues (2004) examined possible relationships between several anxiety measures (including the STAI-T) and psychopathy scores, which revealed mixed findings concerning the differentiation of primary and secondary psychopathy defined by PCL-R Factor 1 and 2 scores. Given these inconsistencies

within previous research concerning the trait anxiety-psychopathy relationship, there is a strong rationale for further investigating the relationship, particularly in non-criminal settings where limited research has been conducted.

5.1.2. Emotion processing and psychopathy

Affective deficits arising from difficulties in processing emotion are understood to be a central characteristic of psychopathy (e.g. Rogstad & Rogers, 2008). Deficits in emotion processing have been examined in relation to psychopathic traits (e.g. Herpertz & Sass, 2000; Steuerwald & Kosson, 2000). A particular focus has been on deficits in emotion recognition and acknowledgement, largely adopting experimental methodologies involving measurement of physiological responses or cognitive processing. For example, Habel et al. (2002) reported poor performance by psychopathic individuals in a forensic setting on emotion discrimination tasks, in comparison to a non-psychopathic control group. This finding, however, must be tentatively interpreted due to the control group in this study being obtained from a non-criminal population, introducing group non-equivalence bias. Similar results have been found in undergraduate samples, such as Montagne et al. (2005) who demonstrated high psychopathy levels to be associated with poorer performance in processing fearful expressions when compared to a 'low psychopathy' group. These 'high' and 'low' groups, however, were determined not by using an established measure of psychopathy, but by indirectly inferring psychopathy levels using Carver and White's (1994) BIS/BAS scales (see section 2.6. for explanation of this limitation). These are just two examples of many that illustrate that while fairly strong conclusions have been drawn by others on the relationship between emotion processing and psychopathy as a unitary construct, flaws in the methodology have largely been ignored. Further support of the tentativeness of such findings

comes in the form of Wilson et al.'s (2011) meta-analysis of studies related to emotion and psychopathy, which concluded that effect sizes in this field appear to be over-estimated.

There is much less research that has investigated emotion processing in primary and secondary psychopathy subtypes. The limited research that has been conducted has largely been in non-criminal undergraduate samples (e.g. Ali et al., 2009; Del Gaizo & Falkenbach, 2008), all of which report some form of differentiation in emotional deficits across the primary and secondary psychopathy subtypes, mostly highlighting that primary psychopathy appears more associated with affective deficits than secondary psychopathy. This overall finding makes sense given the traditional description of primary psychopathy involves the affective components of the construct (Karpman, 1941).

One aspect of deficit in emotion processing that has been largely ignored in relation to psychopathy has been emotion dys-regulation, with only one known study conducted, producing inconclusive results (Casey et al., 2012). The importance of adaptive emotion regulation has previously been pointed out, where it was highlighted that long-term emotion regulation deficiencies are key components underlying adult psychopathology (Aldao et al., 2010). It is therefore surprising that investigation into emotion dys-regulation in relation to psychopathy has yet to be examined.

Given that there has been a multidisciplinary approach to emotion regulation research, there are many possible perspectives on regulatory function one could take. As already outlined, Gross's (1998) process model of emotion regulation is one dominant theory that focuses on reappraisal and suppression; adaptive and maladaptive regulatory strategies of emotion respectively (Gross, 2002). Reappraisal is considered adaptive because it involves cognitively neutralising emotional situations, requiring less cognitive effort than suppression, which involves inhibition of the expression of emotions (Gross, 2002). Suppression is said to be much more cognitively taxing, which in its chronic long-term form can be both physically

and psychologically damaging (Gross, 2002). Of particular relevance to psychopathology is that individuals who chronically suppress emotion often find it difficult to control a wide range of impulsive behaviours. Given that impulsivity is of direct relevance to psychopathy, particularly secondary psychopathy, further investigation into relationships between suppression and psychopathic traits is warranted.

In addition to these specific regulation strategies, general emotion dys-regulation may also differentiate between primary and secondary psychopathy. One such measure that is well established in the literature is the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). An investigation into responses on the DERS and their relationship with primary and secondary psychopathy are warranted, based on the previously discussed relevance of specific regulation strategies, and the lack of research conducted in the area. As previously mentioned, only one unpublished Masters dissertation was located that examined emotion regulation in regards to primary and secondary psychopathy using the ERQ and the DERS. Results revealed that general dys-regulation measured by the DERS influenced the relationship between secondary psychopathy and alexithymia. This study also hypothesised that there would be no significant relationship between reappraisal measured by the ERQ and primary psychopathy. The authors claim this hypothesis was supported due to a very weak correlation between reappraisal and primary psychopathy ($r = .02$), however to accurately support hypotheses specifying non-significance, very large sample sizes are needed (Tabachnick & Fidell, 2007). With a sample size of 100 participants, this study failed to have adequate power to test this hypothesis. The authors also hypothesised negative correlations between suppression and secondary psychopathy, however this was not supported, with no significant correlation found ($r = -.01$). To my knowledge there has not been any published research to date that has been concerned with self-reported emotion regulatory processes and their relationship with psychopathy.

Another facet of emotion processing that has only recently begun to gain traction in relation to psychopathy is emotional manipulation. This is surprising given that ability to manipulate other people's emotions is considered a prime aspect of psychopathy (Hare, 1999, 2006). It is interesting that this notion is largely based on longstanding clinical observations (e.g. Cleckley, 1964) rather than empirical investigations. Traditional research on emotion manipulation in general has focused on specific manipulation tactics (e.g. Buss, 1992; Buss et al., 1987) rather than the construct as a holistic ability. Newer research has involved the use of the newly developed self-report Emotion Manipulation Scale (EMS; Austin et al., 2007). This measure has been used to demonstrate relationships between perceived manipulative ability and other constructs such as emotional intelligence and Machiavellianism (Austin et al., 2007), as well as sincerity and self-monitoring (Grieve, 2011).

The EMS has also been used to examine the relationship between perceived emotion manipulation ability and psychopathy. As previously mentioned, primary and secondary psychopathy traits have both been shown to be related to general perceived manipulative ability (Grieve & Mahar, 2010). In addition, differentiations across primary and secondary psychopathy have been made through the use of two of the EMS subscales which measure poor emotion perception skills and emotional concealment; it was found that secondary but not primary psychopathy was related to these subscales (Grieve & Mahar, 2010).

5.1.3. The interaction between emotion regulation, anxiety and psychopathy

It has already been stated that no published research has directly looked at the interaction between emotion regulation, trait anxiety and psychopathy. There is, however, existing research from which parallels can be drawn. Links between trait anxiety and dysregulation of emotions have been made, with higher trait anxiety related to more dys-

regulation (Miller & Patrick, 2000). Research measuring clinical levels of anxiety also further established positive relationships between emotion dys-regulation and anxiety (Mennin et al., 2005; Turk et al., 2005).

Research has also demonstrated that relationships between emotion facilitation and recognition and psychopathy appear stronger when anxiety levels are low (Lorenz & Newman, 2002; Sutton et al., 2002). It must be noted, however that such research has not differentiated psychopathy by primary and secondary subtypes.

95.1.4. Rationale and summary of hypotheses

The above summary of the literature demonstrates clear gaps in the research surrounding anxiety and emotion processing as possible correlates of primary and secondary psychopathy. There is a strong rationale for proposing models that will attempt to clarify the importance of trait anxiety, emotion regulation deficits and emotion manipulation in predicting primary and secondary psychopathy (phase one), as well as investigating whether trait anxiety may moderate relationships between emotional deficits and psychopathic traits (phase two). The following is a summary of the hypotheses proposed for each model with a brief restatement of the rationale supporting each hypothesis.

The first set of hypotheses relate to phase one which involves testing a model (see Figure 5.1) that proposes trait anxiety and emotion processing variables will significantly contribute to the prediction of primary and secondary psychopathy.

Age was controlled for due to evidence that suggests psychopathic traits decrease with age in a non-clinical sample (Gill & Crino, 2012). Other evidence has shown that Factor 2, but not Factor 1, psychopathy decreases with age in a forensic sample (Harpur & Hare, 1994). Gender was also an important control variable, given that evidence consistently suggests that males are higher in prevalence and severity of psychopathy than females (e.g.

Forth et al., 1996; Rogstad & Rogers, 2008; Salekin et al., 1997). Lastly, socially desirable responding was considered as a control variable. A common misconception is that socially desirable responding and positive impression management is positively associated with self-report measures of psychopathy (Lilienfeld & Fowler, 2006), however in practice the opposite has been found to be the case (e.g. Hare, 1982; Lilienfeld & Andrews, 1996). A recent meta-analysis was conducted by Ray and colleagues (2013) in attempt to clarify the relationship between distorted response styles and self-reported psychopathy. It concluded that there is a tendency for psychopathy to be significantly negatively associated with socially desirable response patterns (Ray et al., 2013). There is an argument, however, for not controlling for such responding in this particular study. There is a tendency for social desirability measures to be moderately negatively correlated with neuroticism (e.g. Messina & Fogliani, 2010; Soubelet & Salthouse, 2011). Given the current study intends to explore associations with trait anxiety, which has been described as a comparable construct to neuroticism (Jorm, 1989), it is possible that controlling for socially desirable responding may influence the ability to detect genuine associations between trait anxiety and the other proposed constructs. In light of this evidence, the analyses will be conducted both with and without social desirability scores as a control variable.

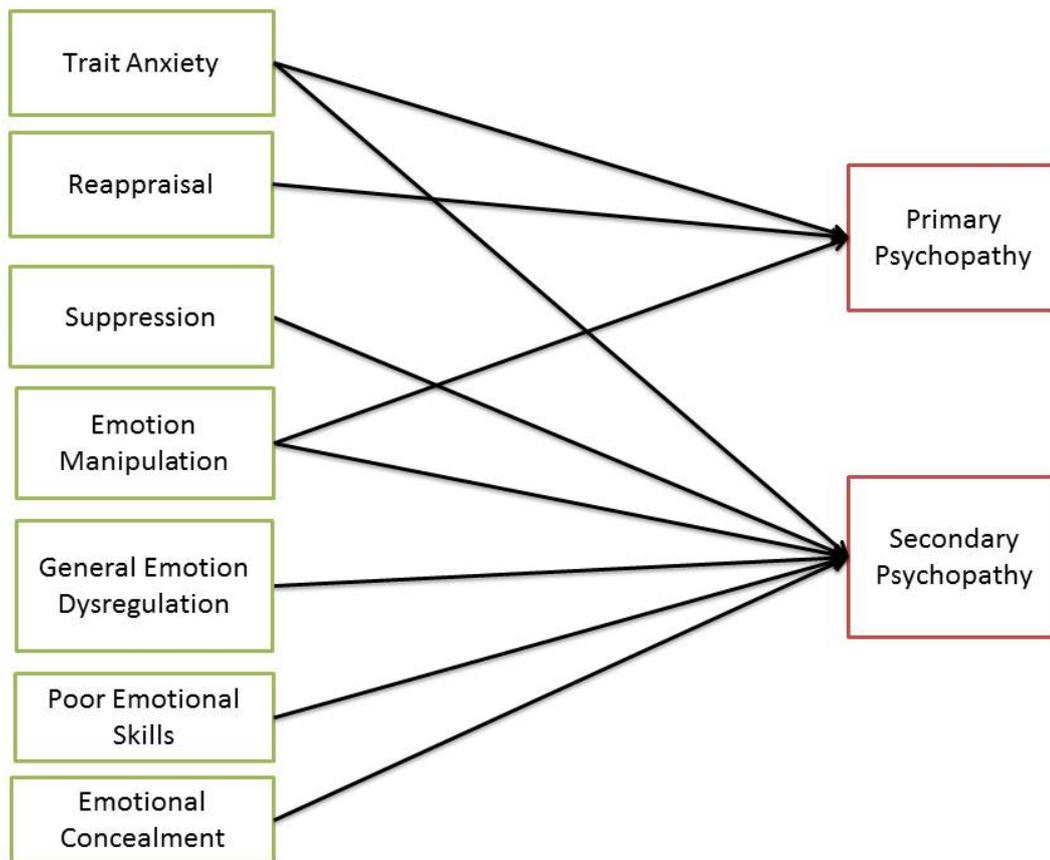


Figure 5.1. Proposed ‘anxiety and emotion processing’ model of psychopathy

The hypotheses and rationale for each are summarised below.

Trait anxiety – primary psychopathy relationship

Traditional theories (Karpman, 1941, 1948; Lykken, 1957, 1995) have suggested a negative relationship between anxiety and psychopathy. Contemporary research has not clearly reflected these theories (Hale et al., 2004; Lilienfeld & Penna, 2001), however given a lack of evidence refuting the original theory, the following hypothesis is proposed;

H1: After controlling for age, gender and social desirability scores, trait anxiety will be a significant negative predictor of primary psychopathy

Trait anxiety – secondary psychopathy relationship

A positive association between anxiety and secondary psychopathy has been well-established in traditional theory (Karpman, 1941, 1948; Lykken, 1957, 1995), however contemporary research concerning specifically trait anxiety and secondary psychopathy is sparse and inconclusive. Given that there is not enough clear evidence yet to refute the argument that trait anxiety is positively related to secondary psychopathy, the following hypothesis is proposed;

H2: After controlling for age, gender and social desirability scores, trait anxiety will be a significant positive predictor of secondary psychopathy

Reappraisal – primary psychopathy relationship

Non-criminal psychopathy has been found to be related to socially adaptive functioning (DeMatteo et al., 2005). By extension, one could infer that the way in which individuals high in primary psychopathy regulate their emotions may also be socially and cognitively acceptable. On the basis of this, the following hypothesis is proposed;

H3: After controlling for age, gender and social desirability scores, reappraisal will be a significant positive predictor of primary psychopathy

Suppression – secondary psychopathy relationship

Chronically suppressing emotions is known to be influenced by individuals being asocial towards others (Gross & John, 2003) which could arguably be a precursor to antisocial behaviour associated with secondary psychopathy (Hart & Hare, 1996). Previous research producing inconclusive evidence for the suppression-secondary psychopathy relationship (Casey et al., 2012) suggests that further research is warranted. Therefore the following hypothesis is proposed;

H4: After controlling for age, gender and social desirability scores, suppression will be a significant positive predictor of secondary psychopathy

General emotion dys-regulation – secondary psychopathy relationship

There is a lack of research examining a general approach to regulation of emotion and psychopathy subtypes. Other research has demonstrated differences in emotional deficit across psychopathy subtypes (e.g. Ali et al., 2009; Del Gaizo & Falkenbach, 2008), so it could be argued that this may be the same for deficits in regulation of emotion. The lack of research in this area warrants the proposal of the following hypothesis;

H5: After controlling for age, gender and social desirability scores, general emotion dys-regulation will be a significant positive predictor of secondary psychopathy

Poor emotional skills – secondary psychopathy relationship

As mentioned previously, only one other published study has demonstrated poor emotion skills to be positively correlated with secondary but not primary psychopathy (Grieve & Mahar, 2010). Other research has also more strongly associated secondary psychopathy with poorer emotion perception than primary psychopathy (Del Gaizo & Falkenbach, 2008). In light of these findings, the following hypothesis is proposed;

H6: After controlling for age, gender and social desirability scores, poor emotional skills will be a significant positive predictor of secondary psychopathy

Emotional concealment – secondary psychopathy relationship

It has been suggested that primary psychopaths have an unemotional demeanour and therefore do not have the need to conceal emotions in order to manipulate others as much as secondary psychopaths may need to (Levenson et al., 1995). As mentioned previously, more

contemporary research has found emotional concealment to be positively correlated with secondary but not primary psychopathy (Grieve & Mahar, 2010). In light of this research, the following hypothesis is proposed;

H7: After controlling for age, gender and social desirability scores, emotional concealment will be a significant positive predictor of secondary psychopathy

Emotion manipulation – psychopathy relationship

Only one previous study has examined the emotion manipulation-psychopathy relationship (Grieve & Mahar, 2010). As previously stated, emotional manipulation was significantly positively correlated with both primary and secondary psychopathy. Given that manipulative and deceptive behaviour are said to encompass psychopathy as a unitary construct (Hare, 1996), the following hypotheses are proposed;

H8: After controlling for age, gender and social desirability scores, emotion manipulation will be a significant positive predictor of primary psychopathy

H9: After controlling for age, gender and social desirability scores, emotion manipulation will be a significant positive predictor of secondary psychopathy

The next set of hypotheses relate to phase two, which involve testing models (see Figures 5.2 and 5.3) that will evaluate trait anxiety as a moderator of the relationships between emotion processing variables and primary and secondary psychopathy.

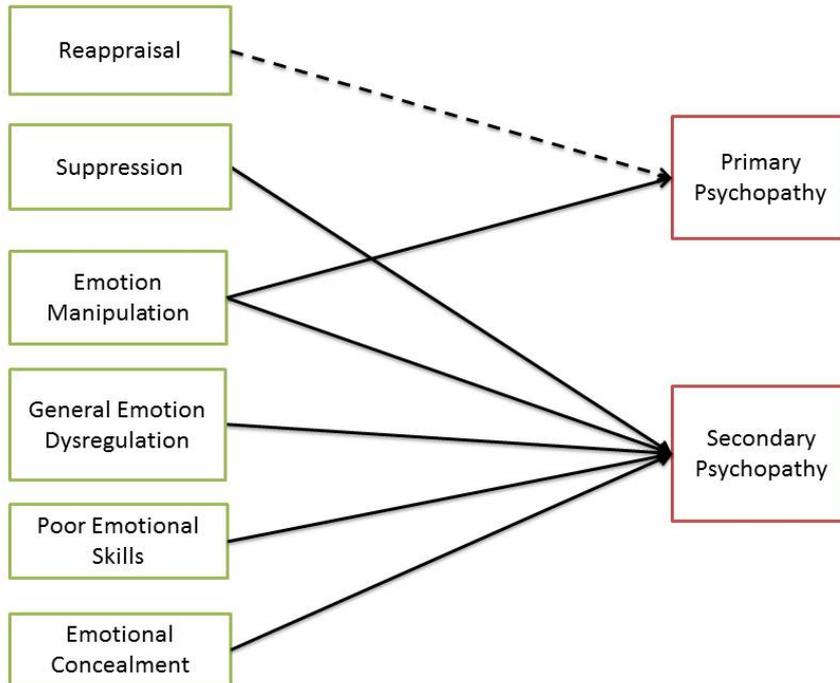


Figure 5.2. Proposed 'emotional process' model of psychopathy in the high trait anxiety group

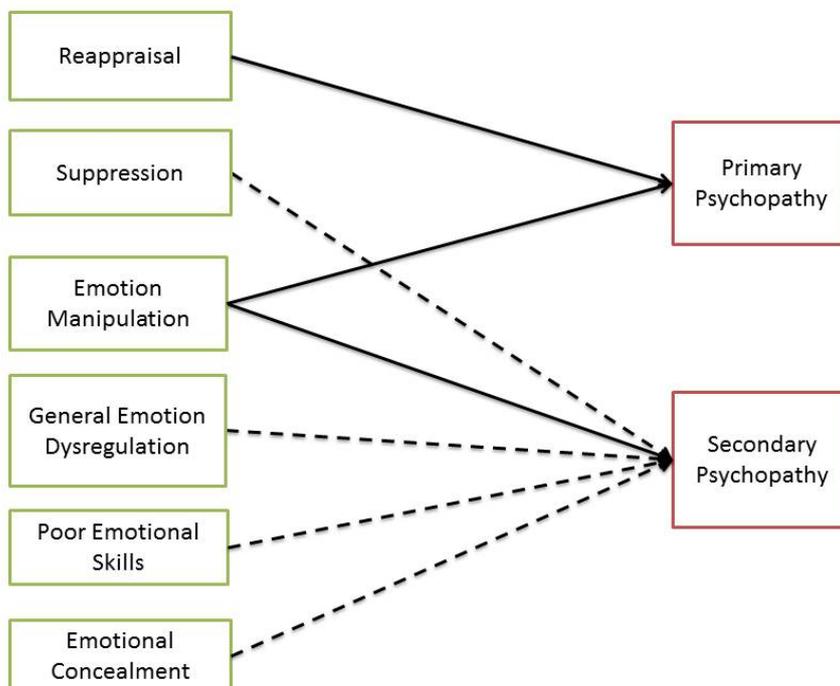


Figure 5.3. Proposed 'emotional process' model of psychopathy in the low trait anxiety group

Firstly an overall test of model invariance across ‘high’ and ‘low’ trait anxiety groups is required, therefore the first overall hypothesis is as follows:

H10: After controlling for age, gender and social desirability scores, there will be significant structural differences across the ‘high’ and low’ trait anxiety groups on the emotional processing model of psychopathy.

If this hypothesis is supported, each pathway will be examined individually and comparisons will be made across high and low trait anxiety groups. This is reflected in the following hypotheses, with the rationale included supporting each hypothesis.

Reappraisal – primary psychopathy relationship

No published research could be located concerning adaptive emotion regulation strategies and psychopathy. However, one could argue that individuals lower in anxiety are more likely to use adaptive strategies to regulate their emotions hence the relationship between reappraisal and primary psychopathy will be stronger when trait anxiety is low. Therefore the following hypothesis is proposed;

H10a: After controlling for age, gender and social desirability scores, trait anxiety will moderate the relationship between reappraisal and primary psychopathy, that is, the reappraisal-primary psychopathy relationship will be stronger in the ‘low trait anxiety’ group.

Suppression – secondary psychopathy relationship

There is currently no published research that directly demonstrates trait anxiety as a moderator of the emotion suppression-secondary psychopathy relationship. Indirect support, however, could be drawn from empirical research that suggests positive associations between maladaptive emotion regulation and secondary psychopathy (Gross & John, 2003), emotion regulation and anxiety (e.g. Turk et al., 2005), and anxiety and secondary psychopathy (e.g.

Hale et al., 2004; Lykken, 1957, 1995). Research has also demonstrated that relationships between deficits in other forms of emotion processing and psychopathy differ depending on the level of anxiety (Lorenz & Newman, 2002; Sutton et al., 2002). In light of this research, the following hypothesis is proposed;

H10b: After controlling for age, gender and social desirability scores, trait anxiety will moderate the relationship between suppression and secondary psychopathy, that is, the suppression-secondary psychopathy relationship will be stronger in the ‘high trait anxiety’ group.

General emotion dys-regulation – secondary psychopathy relationship

The relationship between general dys-regulation of emotion and psychopathy has yet to be investigated in previous research, however the following hypothesis is based on a similar rationale for the above hypothesis H10b, where positive associations have been suggested between emotion dys-regulation, anxiety and psychopathy due to earlier findings (Gross & John, 2003; Hale et al., 2004; Turk et al., 2005). Therefore the following hypothesis is proposed;

H10c: After controlling for age, gender and social desirability scores, trait anxiety will moderate the relationship between general emotion dys-regulation and secondary psychopathy, that is, the general emotion dys-regulation-secondary psychopathy relationship will be stronger in the ‘high trait anxiety’ group.

Poor emotional skills – secondary psychopathy relationship

As previously mentioned, research suggests deficits in emotion processing and psychopathy differ across anxiety levels (Lorenz & Newman, 2002; Sutton et al., 2002), however perception of emotional skills has yet to be investigated in this way in relation to

trait anxiety and secondary psychopathy in particular. Therefore the following hypothesis has been proposed;

H10d: After controlling for age, gender and social desirability scores, trait anxiety will moderate the relationship between poor emotional skills and secondary psychopathy, that is, the poor emotional skills-secondary psychopathy relationship will be stronger in the ‘high trait anxiety’ group.

Emotional concealment – secondary psychopathy relationship

The rationale for this possible moderating relationship is essentially the same as the rationale for the previously mentioned poor emotional skills – secondary psychopathy pathway, which is that evidence needs to be generated showing relationships between emotion processing and psychopathy subtypes rather than as a unitary construct at differing levels of trait anxiety. Therefore the following hypothesis is proposed;

H10e: After controlling for age, gender and social desirability scores, trait anxiety will moderate the relationship between emotion concealment and secondary psychopathy, that is, the emotion concealment-secondary psychopathy relationship will be stronger in the ‘high trait anxiety’ group.

Note that it is not hypothesised that the relationship between emotion manipulation and psychopathy will be moderated by trait anxiety.

5.2. Methodology

5.2.1. Research design

This study employed a cross-sectional correlational design with ‘dimensional primary psychopathy’ and ‘dimensional secondary psychopathy’ as the criterion variables. The

predictor variables are 'trait anxiety', 'reappraisal', 'suppression', 'general emotion regulation', 'emotional manipulation', 'emotional concealment' and 'poor emotional skills'. 'Trait anxiety' is also being examined as a possible moderating variable in Phase 2. The control variables are 'age', 'gender' and 'social desirability'.

5.2.2. Participants and recruitment

Convenience sampling methods used included both online and offline recruitment strategies. Flyers providing a brief summary of the study were distributed among personal and professional networks of the researcher (Participant Information sheet - Appendix 5.1). Links to the questionnaire were posted on the same research-hosting websites used in Study One (see Table 4.3), and social networking sites Facebook and MySpace. In addition to these recruitment methods, a university participants pool was also used which comprised undergraduates studying psychology. These students were required to participate in research (or an alternative assessment) as a prerequisite to passing a unit.

To encourage participation, participants (except those in the participant pool) were given the chance to win one of six \$50 Amazon.com vouchers. As stated previously, incentives such as this assist in participant recruitment and prevention of attrition during completion of surveys (Göriz, 2006). Individuals recruited from the participant pool were awarded points.

In total, 572 individuals accessed the survey. One hundred and two participants with more than 10% missing data were omitted from the study, leaving a final sample of 470. Demographic characteristics of the sample were obtained (see Table 5.1). Median age has been reported due to positive skewness.

Table 5.1.

Demographic characteristics of the sample (N = 470)

Mean age in years (std. deviation)	25.38 (9.50)
Median age in years	22
Gender	349 female 121 male
Country of origin	60.8% Australia/NZ 13.5% USA/Canada 10.5% UK 6.8% Europe 4.3% Asia 2.8% Africa
English as 1 st language	89.5%
Education level	6% some high school 15.6% high school graduates 48% some undergraduate study 15.4% completed undergraduate study 6.4% some postgraduate study 8.6% completed postgraduate study
Occupation (2 most common)	50.7% - Student 10.3% - Healthcare
Employment status	77.8% some form of employment

5.2.3. Materials

The questionnaire for Study Two comprised 151 items. These items included demographic information (see Table 5.1) measured using single items, as well as revised versions of the scales tested in Study One. The LSRP-R (Levenson et al., 1995) and the EMS-R (Austin et al., 2007) revised from Study One of this thesis were used to assess primary and secondary psychopathy dimensions and emotional manipulation respectively. In addition to these, measures of emotion regulation and trait anxiety (as well as a social desirability scale to assess response styles) were adopted. A copy of the final questionnaire can be found in Appendix 5.2.

5.2.3.1. Revised version of the Levenson's Primary and Secondary Psychopathy Scale (LSRP-R; Levenson et al., 1995).

This scale was used to measure 'dimensional primary psychopathy' and 'dimensional secondary psychopathy' in the current sample. The original LSRP (as previously mentioned) was specifically designed to assess primary and secondary psychopathic features in non-forensic samples in a self-report format, based on the assumption that psychopathy is dimensional (Levenson et al., 1995). The revised version developed in Study One has been developed with this same notion in mind. The subscale LSRP-P (16 items) was devised to measure the core affective and interpersonal characteristics, somewhat in line with the PCL-R Factor 1 characteristics. An example item is "*success is based on survival of the fittest; I am not concerned about the losers*" (Levenson et al., 1995, p. 153). The original LSRP-S subscale (10 items) was created to assess social deviance, which is associated with PCL-R Factor 2 scores. An example of an original LSRP-S item is "*I find myself in the same kinds of trouble, time after time*" (Levenson et al., 1995, p. 153). An example of a newly added item to the LSRP-S-R (18 items) is "*I have lost a friend because of the irresponsible things I've*

done". Each of the items are rated on a four-point Likert scale ranging from "disagree strongly (1)" to "agree strongly (4)", giving a possible score range of 16 – 64 and 18 – 72 for the LSRP-P and LSRP-S-R subscales respectively. Higher scores on these subscales indicate greater primary and secondary psychopathic traits.

The current study is only the second to use the revised version of the LSRP and as such there is limited information pertaining to its reliability and validity. In the validation stage using an online community sample (Study One), internal Cronbach's alpha values of the LSRP-P and revised LSRP-S-R were .87 and .84 respectively. Internal consistency of the primary and secondary subscales in the current sample was evaluated and revealed Cronbach's alpha values of .85 and .80 respectively.

5.2.3.2. Revised version of the Emotional Manipulation Scale (EMS-R; Austin et al., 2007).

This scale was used to measure 'emotional manipulation', 'emotional concealment' and 'poor emotional skills' in the current sample. The EMS-R measures the extent to which an individual believes they can emotionally manipulate others, as well as self-perception of their levels of their emotional skills (including how well they can conceal their own feelings from others). Each item is measured on a five-point Likert scale with responses ranging from 'strongly disagree (1)' to 'strongly agree (5)'. The EMS consists of three subscales, Emotional Manipulation (EMS-EM; 10 items), Emotional Concealment (EMS-EC; 4 items) and Poor Emotional Skills (EMS-POS-R; 13 items). An example of an EMS-EM item is "*I know how to embarrass someone to stop them behaving in a particular way*" (Austin et al., 2007, p. 185). Possible scores on this scale range from 10 to 50, with higher scores indicating elevated levels of perceived emotional manipulation skills. An example of an EMS-EC item is "*when someone has made me upset or angry, I tend to downplay my feelings*" (Austin et al., 2007, p. 185). The possible score range on this scale is 4 – 20, with higher scores

suggesting a higher level of concealing emotions. The original EMS-POS subscale has items such as “I am not very good at motivating people” (Austin et al., 2007, p. 185). An example of a newly added item to the EMS-POS-R subscale is “*sometimes I find it hard to ‘keep it together’ emotionally*”. The current possible score range on this subscale is 13 -65, with a higher score indicating a lower level of perceived general emotional skills.

Like the LSRP-R, this study is only the second to use the EMS-R, the first being the validation study conducted previously. Cronbach’s alpha values in the validation study were .89, .78 and .82 for Emotion Manipulation, Poor Emotional Skills and Emotional Concealment respectively. Internal consistency of these subscales in this sample was evaluated and revealed to be almost identical to the validation study (Cronbach’s alpha values of .90, .77 and .82 respectively).

5.2.3.3. *Emotion Regulation Questionnaire (ERQ; Gross & John, 2003).*

This scale was used to measure ‘reappraisal’ and ‘suppression’ of emotional states. The original ERQ is a 10-item scale that attempts to provide an indication of the presence of two main strategies of emotion regulation, Reappraisal (R-ERQ; 6 items; e.g. “I control my emotions by changing the way I think about the situation I am in”) and Suppression (S-ERQ; 4 items; e.g. “I control my emotions by not expressing them”). Each item is measured on a seven-point Likert scale, ranging from ‘strongly disagree (1)’ to ‘strongly agree (7)’. Current possible scores ranges on the Reappraisal and Suppression subscales, therefore, are 6 – 42 and 4 – 28 respectively. Elevated scores on a subscale suggest the increased tendency of the individual to use that strategy when regulating their emotions.

The pilot study of the original ERQ measure conducted on an undergraduate sample revealed the R-ERQ to have adequate internal consistency, with an average alpha reliability across four different samples of .79. The S-ERQ had a marginally lower average internal

consistency of .73 (Gross & John, 2003). Test-retest reliability across a three month time period was also adequate ($r = .69$; Gross & John, 2003). Further use of the original ERQ on undergraduates has supported psychometric properties of the measure. In a study examining emotion regulation techniques during stressful evaluated speaking tasks, Egloff and colleagues (2006) found both the R-ERQ and S-ERQ to have strong internal consistency, with alpha reliability values of .86 and .80 respectively. Various modified forms of the ERQ have also held good psychometric properties. A German version of the ERQ has been developed and has been found to have good internal consistency (R-ERQ Cronbach's $\alpha = .74$; S-ERQ Cronbach's $\alpha = .81$) in an undergraduate sample (Ehring, Tuschen-Caffier, Schnulle, Fischer, & Gross, 2010). A version of the ERQ modified for children has also held adequate internal consistency, Cronbach's α ranging from .80 to .82 and .67 to .73 for the R-ERQ and the S-ERQ respectively (Gullone, Hughes, King, & Tonge, 2010). Evidence for convergent validity of the original ERQ has been found, with significant correlations of the R-ERQ with scales of adaptive coping ($r = .43$) and S-ERQ with scales of maladaptive coping ($r = -.43$; Gross & John, 2003). Discriminant validity was supported, with R-ERQ and S-ERQ negatively related to Neuroticism and Extraversion respectively (Gross & John, 2003). Internal consistency has been examined in the current sample and Cronbach's alpha values appear to be adequate; Cronbach's α R-ERQ = .76 and S-ERQ = .85.

5.2.3.4. *Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004).*

This scale was used to measure 'general emotion regulation'. The DERS is a 36-item measure that assesses individual differences in difficulties of general emotion dys-regulation. Respondents indicate how often each measure applies to them on a five-point Likert scale, ranging from 'almost never (1)' to 'almost always (5)', giving a total score range of 36-180. The measure also provides six subscale scores measuring different dimensions of emotion

regulation including: ‘non-acceptance of emotions’ (six items, e.g. “When I’m upset, I feel guilty for feeling that way”), ‘difficulties in engaging in goal-directed behaviour when distressed’ (five items, e.g. “When I’m upset, I have difficulty concentrating”), ‘impulse control difficulties’ (six items, e.g. “When I’m upset, I lose control over my behaviours”), ‘lack of awareness of emotions’ (six items, e.g. “I am attentive to my feelings” reverse coded), ‘limited access to emotion regulation strategies’ (eight items, e.g. “When I’m upset, my emotions feel overwhelming”) and ‘lack of emotional clarity’ (five items, e.g. “I have no idea how I am feeling”). Higher scores are an indication of greater difficulties in emotion regulation.

The DERS has consistently been found to have adequate internal consistency in community and undergraduate samples for both the total scale (range of Cronbach’s alpha = .91 to .95) and for each of the subscales, with the average range Cronbach’s alpha for the subscales = .81 to .85 (e.g. Gratz & Roemer, 2004, 2008; Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006; Tull, 2006). It has also been found to have good test-retest reliability over a period of 4-8 weeks ($r = .88$; Gratz & Roemer, 2004). High internal consistency of both the whole scale DERS (Cronbach’s alpha = .96) and the individual subscales (Cronbach’s alpha values between .85 and .93) have also been found in the current sample.

5.2.3.5. *State-Trait Anxiety Inventory – Trait Anxiety Scale (STAI-T; Spielberger et al., 1970).*

The STAI was used to measure ‘trait anxiety’. The STAI is a two-dimensional measure made up of the 20-item State Anxiety Scale (STAI-S) and 20-item Trait Anxiety Scale (STAI-T). For the purposes of the current study, only the STAI-T was employed. The STAI-T reflects differences in long-term anxiety-proneness (Gaudry, Vagg, & Spielberger,

1975). Use of the STAI-T is preferred over other measures of anxiety as it has been specifically designed to measure long-term anxiety-proneness, as well as being one of the most well-established measures of trait anxiety (Barlow, 2002). An example item is “Some unimportant thought runs through my mind and it bothers me”. Each item is rated on a four-point Likert scale, ranging from “almost never (1)” to “almost always (4)”, giving a possible score range between 20 and 80. Higher scores are an indication that the individual experiences higher levels of trait anxiety.

The STAI-T has consistently demonstrated itself to be a highly reliable and valid measure of anxiety. In a meta-analysis of the exploration of the psychometric properties of the STAI across various populations (Barnes, Harp, & Jung, 2002), the mean Cronbach’s alpha for the STAI-T was .89 and the mean test-retest reliability coefficient was .88. Bieling and colleagues (1998) provide support for construct validity of the STAI-T through desirable correlations with other well-established measures of depression and anxiety such as the Beck Anxiety Inventory (BAI, $r = .42$; Beck & Steer, 1993) and the Beck Depression Inventory (BDI-I, $r = .72$; Beck, Rush, Shaw, & Emery, 1979).

The STAI-T has been used in psychopathy research for almost as long as the measure’s existence and in such research its psychometric properties have held. Across studies, the STAI-T had high internal consistency, with Cronbach’s α ranging from .88 to .91 (Hale et al., 2004; Lilienfeld & Penna, 2001; Ray, 1983). Concurrent validity for the STAI-T in an undergraduate sample tested for psychopathic tendencies was demonstrated by strong correlations ($r = .70$ to $.85$) with the Taylor Manifest Anxiety Scale and Anxiety Scale Questionnaire (Falkenbach et al., 2008). High internal consistency of the STAI-T is also evident in the current sample (Cronbach’s alpha = .94).

5.2.3.6. *Marlowe-Crowne Social Desirability Scale – Short Form C (SDS Form C; Reynolds, 1982).*

The SDS was originally developed for assessing socially desirable responding. The SDS consists of 33 true-false items that describe culturally approved behaviours that have a low probability of occurrence (Crowne & Marlowe, 1960). Its primary purpose tends to be as an adjunct measure to assess the impact of socially desirable responding on self-report measures that are specific to the purpose of the investigation in question. As such, the length of the original SDS is not ideal as it adds considerable response time and often takes the focus away from the primary purpose of the research. Therefore the use of short forms of the SDS is preferred. One established short form is the Short Form C devised by Reynolds (SDS Form C; 1982), which consists of 13 of the original 33 SDS items and correlates highly with the original 33-item format (Kuder-Richardson Formula 20 (KR-20) ranging from $r = .63$ to $r = .82$; (Fischer & Fick, 1993; Follingstad, Wright, Lloyd, & Sebastian, 1991; Laye-Gindhu & Schonert-Reichl, 2005; Levesque, Gelles, & Velicer, 2000; Reynolds, 1982). In the current sample, internal consistency as measured by KR-20 is .21.

5.2.4. *Procedure*

Before recruitment, ethics approval was obtained from the Curtin University Human Research Ethics Committee. The questionnaire for Study Two was constructed on the Qualtrics website, following a similar procedure to Study One. The questionnaire, taking approximately 30 minutes to complete, was made available via a link from the Participant Information Sheet housed on the Curtin University server. Informed consent was assumed upon completion and submission of the questionnaire. Upon submission the participants were automatically redirected to a debriefing page (Appendix 4.3) housed on the Curtin University

server, from here they were asked to specify whether they were a member of the undergraduate participant pool. If they were they were directed to a page to enter their student ID in order to be awarded participation points. If participants were not part of the pool, they were directed to a different page and given the option of providing their email address for entry into the prize draw. The questionnaire was available for a period of six months, in which time sufficient responses were obtained. The data collected was downloaded from Qualtrics for subsequent use in the Statistical Package for the Social Sciences (SPSS) version 18.0 and LISREL (Linear Structural Relationships) statistical software package. Prizes were drawn at this point whereby the winning participants received \$50 Amazon.com gift vouchers.

5.3. Results

This section outlines the results of the two phases of model testing, as well as preliminary checks and assumption testing. The first section presents the results of a data file check and evaluation of missing data, followed by a summary of endorsement of the LSRP items as an indication of prevalence of psychopathy in the sample. This is followed by a summary of descriptive statistics for key variables, then the results of Confirmatory Factor Analyses for each measure to discern whether the established factor structures held in the sample obtained. The following section includes the results of the model testing via structural equation modelling (SEM) using LISREL 8.80. In order to test these models, the parcelling method was adopted to construct the indicators used to represent the latent variables. This process is outlined, followed by the results of the relevant assumption testing for SEM. This is followed by the results of the model testing, which is split into two phases. The first phase involved testing the ‘anxiety and emotion processing’ model of psychopathy. The second

phase involved a multi-group analysis technique to test trait anxiety as a moderator between emotion processing variables and primary and secondary psychopathy.

5.3.1. Data file check and missing data

As per the recommendations outlined by Tabachnick and Fidell (2007) the accuracy of the data file was checked before evaluation of missing data was conducted. No problems of accuracy were identified. Multiple submissions were also screened for, of which there were none.

From an initial sample of 572 participants, 102 cases missing more than 10% of data were deleted, leaving 470 participants. A MVA was run to examine the pattern of missing data for the remaining missing data points. There were 312 missing data points in 171 cases across 147 variables. Little's MCAR test determined that this pattern of missing data was not completely at random, $\chi^2(18347) = 18855.41, p = .004$. Subsequent *t*-tests on the majority of the pairs of items confirm that the data were not missing at random, that is, the majority of *t*-tests observed were significant at $\alpha = .05$. However, given that the amount missing both per case and per variable is close to or less than 5%, it was acceptable to proceed with replacement of this missing data (Tabachnick & Fidell, 2007). The replacement method used was expectation maximisation, which involves estimating missing data points based on a normally distributed missing data correlation matrix, which is then used as a basis for making inferences about missing values. This is an acceptable, conservative means of replacement when the amount of missing data is low, as is the case here (Tabachnick & Fidell, 2007).

5.3.2. Rate of pro-trait endorsement of LSRP-R items

Females on average scored a total of 28.56 ($SD = 6.07$), while males scored 31.26 ($SD = 6.38$) out of a possible 64 on the 16 LSRP-P items measuring primary psychopathy. These

means were determined to be statistically significant across gender, $t(467) = 4.16, p < .001$, Cohen's $d = .43$, a moderate effect (Cohen, 1992). The mean total score of the whole sample was 29.23 ($SD = 6.28$). Thirty participants responded with pro-trait endorsement of 50% or more of the LSRP-P items, (18 males and 12 females). Pro-trait endorsement was indicated by participants responding with 'agree somewhat' or 'strongly agree' to positively worded items, or 'disagree somewhat' or 'strongly disagree' to negatively worded items. The maximum pro-trait endorsement was 13 of the 16 items. Three participants endorsed this number of items, all of whom were female.

Pro-trait endorsement rates were higher overall on the 18 items measuring secondary psychopathy. Females had a mean total LSRP-S-R score of 41.68 ($SD = 6.90$), while males scored 42.10 ($SD = 5.62$) out of a possible 72 on the 18 LSRP-S-R items. These means were determined to be statistically significant across gender, $t(467) = 0.593, p = .553$, Cohen's $d = .07$, a very small effect (Cohen, 1992). The mean total score of the whole sample was 41.76 ($SD = 6.62$). One hundred and seventeen participants (50 males and 127 females) endorsed 50% or more of LSRP-S-R items. The maximum pro-trait endorsement was 17 of the 18 items, four female participants produced this response pattern. As in Levenson et al.'s (1995) original research, as well as others such as Lynam and colleagues (1999), the above mentioned results provide evidence for sufficient endorsement rates. As a result it can be assumed that there is adequate representation of psychopathic traits, therefore rendering plausible interpretation of results.

5.3.3. Descriptive statistics for key measures

Table 5.2 summarises descriptive statistics, including Cronbach's α , for each subscale used as an indicator of the latent variables in the analysis. Means from examples of previous use of each measure have been included to broadly illustrate comparability across studies.

Given that internal consistency of each measure is adequate for research purposes (Shum et al., 2006), it is acceptable to continue to use these scales in subsequent analyses.

Table 5.2.

Descriptive statistics, comparison data and Cronbach's alpha for key measures (N = 470)

Measure	Mean (SD)	Comparison data from previous research	Cronbach's α
Primary Psychopathy (LSRP-P)	29.23 out of 40 (6.27)	29.13 (6.86) (Levenson et al., 1995)	.85
Secondary Psychopathy (LSRP-S-R)	41.76 out of 72 (6.63)	45.89 (8.44) (From Study One in current thesis)	.80
Trait Anxiety (STAI-T)	44.84 out of 80 (11.44)	38.79 (10.33) (Bados, Gómez-Benito, & Balaguer, 2010)	.94
Reappraisal (R-ERQ)	28.73 out of 42 (5.39)	28.00 (5.13) (Ehring et al., 2010)	.76
Suppression (S-ERQ)	15.02 out of 28 (5.72)	12.26 (5.17) (Ehring et al., 2010)	.85
General Dys-regulation (DERS)	91.44 out of 180 (23.28)	For females; 77.99 (20.72) For males; 80.66 (18.79) (Gratz & Roemer, 2004)	.96
Emotion Manipulation (EMS-EM)	31.22 out of 50 (8.56)	30.87 (8.12) (Grieve & Mahar, 2010)	.90
Poor Emotional Skills (EMS-POS-R)	30.63 out of 65 (7.12)	30.22 (7.10) (From Study One in current thesis)	.77
Emotion Concealment (EMS-EC)	14.10 out of 20 (3.64)	11.47 (3.64) (Grieve & Mahar, 2010)	.82

5.3.4. *Confirmatory factor analyses (CFA)*

Before the structural relationships among latent variables could be estimated, a confirmatory analysis (CFA) was conducted for each measure included in Table 5.2 in order to confirm its factor structure. As previously indicated in Chapter 3, a good fit is indicated by strong factor loadings, appropriate correlations between factors and adequate values on goodness of fit indices, all while respecting the theoretical foundations of each scale used to measure each variable.

5.3.4.1. *Assumption testing*

Kolmogorov-Smirnov tests of normality indicated that all items were not normally distributed. However this test is sensitive to the slightest departures from normality, including departures that have no impact on the reliability of the statistical analysis (Tabachnick & Fidell, 2007). Examination of skewness and kurtosis values and visual inspection of the relevant histograms indicated that these normality violations were trivial and did not require transformations (Tabachnick & Fidell, 2007). Visual inspection of normal probability plots and detrended expected probability plots showed that the actual distribution did not deviate, or only marginally deviated, from the expected distribution (Tabachnick & Fidell, 2007). In order to check linearity, a random selection of bivariate scatter-plots were examined for each scale. There were no curvilinear trends.

Data were screened for both univariate and multivariate outliers. Boxplots indicated that there were no influential univariate outliers in any of the scales. Multivariate outliers were detected in all scales, however none of these multivariate outliers appeared to distort the subsequent analyses (tested by comparing results with and without outliers) so they were retained. (see Table 5.3 for a summary of the detection of these outliers). Tolerances values for each subscale in each measure were all greater than .1, indicating that multicollinearity

was not a concern (Tabachnick & Fidell, 2007). Multivariate normality was tested using LISREL 8.80 for each measure; all produced significant results indicating violations of multivariate normality. As previously stated, violations of multivariate normality inflate the chi-square statistic that is normally used to test model fit (Joreskog & Sorbom, 1989). As a result, model fit for each measure was tested with a chi-square statistic that corrects for the inflation, the Satorra-Bentler χ^2 (Jöreskog & Sörbom, 2006)

Table 5.3.

Tests of multivariate outliers across items in each measure and their influence on the analysis
($N = 470$)

Measure	Maximum Mahalanobis distance ^a	Critical χ^2 ($\alpha = .001$) ^a	Degrees of freedom	Multivariate outliers (N)
LSRP (LSRP-P, LSRP-S-R)	95.78	69.35	37	14
EMS (EMS-EM, EMS-POS-R, EMS-EC)	77.52	56.89	28	6
ERQ (S-ERQ, R-ERQ)	45.50	29.59	10	5
DERS	111.45	67.98	36	19
STAI-T	57.53	45.23	20	5

Note. Primary Psychopathy (LSRP-P), Secondary Psychopathy (LSRP-S), Trait Anxiety (STAI-T), Reappraisal (R-ERQ), Suppression (S-ERQ), General Dysregulation (DERS), Emotion Manipulation (EMS-EM), Revised Poor Emotional Skills (EMS-POS-R), Emotion Concealment (EMS-EC)

^a When maximum Mahalanobis distance exceeds its corresponding critical χ^2 value, this indicates the presence of multivariate outliers.

5.3.4.2. *Confirmatory factor analyses*

CFA using LISREL 8.80 was conducted on the LSRP-R, EMS-R, ERQ, STAI-T and the DERS to confirm their factor structure in the current sample. The factor models proposed for each of the five measures produced goodness of fit indices that reached some of the

required cut-off points. Upon addition of error covariances between the items as suggested by the LISREL modification indices and also guided by theoretical underpinnings of the measured constructs, fit indices were improved. It should be noted that for the LSRP-R and EMS-R, the same error covariances from Study One were added to ensure theoretical and measurement consistency. Table 5.4 summarises the goodness of fit indices for each scale after the suggested error covariances were added.

Confirming the factor structure of the LSRP and EMS were particularly important given these are newly revised version yet to be tested on other samples. The confirmation of the proposed 2-factor structure of the LSRP supports the use of the LSRP subscales as distinct measures of primary and secondary psychopathy. It was also important to confirm that the subscales of the EMS were distinct from each other, as each subscale has been selected to reflect a different latent variable in the proposed model of emotion processing and psychopathy.

Table 5.4.

Goodness of fit indices for each measure (N = 470)

Fit Indices	LSRP-R (2-factor correlated)	EMS-R (3-factor correlated)	ERQ (2-factor correlated)	STAI-T (1-factor)	DERQ (1-factor)	DERQ (6-factor correlated)
Normed chi-square (Satorra-Bentler χ^2 divided by its degrees of freedom)	2.96	4.16	2.79	5.57	24.75	4.62
Comparative Fit Index (CFI)	0.94	0.91	0.98	0.97	0.85	0.96
Non-Normed Fit Index (NNFI)	0.92	0.90	0.97	0.96	0.84	0.96
Standardised Root Mean Square Residual (SRMR)	0.066	0.075	0.056	0.054	0.14	0.078
Root Mean Square of Approximation (RMSEA)	0.065	0.082	0.062	0.099	0.23	0.088

Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003) c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Benet-Martínez & Karakitapoglu-Aygün, 2003); d: Standardised Root Mean Square Residual; values less than .08 indicate good fit (Marsh et al., 2004) e: Root Mean Square Error of Approximation; values less than or equal to .08 indicate a good fit (Marsh et al., 2004) f: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit (Akaike, 1987).

5.3.5. Model testing using structural equation modelling (SEM)

5.3.5.1. Parcelling

The nature of SEM allows a researcher to account for measurement error when estimating relationships between latent variables. It is important to take advantage of this capability of SEM by choosing the optimum method of linking variables to their relevant indicators, or items (Schumacker & Lomax, 2010). The process of aggregating single items to form parcels and using those parcels as indicators of the target latent variable is one such method (Cattell & Burdsal Jr, 1975). This process has several advantages. Using parcels rather than single items as indicators improves model parsimony and reduces sampling error from various sources (Little, Cunningham, Shahar, & Widaman, 2002). Further, parcel-based models tend to have better model fit than item-based models (Matsunaga, 2008). The parcelling technique is considered far superior to simpler formations of indicators (Matsunaga, 2008) and consequently has been implemented in the current study.

The process of forming the parcels involved determining how many parcels per latent variable would be appropriate, and which items would form each parcel. Forming a minimum of three parcels per latent variable has been suggested (Matsunaga, 2008), so three parcels each were used to form the LSRP-P, LSRP-S-R, STAI-T, R-ERQ, DERS, EMS-EM and EMS-POS-R. The S-ERQ and the EMS-EC are measures consisting of only four items, so the decision was made to use these items as indicators. In order to decide which items would form each parcel, factor loadings for each item on the relevant factor were produced using forced 1-factor exploratory factor analysis solutions in SPSS 19.0.

For each latent variable, factor loadings were ranked in descending order by strength. This provided information on how 'representative' each item was of its relevant factor in the current sample. As three parcels per latent variable were being generated, the three strongest

factor loadings were assigned to a parcel each, then the next three strongest, and so on, until all items were assigned to a parcel. This process ensured that all parcels would be made up of items with both strong and weak factor loadings, the notion being that each parcel should be a smaller representation of the measure as a whole, and consequently, an adequate representation of the relevant latent construct. These parcels were used to form the measurement model components of each structural model being tested. See Appendix 5.3 for a summary of the items within each parcel and their EFA factor loadings.

5.3.5.2. Assumption testing

The assumptions required to be tested before beginning SEM are multivariate normality, linearity, multicollinearity between the latent variables, and an appropriate free parameters to cases ratio (Kline, 2005; Tabachnick & Fidell, 2007). All assumption tests except for multicollinearity were conducted on the newly developed parcels as indicators.

A test of multivariate normality was run using LISREL 8.80. The test was significant, $\chi^2(3276) = 344.12, p < .001$, indicating that this assumption had been violated. Violations of multivariate normality inflate the chi-square statistic that is normally used to test model fit (Joreskog & Sorbom, 1989). As a result, model fit in the remaining analyses was tested with a chi-square statistic that corrects for the inflation, the Satorra-Bentler χ^2 (Jöreskog & Sörbom, 2006). Linearity was tested by examining a random selection of scatterplots depicting bivariate relationships between the parcels. No obvious curvilinear trends were observed, so linearity was assumed.

In order to assess multicollinearity of the latent variables, IBM SPSS 19.0 was used to run a regression analysis using a dummy dependent variable to obtain tolerance values. Tolerance values are an indication of how correlated a latent variable (total scale score) is with the other latent variables, with a low tolerance value ($< .2$) being an indication of a high

correlation (Menard, 2002). Table 5.5 summarises the range of tolerance values for each latent variable, demonstrating multicollinearity is not a concern for this data.

Table 5.5.

Tolerance values across each total measure score (N = 470)

Measure	Range of Tolerance values for measure
LSRP-P	.638
LSRP-S-R	.343
STAI-T	.265
RERQ	.777
SERQ	.522
DERQ	.259
EMS – EM	.738
EMS – POS-R	.474
EMS – EC	.584

A rule-of-thumb for structural equation modelling is a 10-20:1 ratio of participants per parameters, with an absolute minimum of five participants per parameter in order to test structural models and measurement models (Kline, 2005). For testing the Phase 1 hypotheses, the proposed measurement model has 105 parameters (30 indicator error variances, 30 indicator factor loadings, 36 bivariate correlations among the factors, 9 factor variances). A minimum sample size of 525 would be required, $5(30 + 30 + 36 + 9) = 525$. For the proposed structural model with 39 parameters (9 path coefficients, 2 disturbances for the endogenous variables, 7 variances for the exogenous variables and 21 bivariate correlations between the exogenous variables), a minimum sample size of 195 would be required, $5(9 + 2 + 7 + 21) = 195$. A total current sample of 470 just falls short of being adequate to test the measurement model, but is however adequate to test the structural model.

For testing the Phase 2 hypotheses, the proposed measurement model has 88 parameters (26 indicator error variances, 26 indicator factor loadings, 28 bivariate correlations among the factors, 8 factor variances). A minimum sample size of 440 would be required, $5(26 + 26 + 28 + 8) = 440$. For the proposed structural model with 30 parameters (7 path coefficients, 2 disturbances for the endogenous variables, 6 variances for the exogenous variables and 15 bivariate correlations between the exogenous variables), a minimum sample size of 150 would be required, $5(7 + 2 + 6 + 15) = 150$. The current sample will be split into two groups in order to test moderation hypotheses in Phase 2 (see subsequent section). The subsamples comprise of 157 (low Trait Anxiety) and 163 (high Trait Anxiety) participants, which is adequate for testing the structural model, however less than optimal for testing the measurement model.

5.3.5.3. Control variables

As previously stated (see section 5.1.4.) research suggests that age, gender and social desirability have each been found to be related to either primary or secondary psychopathy, or both. As a consequence, it was deemed necessary to consider controlling for the influence of these three variables in the following analyses.

When examining the latent variables as represented by their total scale scores, social desirability scores were negatively correlated with both primary psychopathy, $r(468) = -.22, p < .001$, and secondary psychopathy, $r(468) = -.41, p < .001$. Age was also significantly negatively correlated with primary psychopathy, $r(468) = -.15, p = .001$, and secondary psychopathy, $r(468) = -.23, p < .001$. Gender was found to be negatively correlated with LSRP-P, $r_{pb} = .19, p < .001$, however this was not the case for LSRP-S-R, $r_{pb} = .05, p = .252$. Correlations between the control variables and the parcels representing the latent criterion variables also demonstrated similar correlations (see Appendix 5.4 for the correlation matrix

depicting these correlations). These results provide empirical support for including these variables as control variables. As a result, a partial correlation matrix controlling for these three variables (Table 5.6) was obtained to represent the latent variables in the model testing process.

Table 5.6.

Partial correlation matrix of total measure scores for latent variables controlling for age, gender and social desirability scores (N = 470)

	Primary Psychopathy	Secondary Psychopathy	Trait Anxiety	Reappraisal	Suppression	Emotion Manipulation	Poor Emotional Skills	Emotional Concealment	General Emotion Dys-regulation
Primary Psychopathy	1								
Secondary Psychopathy	.432**	1							
Trait Anxiety	.165**	.688**	1						
Reappraisal	-.131*	-.307**	-.397**	1					
Suppression	.210**	.293**	.281**	-.026	1				
Emotion Manipulation	.356**	.129**	-.022	.098*	.078	1			
Poor Emotional Skills	.191**	.521**	.616**	-.392**	.291**	-.219**	1		
Emotional Concealment	.161**	.187**	.168**	.004	.641**	.062	.133*	1	
General Emotion Dys-regulation	.235**	.703**	.818**	-.364**	.315**	.059	.609**	.212**	1

* $p < .05$, two-tailed. ** $p < .001$, two-tailed.

5.3.5.4. *Preliminary interpretation of partial correlation matrix*

The partial correlations between primary and secondary psychopathy and the predictor variables were statistically significant regardless of the magnitude of the relationships, which is to be expected given the large sample size. Trait anxiety was correlated with both primary and secondary psychopathy, with a much weaker positive relationship observed with primary than secondary psychopathy. A similar result can be seen in regards to the emotion processing variables and primary and secondary psychopathy, with most variables exhibiting weaker relationships with primary than secondary psychopathy. This was not the case, however, with reappraisal. The reappraisal-secondary psychopathy relationship appeared stronger than the hypothesised reappraisal-primary psychopathy relationship. It is recommended that this be interpreted cautiously given that a strong theoretical rationale has not been put forward in regards to this relationship, and such a finding may be unique to this sample. Emotion manipulation was more strongly correlated with primary psychopathy than secondary psychopathy.

There are also notable correlations amongst the emotion processing variables. Reappraisal was significantly negatively correlated with poor emotional skills and general emotion dys-regulation. Suppression had a strong positive correlation with emotional concealment, and moderate positive correlations with poor emotional skills and general emotion dys-regulation. Poor emotional skills and general emotion dys-regulation were strongly positively correlated with each other. Emotion manipulation was not significantly correlated with any of the other emotion processing variables except for poor emotion skills, of which there was a weak negative correlation.

Correlations should also be noted between trait anxiety and the emotion processing variables. Reappraisal and trait anxiety had a moderate negative relationship, while

suppression and trait anxiety were weakly positively related. Emotional concealment has a very weak positive relationship with trait anxiety, however both poor emotional skills and general emotion dys-regulation were strongly positively associated with trait anxiety.

Emotion manipulation was not significantly correlated with trait anxiety.

5.3.5.5. Phase One: Testing the ‘anxiety and emotion processing’ model of psychopathy

LISREL 8.80 was used to test the anxiety and emotion processing model of psychopathy (Model 1) using the whole sample ($N = 470$). Table 5.7 summarises path coefficients for each pathway. The relationships of Suppression and Emotion Concealment with Secondary Psychopathy were non-significant, as denoted by the non-significant z-scores. Figure 5.4 depicts the model (Model 1) with the non-significant pathways included. These non-significant pathways were removed, the analyses were repeated and the revised ‘anxiety and emotion processing’ model (Model 2) was obtained. Table 5.8 summarises the goodness of fit statistics for each model, which indicates that once the non-significant pathways were removed, fit indices improved. Figure 5.5 illustrates both the measurement and structural components of the final model (Model 2). Values to take note of are the proportion of variance that each predictor accounts for in either Primary or Secondary Psychopathy represented in red as percentages.

Table 5.7.

Path coefficients for the 'anxiety and emotion processing' model (N = 470)

Pathway	Path Coefficient (Standard error)	z-value
Model 1		
Trait Anxiety → Primary Psychopathy	0.12 (0.06)	2.23*
Reappraisal → Primary Psychopathy	-0.17 (0.06)	-2.85*
Emotion Manipulation → Primary Psychopathy	0.42 (0.05)	8.02*
Trait Anxiety → Secondary Psychopathy	0.40 (0.09)	4.58*
Suppression → Secondary Psychopathy	0.05 (0.06)	0.94
Emotion Manipulation → Secondary Psychopathy	0.19 (0.05)	4.06*
Poor Emotional Skills → Secondary Psychopathy	0.24 (0.09)	2.86*
Emotion Concealment → Secondary Psychopathy	-0.01 (0.06)	-0.13
General Dys-regulation → Secondary Psychopathy	0.22 (0.09)	2.39*
Model 2 – Final Model		
Trait Anxiety → Primary Psychopathy	0.12 (0.06)	2.18*
Emotion Manipulation → Primary Psychopathy	0.42 (0.05)	8.03*
Reappraisal → Primary Psychopathy	-0.18 (0.06)	-2.95*
Trait Anxiety → Secondary Psychopathy	0.40 (0.09)	4.57*
Emotion Manipulation → Secondary Psychopathy	0.19 (0.05)	4.17*
Poor Emotional Skills → Secondary Psychopathy	0.25 (0.08)	2.94*
General Dysregulation → Secondary Psychopathy	0.23 (0.09)	2.55*

Note: z-values marked with * are > 1.96 and indicate statistically significant pathways

Table 5.8.

Goodness of fit statistics for each proposed ‘anxiety and emotion processing’ model

Model	χ^2	df	χ^2/df^a	CFI ^b	NNFI ^c	Model AIC	RMSEA ^e
Model 1	903.81	347	2.60	0.97	0.97	1079.81	0.058
Model 2 – Final Model	437.38	172	2.54	0.98	0.98	555.38	0.057

Note. a: Normal theory weighted least squares χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Bollen, 1989); c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Bollen, 1989); d: Root Mean Square Error of Approximation; values less than or equal to .06 indicate a good fit (Hu & Bentler, 1999); e: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit.

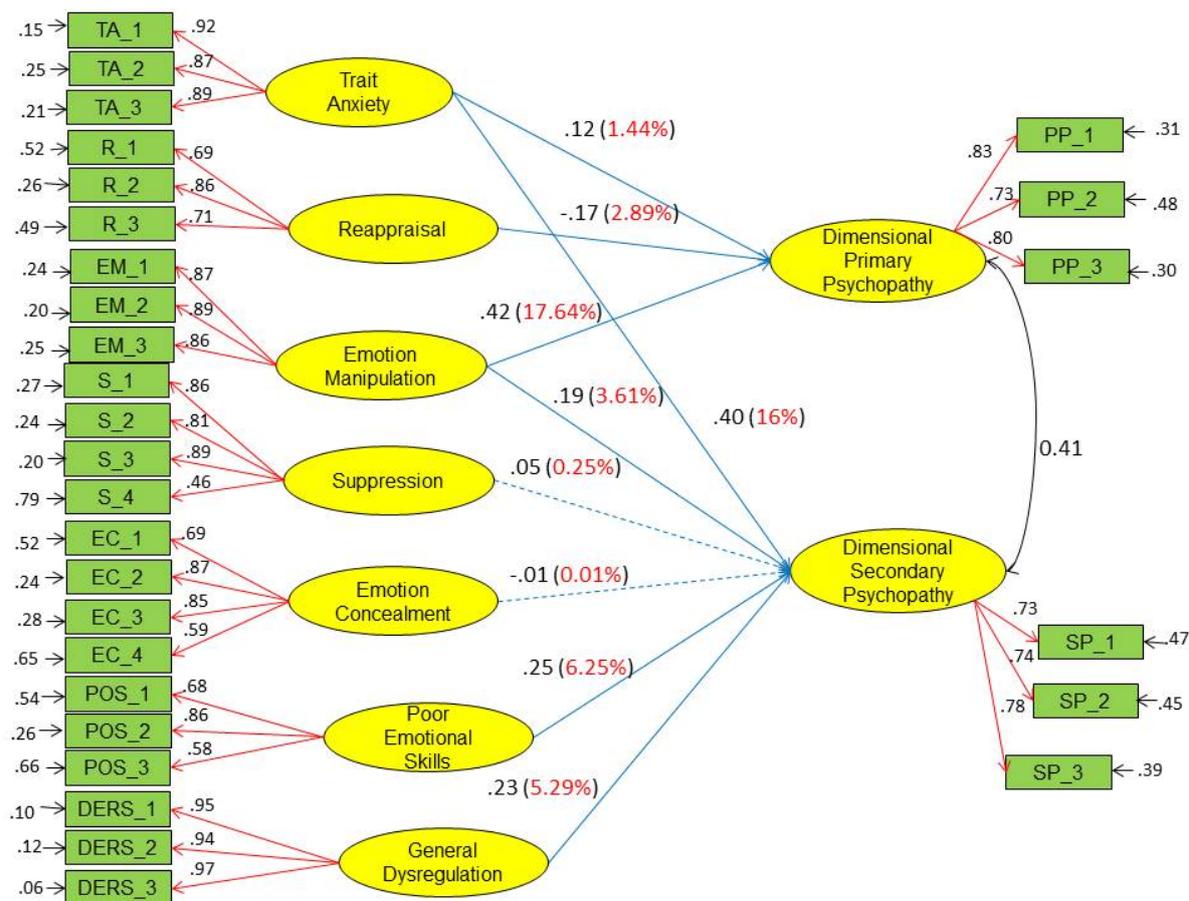


Figure 5.4. Model 1 – First ‘anxiety and emotion processing’ model of primary and secondary psychopathy

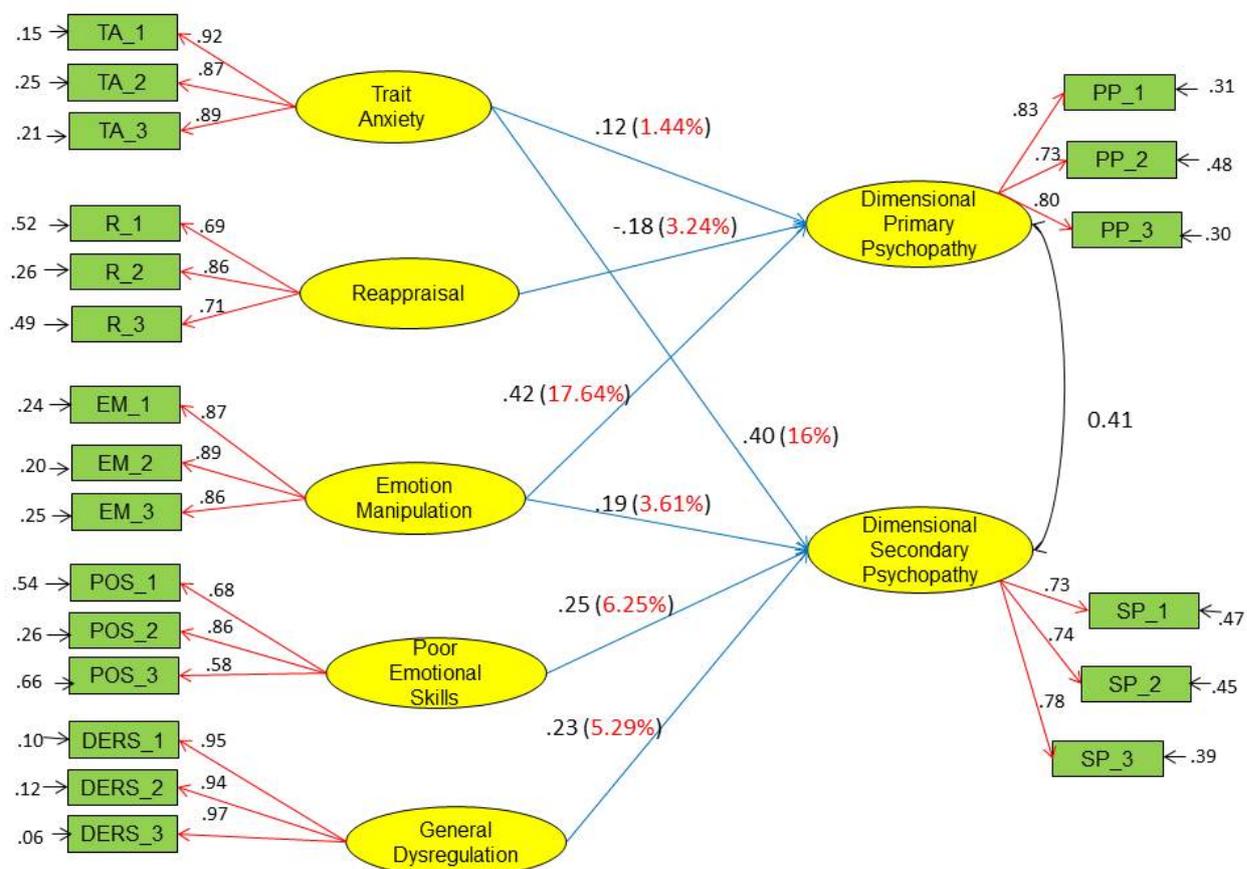
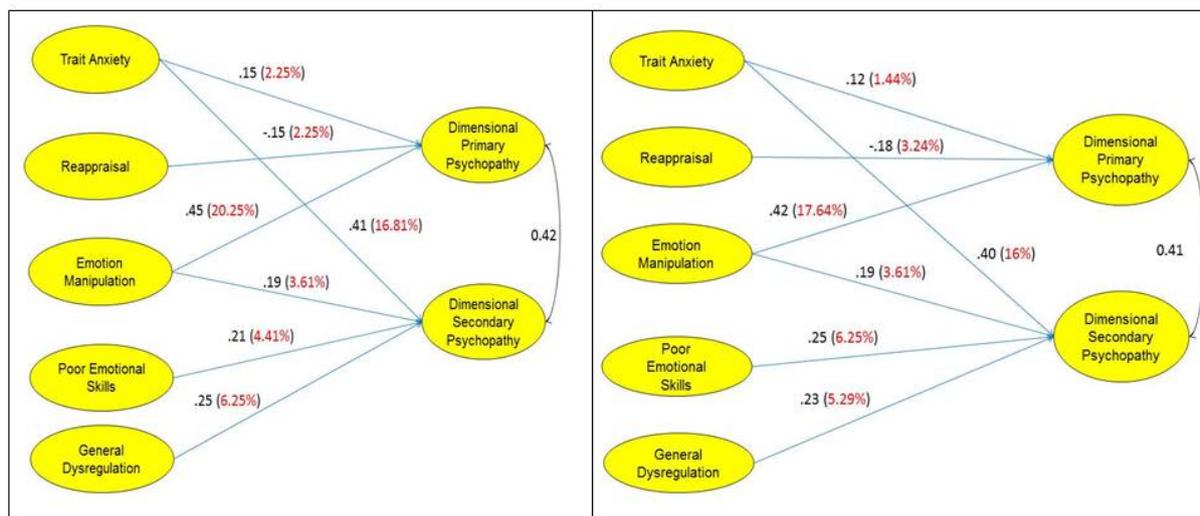


Figure 5.5. Model 2 -Final ‘anxiety and emotion processing’ model of primary and secondary psychopathy

As previously mentioned, there are sound reasons for both controlling and not controlling for socially desirable responding in this study (e.g. Lilienfeld & Fowler, 2006; Messina & Fogliani, 2010; Soubelet & Salthouse, 2011). Subsequently, the predictor model was also tested without social desirability scores as a control variable. Such analysis was conducted, revealing very little differences across the pathway coefficients produced in the two models. Figure 5.6 illustrates these minimal differences, noting that goodness of fit as indicated by Model AIC values are also only marginally different.



With age and gender as
control variables
Model AIC = 560.41

With age, gender and social
desirability as control variables
Model AIC = 557.38

Figure 5.6. Final simple predictor model with and without controlling for social desirability scores.

5.3.5.6. Phase Two: Evaluating trait anxiety as a moderator

5.3.5.6.1. Preliminary analyses for moderation

To test the moderator model, the sample was split into two groups categorised as the ‘high Trait Anxiety’ and ‘low Trait Anxiety’ groups. These groups were created by determining the 33rd and 66th percentile STAI-T scores, and forming groups using the percentile cut-off scores, that is, the ‘high Trait Anxiety’ group includes participants with a score equal to or above the 66th percentile; while the ‘low Trait Anxiety’ group includes

participants with a score equal to or below the 33rd percentile. Table 5.9 summarises the relevant values for each group.

Table 5.9.

Descriptive statistics for the high and low trait anxiety groups

	High Trait Anxiety group	Low Trait Anxiety group
<i>N</i>	163	157
Cut-off score for group eligibility	> or equal to 49	< or equal to 38.66
mean STAI-T score (SD)	57.81 out of 80 (6.08)	32.51 out of 80 (4.17)

To test whether Trait Anxiety performs as a moderator of the emotion processing models of psychopathy, a two-stage process was involved. Firstly, the equivalence of the measurement components of the two models was tested, followed by a test of equivalence of the structural components of the two models.

5.3.5.6.2. Test of equivalence of the measurement component

A χ^2 test using LISREL 8.80 was conducted to determine whether the measurement parameters of the high and low Trait Anxiety groups were different from each other. There are three sets of parameters in the measurement model:

- 1) The factor loadings
- 2) The correlations among the factors
- 3) The error variances of the observed variables

There are seven types of between-group (high versus low Trait Anxiety) differences with respect to these measurement parameters. Each type of between-group difference can be instantiated into a multi-group SEM model, which can then be tested in order to identify the best fitting model (see Table 5.10). Model 1a had the best model fit, as evidenced by Model 1a having the lowest AIC value of the models (1137.31). This suggests that there are no significant differences across any sets of parameters that could confound the comparison of the structural pathway models across the high and low Trait Anxiety groups.

Table 5.10.

Fit indices for types of parameter variance across high and low trait anxiety groups

Model	χ^2	df	χ^2/df^a	CFI ^b	NNFI ^c	RMSEA ^d	Model AIC ^e
<u>Model 1a</u>							
All parameters equal	977.31	622	1.57	.934	.931	.0599	1137.31
<u>Model 2a</u>							
Factor loadings different	960.83	596	1.61	.932	.926	.0620	1172.83
<u>Model 3a</u>							
Factor correlations different	975.16	615	1.59	.934	.930	.0607	1149.16
<u>Model 4a</u>							
Error variances different	959.93	612	1.57	.935	.931	.0598	1139.93
<u>Model 5a</u>							
Factor loadings & error variances different	946.31	586	1.62	.933	.925	.0622	1178.31
<u>Model 6a</u>							
Factor loadings &	958.48	589	1.63	.931	.924	.0628	1184.48

factor
correlations
different

Model 7a

Factor	973.39	610	1.59	.933	.929	.0612	1157.39
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correlations
and error
variances
different

Model 8a

All parameters	1504.64	743	2.03	.896	.887	.0803	1758.54
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different

Note. a: Satorra Bentler χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Bollen, 1989); c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Bollen, 1989); d: Root Mean Square Error of Approximation; values less than or equal to .06 indicate a good fit (Hu & Bentler, 1999); e: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit.

5.3.5.6.3. Test of equivalence of the structural components

As it was determined that the measurement model was invariant across groups and therefore could not confound the comparison of the structural models, multi-group comparisons of the structural pathways of the models were conducted.

LISREL 8.80 was used to test two competing models. Model 1b assumed that the path coefficients were invariant across the high and low Trait Anxiety groups, and Model 2b assumed that all the path coefficients varied across the groups. Table 5.11 summarises the results which suggest that Model 1b fits better than Model 2b, particularly with respect to the Model AIC values. This result suggests that the model pathways as a whole do not differ across high and low Trait Anxiety, further suggesting no evidence for moderation.

Table 5.11.

Fit indices for multi-group analysis for structural model

Model	χ^2	<i>df</i>	χ^2/df^a	CFI ^b	NNFI ^c	RMSEA ^d	Model AIC ^e
<u>Model 1b</u>							
All pathway coefficients equal	1055.13	626	1.69	.924	.921	.066	1207.13
<u>Model 2b</u>							
All pathway coefficients different	1017.26	593	1.72	.923	.915	.067	1235.26

Note. a: Normal theory weighted least squares χ^2 divided by its degrees of freedom; a value less than or equal to 3 indicates a good fit (Kline, 1998); b: Comparative Fit Index; a value greater than or equal to .9 indicates a good fit (Bollen, 1989); c: Non-Normed Fit Index; a value greater than or equal to .9 indicates a good fit (Bollen, 1989); d: Root Mean Square Error of Approximation; values less than or equal to .06 indicate a good fit (Hu & Bentler, 1999); e: The Akaike Information Criterion penalizes for model complexity and can be used to compare non-nested models – the lower the AIC, the better the fit.

5.4. Discussion

The goal of this study was to investigate whether there are relationships between trait anxiety, emotional processing deficits, emotion manipulation and primary and secondary psychopathy, in addition to examining whether trait anxiety moderated any of these relationships. A model was proposed and tested which included trait anxiety as a predictor along with the other emotion processing variables, for the purposes of examining the relative contributions of each variable in their prediction of primary and secondary psychopathy. The results show partial support for this model, with some of the relevant hypotheses being supported and others not. Further, the results failed to support the hypothesis that trait anxiety will be a moderator of the relationship between some emotion processing variables and primary and secondary psychopathy in this sample. These findings support some of the existing research concerning anxiety levels, emotion processing and psychopathy, while also offering some new interesting findings which further the field of psychopathy research.

5.4.1. Interpretation of model testing results

5.4.1.1. Results of 'anxiety and emotion processing' model of psychopathy

This model was tested on the whole sample ($N = 470$) to determine the relative contributions of trait anxiety and emotion processing variables in predicting primary and secondary psychopathy. Table 5.12 summarises the relative contributions of each predictor of psychopathy subtypes. Each relationship will be discussed in relation to previous research. Cohen (1988) suggests that a proportion of approximately .0196 (or 1.96%) can be considered a small effect size, while a value of .15 (15%) is considered medium, and .35 (35%) large.

Table 5.12.

Summary of contributions of predictor variables to prediction of psychopathy (N = 470)

Predictor variable	Relative contribution of predictor variable (percentage of variance accounted for)	
	Primary psychopathy	Secondary psychopathy
Trait anxiety	Sig. contribution (1.44%)	Sig. contribution (16%)
Reappraisal	Sig. contribution (3.24%)	Pathway not proposed
Suppression	Pathway not proposed	Non-sig. contribution
General dys-regulation	Pathway not proposed	Sig. contribution (5.29%)
Poor emotional skills	Pathway not proposed	Sig. contribution (6.25%)
Emotional concealment	Pathway not proposed	Non-sig. contribution
Emotion manipulation	Sig. contribution (17.64%)	Sig. contribution (3.61%)

5.4.1.1.1. Trait anxiety and primary psychopathy (H1)

Trait anxiety was originally hypothesised to have a significant negative relationship with primary psychopathy. The results show that this is not the case in this sample (not supporting H1), instead there appears to be a small positive relationship, with trait anxiety accounting for 1.44% of the variance in primary psychopathy. Although this has been determined to be a statistically significant contribution in this sample, this is considered a small effect. In other words, trait anxiety appears to be a weak, positive predictor of primary psychopathy.

This finding is contradictory to Lykken's (1957) results from testing his 'low-fear hypothesis'. Lykken (1957) equated anxiety with fear, constructs which have since been established to be distinct from each other. As a result of this conceptualisation, his work was primarily experimental, involving physiological means to measure response to certain fear-eliciting stimuli. Such conceptualisation and measurement is markedly different from trait anxiety, which is by definition stable across time and situations and as a result less likely to be influenced by situational

factors (Barlow, 2002). While the original intention for the LSRP-P was to reflect Karpmans (1941) theory positing that primary psychopathy is characterised by a lack of anxiety, the results suggest that perhaps this has not been the case.

Differences in measurement of anxiety are also a possible explanation for contrasting findings. Much previous research that supports negative associations between anxiety and primary psychopathy have been based on physiological responses to stimuli designed to elicit anxious or fearful responses (e.g. Newman & Schmitt, 1998), while most research using self-report measures of anxiety is less consistent. For example, Schmitt and Newman (1999) demonstrated negligible relationships between PCL-R (Hare, 2003) scores and self-report anxiety; the WAS (Welsh, 1956) accounted for less than 1% of the variance in PCL-R Factor 1 scores.

It seems reasonable to suggest that this problem of non-equivalent scales may be further attenuated by also using self-report psychopathy measures like the LSRP-R, as the current study did. A primary limitation of self-report methods of measurement is the issue of individuals responding with honest accurate answers, which is further compounded in psychopathy research due to psychopathy traits being associated with pathological lying (see 'limitations' section for further detail).

Other differences between the current and previous research that could be contributing to inconsistent results are the type of sample adopted. Harpur and colleagues (1989) reported a significant negative correlation between STAI-T and PCL Factor 1 scores, with STAI-T scores accounting for 4% of the variance in PCL Factor 1 scores, in a criminal male sample. One cannot be too quick to name sampling issues as the explanation for differing findings, however, as previous research using a criminal sample has in fact found similar results to the current study. Hale et al. (2004) found a positive, albeit non-significant, relationship between STAI-T and PCL-R factor 1 scores. These results are not directly comparable to the current finding, however, due to non-equivalent psychopathy measures across studies.

The current finding, partially supported by previous research (Hale et al., 2004) offers further explanation regarding the relationship between anxiety and psychopathy. The current finding partially supports Hale et al.'s (2004) suggestion that the interpersonal and affective components of psychopathy may be unrelated to trait anxiety. Schmitt and Newman's (1999) findings concerning the anxiety-psychopathy relationship are also relevant to the current finding, as they demonstrated that once antisocial lifestyle aspects (PCL-R Factor 2) were controlled for, there appeared to be no significant relationship between anxiety and total PCL-R scores. Schmitt and Newman (1999) inferred from this finding that previously found significant relationships between anxiety and psychopathy have been largely influenced by the antisociality component of psychopathy. The current finding offers further support for this suggestion, as well as further justifying the rationale for differentiating between psychopathy subtypes in the current, and future studies.

In summary, the hypothesis that trait anxiety and primary psychopathy would be negatively related was not supported. Suggestions for explanations of this finding have centred on the differences in traditional versus more contemporary ways in which anxiety has been conceptualised and measured. In addition, the finding is supported by other research that has demonstrated weak positive relationships between trait anxiety and primary psychopathy (Hale et al., 2004). In light of the relationship found in the current study and how it compares to previous research, it can be concluded that at best, trait anxiety appears to have a weak association with primary psychopathy.

5.4.1.1.2. Trait anxiety and secondary psychopathy (H2)

Trait anxiety accounted for a statistically significant 16% of the variance in secondary psychopathy (a medium effect size using Cohen's conventions), which supports hypothesis two (H2). In this sample, trait anxiety had a stronger relationship with the secondary psychopathy dimension than the primary psychopathy dimension. This finding supports Harpur and colleagues

(1989) finding that there is a positive relationship between PCL factor 2 scores and trait anxiety; in a male criminal sample trait anxiety accounted for 3.24% of the variance in PCL Factor 2 scores.

The current finding also reflect Hale et al.'s (2004) finding of a moderate positive relationship between PCL-R Factor 2 scores and STAI-T scores, after PCL-R Factor 1 scores were controlled for. This accounted for a significant 5.3% of the variance in PCL-R Factor 2 scores that could be explained by STAI-T scores. Note, however, that STAI-T scores appear to be a weaker predictor of secondary psychopathy than the current findings. There are two possible reasons for this. First, the current study did not adopt the PCL-R as its psychopathy measure, therefore introducing measurement non-equivalence issues. Secondly, the previous research was conducted on male criminal samples, markedly different from the heterogeneous community sample used in the current study. Differences in manifestation of trait anxiety or psychopathy or both across these samples may contribute to the differences in strength of the relationship between trait anxiety and secondary psychopathy.

It should be pointed out here that there is a general understanding that trait anxiety can be equated with neuroticism (Jorm, 1989). Further, it is also widely considered that neuroticism underlies much of general psychopathology (Kring & Sloan, 2009). Logical reasoning therefore states that trait anxiety potentially underlies the majority of psychological disorders. Given that previous authors have suggested secondary psychopathy to be phenotypically similar to antisocial personality disorder, which has pathology attached to it that reflects a destructive lifestyle and impulsive decision-making (Anestis, Anestis, & Joiner, 2009), it can therefore be suggested that the finding that trait anxiety strongly predicts secondary psychopathy is intuitive from a clinical perspective.

While the tested model confirmed a direct relationship between trait anxiety and secondary psychopathy, the partial correlation between trait anxiety and secondary psychopathy was stronger ($r = .69$) before entering into the model. This suggests that in terms of predicting secondary

psychopathy, trait anxiety contributes both unique and shared variance with other predictor variables. Inspection of the partial correlation matrix reveals strong relationships between trait anxiety and poor emotional skills ($r = .62$) and general emotion dys-regulation ($r = .82$). Further, there is a weak to moderate significant relationship between suppression and trait anxiety ($r = .28$), a latent variable rendered non-significant when entered into the model (see ‘suppression-secondary psychopathy’ section). These partial correlations tentatively suggest that these three emotion processing variables share variance with trait anxiety and may potentially partially mediate the relationship between trait anxiety and secondary psychopathy.

The results from the model testing have added clarity to the understanding of the relationship between trait anxiety and secondary psychopathy. Trait-based conceptualisations of anxiety are stronger predictors of the antisocial-behavioural components of psychopathy rather than the personality-affective deficit aspects. In light of preliminary correlations produced from the current study however, there is the suggestion that the trait anxiety-secondary psychopathy relationship may be related to each other in a way not hypothesised in the current study, that is, some emotion processing deficits may be partial mediators of the trait anxiety-secondary psychopathy relationship.

5.4.1.1.3. Reappraisal and primary psychopathy (H3)

Reappraisal accounted for a statistically significant 3.24% of the variance in primary psychopathy. This indicates that reappraisal, although weak, is a significant negative predictor of primary psychopathy, therefore supporting hypothesis three (H3). The current finding contrasts with the one other known study that has examined this relationship which found no significant correlation (Ridings, 2011). It should be noted, however, that the pattern of results concerning reappraisal and both primary and secondary psychopathy in Ridings’ (2011) study is similar to preliminary partial correlations in the current study. These correlations demonstrate a stronger negative relationship between reappraisal and secondary psychopathy than the proposed positive

reappraisal-primary psychopathy relationship. Striking similarities between Ridings' (2011) study and the current study strengthen such conclusions, that is, the use of a non-criminal sample and use of identical scales to measure the relevant constructs. On the other hand, Ridings' conclusions are based on correlations where shared variance has not been accounted for. Further analyses of this relationship using SEM would be needed to draw stronger conclusions.

Although the current finding concerning the reappraisal-primary psychopathy was deemed statistically significant, the practical significance of this finding is small, which begs to question of the relevance of examining associations between adaptive emotion regulatory strategies and primary psychopathy. It may be that it is the behavioural component of psychopathy including aspects such as impulsivity and intolerance to frustration (secondary psychopathy) that is more related to emotion regulation deficits.

5.4.1.1.4. Suppression and secondary psychopathy (H4)

It was found that, contrary to what was hypothesised, suppression did not significantly predict secondary psychopathy, therefore hypothesis four (H4) was not supported. Such a non-significant relationship suggests that the tendency to suppress emotions varies independently to levels of secondary psychopathy. It should be noted, however, that preliminary partial correlations indicated a weak to moderate significant relationship between suppression and secondary psychopathy. This suggests the existence of shared variance among suppression and other predictor variables in the model. Further evidence for this claim can be seen in weak to moderate partial correlations between suppression and poor emotional skills and general emotion dys-regulation in the partial correlation matrix.

Ridings' (2011) unpublished work reflects this finding; they also found no significant correlation between suppression and secondary psychopathy. Casey et al.'s (2012) findings were inconclusive regarding expressive suppression in an experimental task in relation to psychopathy.

The current findings regarding suppression, as well as previous research, leads to the conclusion that at best suppression is weakly associated with secondary psychopathy.

5.4.1.1.5. General dys-regulation and secondary psychopathy (H5)

General emotion dys-regulation was found to account for a statistically significant 5.29% of the variance in secondary psychopathy, suggesting that it is a significant but weak positive predictor of secondary psychopathy, therefore supporting hypothesis five (H5). Previous theorists have suggested that the impulsivity and susceptibility to extreme negative emotions related to secondary psychopathy are likely due to difficulties in emotion regulation (Karpman, 1941; Lykken, 1957). While there is a lack of published research that has directly examined self-reported emotion regulation and psychopathy, indirect empirical evidence supports the current finding, demonstrating that antisocial behaviour and impulsivity are significantly related to negative affect regulation difficulties and maintaining stable moods (Stinson et al., 2008). It should be noted, however, that this finding was drawn from a male sex offender sample, which may be systematically different from the general population regarding levels of emotion dys-regulation.

Examination of preliminary correlation analyses illustrates a seemingly attenuated relationship between general dys-regulation and secondary psychopathy, with a strong positive partial correlation between the two variables reduced to a moderate regression coefficient when entered into the model. Partial correlations also demonstrate a strong relationship between general dys-regulation and poor emotional skills. Theoretically this makes sense, as having general difficulties in regulating emotional expression is clearly part of a perceived deficit in emotional skills. Further, general dys-regulation is strongly correlated with trait anxiety. This evidence tentatively suggests an argument could be made for general dys-regulation and poor emotional skills acting as partial mediators of the trait anxiety-secondary psychopathy relationship. These findings also suggest that perhaps the measures used to gauge general emotion regulation

difficulties and poor emotional skills could be combined to form a latent construct of broader deficits in emotion processing.

In the current study general emotion dys-regulation measured by the DERS was used as a total score; however as previously noted the DERS is made up of 6 subscales that measure different aspects of regulatory deficits. Regarding secondary psychopathy specifically, previous research demonstrates that some but not all of the subscales appear to be related to secondary psychopathy, reporting significant positive correlations with the 'Non-acceptance', 'Goal', 'Impulsive' and 'Strategies' subscales, but no significant relationships with 'Awareness' and 'Clarity' subscales (Ridings, 2011). It may be that the significant relationship found in the current study was more influenced by the former mentioned subscales and less influenced by the latter-mentioned subscales. I chose not to further explore this finding by using the individual subscales as it would have created a model with too many latent variables, which would have required a sample size much too large to be feasibly obtained. This investigation could, however, be a potential avenue for future research.

5.4.1.1.6. Poor emotional skills and secondary psychopathy (H6)

Poor emotional skills scores were found to account for a statistically significant 6.25% of the variance in secondary psychopathy, suggesting that it is a weak but significant positive predictor of secondary psychopathy, therefore supporting hypothesis six (H6). The little previous research investigating secondary psychopathy and the POS scale supports the current finding, with Grieve and Mahar (2010) reporting poor emotional skills accounted for 11.56% of the variance in secondary psychopathy. Del Gaizo and Falkenbach (2008) used computer-based tasks to measure emotion perception and failed to demonstrate a relationship between secondary psychopathy and emotion perception deficits which is inconsistent with the current finding. It should be noted that these researchers suggested their non-significant findings may be attributed to their non-criminal sample, however the current finding suggests that this explanation is less likely. The current

finding and previous research that supports it suggests that a perceived lack of emotional skills appears to be a correlate of secondary psychopathy.

It should be noted, however, that preliminary partial correlations obtained in the current study illustrate a potentially stronger relationship between poor emotional skills and secondary psychopathy. The strength of the relationship between these two variables decreases from a moderate to a weak positive relationship once entered into the model with other emotion processing variables. As previously mentioned, there is a strong correlation between poor emotional skills and general emotion dys-regulation which is theoretically supported by conceptual similarities between the two constructs. Further, the poor emotional skills measure is strongly correlated with trait anxiety. On the basis of this evidence, it could be concluded that poor emotional skills accounts for unique variance in predicting secondary psychopathy in addition to sharing variance with other emotion processing variables and trait anxiety. As previously stated, this correlational evidence may be enough to suggest that poor emotional skills, along with general dys-regulation, could be partial mediators of the trait anxiety-secondary psychopathy relationship.

5.4.1.1.7. Emotional concealment and secondary psychopathy (H7)

The final model tested demonstrated that emotional concealment was not a significant predictor of secondary psychopathy, therefore not supporting hypothesis seven (H7). This finding seems inconsistent with previous research examining the relationship between emotional concealment and secondary psychopathy which found emotional concealment to account for a significant 6.76% of the variance in secondary psychopathy (Grieve & Mahar, 2010). In the current study, the partial correlation from the preliminary analyses was significant, albeit, weak emotional concealment-secondary psychopathy relationship. The current study, therefore, offers further explanation regarding this relationship in that once such shared variance is accounted for, perceived ability of concealing ones emotions does not appear to significantly predict secondary psychopathy scores. It should be noted that the most likely influence on shared variance in the current study was

from the measure of suppression, due to the strong positive correlation between emotional concealment and suppression. Given that suppression was found to also be a non-significant predictor, this is further evidence that concealing and suppressing emotional expression does not appear to be more than weakly related to secondary psychopathy.

5.4.1.1.8. Emotion manipulation and psychopathy (H8 and H9)

Emotion manipulation was found to account for a statistically significant 17.64% of the variance in primary psychopathy. This percentage indicates emotion manipulation to be a moderate positive predictor of primary psychopathy, and the strongest of the predictors tested, supporting hypothesis nine (H8). Emotion manipulation was found to account for a statistically significant 3.61% of variance in secondary psychopathy, demonstrating that it is also a weak positive predictor of the antisocial behavioural components of psychopathy, supporting hypothesis nine (H9). Further evidence that emotion manipulation is a unique predictor lies in the very weak correlations between the emotion manipulation measure and all the other included emotion processing variables. Grieve and Mahar's (2010) previous investigation into the same relationships in two separate studies revealed similar findings. In their first study emotion manipulation appeared to be a stronger predictor than the current study, with 28.1% and 12.3% of variance in primary and secondary psychopathy respectively accounted for by emotion manipulation measured by the EMS in a non-criminal sample. In their second study where regression analyses were adopted and genders were analysed separately, a more conservative size of predictive utility was found, where in a male sample 19.4% and in a female sample 9.61% of the variance in primary psychopathy could be explained by emotion manipulation. In regards to secondary psychopathy, in a male sample 4% and in a female sample 5.76% of the variance was explained by emotion manipulation. In the current study, gender differences were noted and subsequently controlled for, in response to both Spearman's rho correlations revealing significant relationships between gender and primary and secondary psychopathy, as well as previous research suggesting that psychopathy may manifest

itself differently across males and females (Grieve & Mahar, 2010). Therefore as gender was controlled for, little comment can be made on how Grieve and Mahar's (2010) differences in predictive utility across gender compare to the current findings.

The current findings in support of Grieve and Mahar's (2010) research adds weight to the long standing notion that emotional manipulative ability is strongly associated with psychopathy. It also advances the field by potentially offering further empirical evidence about which aspects of psychopathy are more influenced by perceived manipulative ability. Skeem and colleagues (2007) have previously commented that the manipulative nature of psychopathy would theoretically be more apparent in high levels of primary psychopathy; such a statement is now strengthened in light of new empirical evidence gleaned from the current study and other contemporary research.

5.4.1.1.9. Summary of Simple Predictor Model

The final simple predictor model explains variance in primary and secondary psychopathy in a non-criminal sample. In combination, trait anxiety, emotional manipulation and reappraisal as an emotion regulation strategy accounted for 22.32% of the variance in primary psychopathy, with emotion manipulation accounting for the majority of unique variance (17.54%). In regards to secondary psychopathy, trait anxiety, emotional manipulation, poor emotional skills and general emotion dys-regulation accounted for 31.15% of the variance in combination, with trait anxiety being the largest contributor of unique variance (16%). In light of the evidence provided, there is support for the additive effect of trait anxiety and some emotion processing constructs in explaining primary and secondary psychopathy.

Further, it should be noted that some of the model pathways have attenuated relationships when compared with partial correlations obtained in preliminary analyses. This evidence, along with the findings that show significant partial correlations between trait anxiety and the emotion processing variables in the preliminary correlation matrix (except for emotion manipulation), may

suggest the possibility of these emotion processes partially mediating the relationship between trait anxiety and primary and secondary psychopathy, with evidence suggesting that such a mediating effect may have more impact on secondary psychopathy.

It should also be noted that the results of the proposed pathways in this model were similar regardless of whether social desirability was controlled for in the analyses, with very little difference in goodness of fit as indicated by the Model AIC values. This provides preliminary evidence that the decision to control for socially desirable responding may not be as important as previous research suggests (e.g. Ray et al., 2013). However, the moderate negative bivariate correlations between social desirability scores and both dimensions of psychopathy are in fact consistent with Ray and colleagues' (2013) meta-analytic findings. On the basis of these findings, one can only conclude that there still needs to be further investigation into how distorted response styles impact on self-reported psychopathy and its relationships with other variables.

While it is tentative to suggest causal inferences can be drawn from these findings, one could argue that the complexity of these analyses relative to previous methodologies does allow for stronger inferences regarding the directionality of the relationships between emotion processing and psychopathic traits to be made than has been previously able in correlational studies.

5.4.1.2. Trait anxiety as a moderator (H10)

As well as testing a simple predictor model which investigated the relative contributions of trait anxiety and emotion processing variables to the prediction of psychopathy, it was further hypothesised that levels of trait anxiety may moderate the relationship between emotion processing and psychopathy subtypes. The results of the multi-group analyses suggest that the relationships between emotion processing and psychopathy do not differ across high and low levels of trait anxiety. On the basis of these findings, it does not appear that trait anxiety moderates the

relationship between emotion processing variables and primary and secondary psychopathy, therefore hypothesis ten (H10) was not supported.

It should be noted that the proposal for moderation was based on little direct empirical evidence, that is, no other published research could be located that tested trait anxiety as a moderator of the relationships between emotion processing and primary and secondary psychopathy. There is the possibility, however, that the inadequate sample size did not allow for significant results to be obtained (see 'limitations' section). The sample was split into high and low trait anxiety groups by determining the 33rd and 66th percentile STAI-T scores; the 'low trait anxiety' group comprising of 157 participants with a score equal to or below the 33rd percentile, and the 'high trait anxiety' group comprising of 163 participants with a score equal to or above the 66th percentile. The complexity of multi-group analyses using SEM requires a substantially large sample size; 163 (and by extension, 157) participants do not constitute an adequately sized sample according to power analyses.

The other possibility, however, is that while there may be an interaction between trait anxiety, emotion processing and psychopathy, it may be in a different form than hypothesised. As suggested in this discussion, there is a possible partial mediating relationship, whereby emotion processing may mediate the trait anxiety-psychopathy relationship.

5.4.1.3. Summary of interpretation of results

The evidence gleaned from the current study shows support for trait anxiety and emotion processing variables as significant predictors of primary and secondary psychopathy. Further analyses tested trait anxiety as a possible moderator of the emotion processing-psychopathy relationships; however this hypothesised relationship was not supported. While it may seem that perhaps the logical steps in the analysis process could have been to examine the results of the partial correlation matrix then propose a possible mediating relationship from there, one should be wary of

basing hypotheses purely on empirical evidence with no regard for theoretically supported ideas. The extensive review of previous literature demonstrated evidence that trait anxiety could have reasonably been proposed as a moderator, however the current study has failed to support this possibility. Instead, empirical evidence advocates for another possible way that trait anxiety, emotion processing and psychopathy may interact, that is, by emotion processing partially mediating the trait anxiety-psychopathy relationship. It should also be noted that some hypotheses may have been unsupported due to the potentially inadequate construct validity of the LSRP-R and EMS-R revised in Study One. Given that construct validity has not been directly assessed for these revised measures, one cannot be sure of this assertion, but it should be considered as a possible contributor to the unsupported hypotheses until evidence is generated that suggests otherwise.

5.4.2. Study strengths

There are a number of strengths of this study; the size and diversity of the sample, the use of SEM and reliable measures and adopting an integrative approach to the research. These will be elaborated on in the following section.

5.4.2.1. Use of international sample

The use of an international community sample allowed for greater heterogeneity across participants than has been seen in previous research. Participants' country of origin spanned almost all continents, with the majority specifying Australia or New Zealand as the country of residence. Further, education level for the participants was varied, ranging from not completing high school up to postgraduate tertiary qualifications. Approximately half of the participants were students, with the rest specifying a range of occupations spanning from healthcare, to corporate management, to tradespeople roles. Much of the existing non-criminal psychopathy research has been conducted on undergraduate samples, often localised to one university campus. Having a diverse sample allows for stronger inferences to be made regarding the nature of emotion processing, trait anxiety and

psychopathy in the wider community. As previously mentioned, previous research has also concluded that the recruitment of samples online can potentially be a superior recruitment process that offline strategies due to the increased chance of a diverse sample being obtained (Casler et al., 2013) as well as increase the likelihood of sensitive questions to be answered (Kays et al., 2012).

5.4.2.2. *Sample size and use of SEM*

The size of sample, while not necessarily larger than those from previous studies, can also be considered a strong point of the study. A large sample size ($N = 470$) allowed for the use of sophisticated modelling techniques, specifically, structural equation modelling (SEM). SEM is considered advantageous in relation to other regression techniques for several reasons. Firstly, it allows for stronger inferences to be drawn about direction of relationships (Kline, 2005; Schumacker & Lomax, 2010). To the authors' knowledge, very little research has yet to apply such modelling techniques to relationships between psychopathy and other possible correlates. The majority of correlational research has, at best, applied multiple regression analyses to draw inferences regarding relationships between variables.

A second advantage to using SEM techniques is that proposed predictor variables can be examined simultaneously, enabling the portioning of shared and unique variance (Kline, 2005; Schumacker & Lomax, 2010). The current study examined multiple emotion processing-related variables as well as trait anxiety simultaneously in order to evaluate their predictive utility of both primary and secondary psychopathy. Other simpler regression techniques previously employed have only allowed evaluations of how multiple predictors influence one criterion at a time, that is, primary *or* secondary psychopathy, or psychopathy as a unitary construct. In other words, SEM techniques seem to lend themselves particularly well to investigating psychopathy as a two-dimensional construct.

Lastly, SEM is advantageous in that its processes enable accounting for error in measurement (Kline, 2005; Schumacker & Lomax, 2010). Calculating then subsequently controlling for any error in the measures used to form the indicators that are representing the latent constructs allows the researcher to aptly interpret the beta coefficients (the strength of a given pathway) in the structural model being tested (Kline, 2005; Schumacker & Lomax, 2010). The parcelling technique used to form the indicators for each latent variable (described in this study's results section) further strengthens the methodology adopted in the current study by improving the likelihood of model parsimony and reducing sampling error (Little et al., 2002)

5.4.2.3. Use of reliable measures

All measures used to represent the latent variables in the models were determined to have good internal consistency, which included the LSRP-S-R and EMS-POS-R subscales developed in Study One of this thesis. The use of highly reliable measures lessens the chance of having attenuated correlation coefficients, which would in turn have an impact on magnitude of the pathways in the proposed models.

5.4.2.4. Integrative approach to research

The final strength of this study lies in the way in which two areas of psychopathy research were integrated, that is, emotion processing deficits and levels of trait anxiety. Much of the previous body of research has examined the influence of emotional deficits or trait anxiety singularly, but few researchers have attempted to design research that may explain how emotion processing and trait anxiety interact to influence psychopathic traits. Perhaps the beginnings of such research can be seen in Lorenz and Newman's (2002) study that demonstrated that the strength of the relationship between emotion facilitation deficits and psychopathy appeared stronger when anxiety levels are low. Sutton, Vitale and Newman (2002) also demonstrated that low anxiety levels in a psychopathic offender sample were related to attenuated reflex responses to emotionally laden

pictures. It is important to extend the field of psychopathy research beyond the exploration of single predictors to examine how different predictors interact. From here new ideas and designs can be developed that consider multiple variables simultaneously in their prediction of psychopathic traits to enable a more holistic understanding of the complex construct of psychopathy. The current study has become part of this pioneer phase by implementing sophisticated SEM techniques that allow multiple constructs to be evaluated in relation to primary and secondary psychopathy.

5.4.3. Study limitations

As well as strengths, this study had several limitations; sampling issues, the use of self-report measures and mono-operation bias, as well as the limitations to using a cross-sectional design. Details of these limitations are outlined below.

5.4.3.1. Sample size

Power analyses determined that the obtained sample size was inadequate to test the measurement component of the proposed models. This could have possibly influenced the outcome of the results. For example, it was determined in the multi-group analysis testing for moderation that the measurement model across the groups was invariant, and it was therefore concluded that the measurement components would not be influential in the comparison of the structural component of the model across high and low trait anxiety groups. As noted previously, the sample sizes for each group were inadequate and may not have allowed for true differences in the measurement model to be seen. With a large enough sample size, invariance in the measurement model across the groups may have been found. Obtaining a sample large enough was not feasible due to time constraints on the data collection period. Another pertinent issue that affected the study's power is the dichotomizing of trait anxiety scores. It is well established that dichotomization can decrease statistical power (MacCallum, Zhang, Preacher & Rucker, 2002). As a result this diminished

statistical power could have contributed to the hypotheses regarding moderation being unsupported in this sample.

5.4.3.2. Sampling bias

Although it was previously mentioned that the diversity of the sample obtained was a strength of the study, there was a notable sampling bias in that the majority of the sample were female. Gender was added as a control variable in order to control any possible gender differences. Future research may endeavour to obtain larger samples in order to run analyses for males and females separately.

5.4.3.3. Use of self-report measures

While self-report methods are the most convenient for use in large online samples for obvious reasons such as economy and minimal need for trained test administrators, they have their limitations. Of particular concern when considering psychopathy measurement, those high in psychopathic traits are known to lie pathologically (Hare, 1999). That is, how can we trust an individual high in psychopathy to respond honestly when a key characteristic of their persona is dishonesty? Further, this study involved measurement of perceived emotion processing ability. If it is true that individuals high in psychopathy have deficits ranging across the span of emotion processing ability, then it makes sense to suggest that the accuracy of such individuals' responses to self-report measures may be questionable. For example, the self-report scale of emotional manipulation used in the current study is a measure of subjective perceptions of manipulative ability. Those scoring high on psychopathy, particularly the primary component, are likely to be characterised as having a grandiose sense of self-worth, so there is the possibility that their perceived ability to manipulate others is in fact over-inflated. This particular problem is always going to be an issue where questions measure perceived ability of the individual respondent who has high levels of psychopathic traits.

5.4.3.4. Mono-operation bias

The concept of mono-operation bias has potential influence on the current results. By limiting conceptualisation of a construct, or in this case a latent variable, to a single measure then there is the possibility of not capturing the full extent of the construct in question (Cooke & Campbell, 1979). It may be that each psychopathy subtype and their predictors may not have been adequately represented by the single measures used to represent them. It could be said, however, that the sophisticated means in which the data was analysed (SEM methods) reduced the influence of such a phenomenon, especially given that one of the key advantages of this analysis technique is it attempts to account for measurement error. Further, multiple ‘parcels’ were used as indicators to represent the latent constructs (see section 5.4.2.2. for further detail).

5.4.3.5. Use of a cross-sectional design

A final limitation to the current study is the use of a cross-sectional design. Adopting such a design limits the interpretation of the pathways in the model as possible causal relationships. Although it has been said that the use of SEM techniques allows for stronger inferences to be drawn about direction of relationships (Kline, 2005; Schumacker & Lomax, 2010), a stronger design would be longitudinal in nature. Collecting data on the predictor variables at an earlier time period than the criterion variables would enable the causal directionality to be further tested.

5.4.4. Theoretical implications

The results of this study have important theoretical implications for the wider field of psychopathy research, particularly in relation to the growing body of literature concerning non-criminal psychopathy. More specifically, implications drawn from this study concerning how trait anxiety and certain aspects of emotion processing are related to psychopathy subtypes personality dimensions are outlined in the following section.

First, this study provides support for the notion that psychopathy as a personality dimension can be appropriately measured in a non-criminal setting. Such support is provided in the form of an adequate range of psychopathy scores, as well as the presence of a normal distribution of scores (see sections 4.2.2. and 5.3.3.). This point will be further elaborated in the general discussion chapter, where the results of Study One of this thesis will also be discussed in support of this point.

Second, the current study suggests that trait anxiety more strongly predicts the behavioural aspects that encompass the construct of secondary psychopathy than the affective interpersonal aspects of primary psychopathy in a non-criminal sample. In other words, trait anxiety does not appear to be important in the prediction of primary psychopathy dimension scores, as evidenced by the weak relationships established in the tested model. On the other hand, the positive relationship established between trait anxiety and secondary psychopathy in the model testing suggests that trait anxiety appears to be an important predictor of secondary psychopathy dimension scores. These findings demonstrating differences in the predictive power of trait anxiety in regards to primary and secondary psychopathy dimensions add to the currently inconsistent body of research that has investigated trait anxiety and psychopathy subtypes. It suggests that it may be more meaningful to direct future explorations of trait anxiety and psychopathy towards the antisocial behavioural aspects that secondary psychopathy encompasses than the interpersonal aspects of primary psychopathy.

Further, the methods of analysis used allows for inferences to be drawn on the importance of trait anxiety in predicting psychopathy personality dimensions relative to the emotion processing variables included in the modelling process. Trait anxiety appears to be more important than emotion processing variables when predicting secondary psychopathy, as evidenced by trait anxiety accounting for more unique variance (16%) in secondary psychopathy than the emotion processing variables combined (15%).

The results do suggest, however, that certain emotion processing variables appear to be important in the prediction of both primary and secondary psychopathy, accounting for unique variance. Poor emotional skills and general emotion dys-regulation both accounted for unique variance in secondary psychopathy in this non-forensic sample. This implies that perceived lack of emotion skills and perception of general difficulties in regulating emotion are associated with the behavioural issues of secondary psychopathy. It has previously been theorised that difficulties in mood maintenance and difficulties in regulating negative affect appear to be related to characteristics such as impulsivity and antisocial behaviour (Stinson et al., 2008); the current finding, along with other research (e.g. Grieve & Mahar, 2010; Ridings, 2011) empirically supports this.

The results of this study also demonstrate that emotion manipulation predicts both primary and secondary psychopathy, but has particular influence on primary psychopathy. Perceived manipulative ability contributed to a large proportion of variance accounted for in the model as a whole (uniquely accounting for 17.64% of variance in primary psychopathy). This finding further supports descriptions of primary psychopathy including the existence of manipulative ability (e.g. Skeem et al., 2007).

While the results of this study demonstrate that trait anxiety does not appear to be a moderator of the relationships between emotional deficits and psychopathy subtypes, one cannot completely disregard the notion that trait anxiety, emotion processing and primary and secondary psychopathy may be inter-related. Preliminary evidence from this study demonstrates that trait anxiety and emotional processes contribute shared, in addition to unique, variance in predicting psychopathy personality dimension scores. This suggests the possibility of certain emotional deficits being partial mediators of the relationship between trait anxiety and secondary psychopathy.

To summarise, the results from the current study have theoretical implications for understanding psychopathy as a dimensional personality trait. It appears that psychopathy as a

personality dimension can be measured in non-criminal settings. Further, both trait anxiety and emotion processing variables predict primary and secondary psychopathy. Notable predictors are emotion manipulation and trait anxiety, accounting for the majority of the variance in primary and secondary psychopathy respectively. These differential relationships also offer support for the 2-factor model of psychopathy. While the results suggest that trait anxiety does not appear to act as a moderator, they do suggest that some emotional deficits may mediate the trait anxiety-secondary psychopathy relationship. Such implications open up possibilities for future research directions.

5.4.5. Applied implications

It is too presumptuous to suggest direct implications for clinical treatment, given that the perspective taken in the current study was to view psychopathy as dimensional and that the findings are based on a non-clinical sample. Some tentative comments could be made, however, in relation to one of the stronger relationships found in the model, that is, the trait anxiety-secondary psychopathy relationship. Firstly, as previously mentioned, the finding that trait anxiety strongly predicts secondary psychopathy is intuitive from a clinical perspective. Further to this, there is consistent evidence to suggest that trait anxiety can be successfully reduced through cognitive bias modification, as it has been said that individuals high in anxiety demonstrate a cognitive bias that favours the processing of threatening information (e.g. MacLeod & Rutherford, 1992; See, MacLeod, & Bridle, 2009). In light of evidence that trait anxiety is a strong predictor of secondary psychopathy, and trait anxiety can be treated (e.g. See et al., 2009), it could perhaps be cautiously suggested that existing trait anxiety treatments such as cognitive bias modification may have an indirect influence on levels of the antisocial behaviours associated with secondary psychopathy.

There may also be treatment-based implications related to the finding that general emotion dys-regulation is a significant predictor of secondary psychopathy. Treatments such as dialectical behaviour therapy (DBT) have been demonstrated to be effective in treating the dys-regulation of emotions associated with Borderline Personality Disorder (BPD) (e.g. Linehan et al., 1999). One of

the primary modules of the skills training component of DBT involves teaching skills in emotion regulation. Further to this point, empirical evidence has shown BPD and secondary psychopathy to be conceptually related (e.g. Miller et al., 2010). It could be inferred perhaps that attempts to treat the underlying issue of poorly regulated emotional responses could indirectly impact on levels of secondary psychopathy. Galietta and Rosenfeld (2012) discuss the merits of applying DBT to psychopathic offenders in a forensic setting, mentioning anecdotal evidence for the potential efficacy of the treatment in reducing the behavioural components associated with psychopathy (secondary psychopathy). This point, however, has not been as strongly put forward as the idea behind trait anxiety reduction, given that the found relationship between emotion dys-regulation and secondary psychopathy in the current study was not particularly strong. Future research would be needed to determine through empirical means if treatments such as DBT can reduce secondary psychopathy specifically.

5.4.6. Future research suggestions

Although prevalence of LSRP-R-rated psychopathy was deemed to be sufficient for plausible interpretation of results, the frequency of psychopathic traits in this sample was low. While this is expected of a non-criminal sample, testing the same proposed relationships between trait anxiety, emotion processing and psychopathy in institutionalised forensic samples is warranted. Given research suggests that manifestation of psychopathy is known to differ across criminal and non-criminal populations (Hall & Benning, 2006), it is possible that the results produced in the current study may not be replicated in a criminal sample. If marked differences are seen in the applicability of the model in criminal settings, this may give some indications of possible factors protecting against manifestation of high levels of psychopathy that may be occurring in the non-criminal samples. This would be particularly relevant if the proposed relationships appeared stronger in criminal samples.

As previously suggested, some of the preliminary partial correlations suggest that testing an alternative model may be warranted whereby emotion processing variables partially mediate the relationship between trait anxiety and primary and secondary psychopathy. Ideally, future research would involve testing such an alternative model on both criminal and non-criminal samples to broadly investigate first whether the proposed mediating relationship is supported, and second how such a mediating relationship might differ across criminal and non-criminal settings.

Another area for future research lies in testing gender differences. The current study did not investigate any gender differences across the model; instead differences were noted and subsequent controlled for in further analyses. There is merit, however, in testing the proposed models in separate male and female samples, and making comparisons across models. Future research should continue exploring gender differences in psychopathy within community settings, as previous research has demonstrated that males and females clearly differ in the behavioural manifestation of psychopathic traits (Verona & Vitale, 2006).

Future research should also endeavour to use longitudinal designs to further establish causal relationships between deficits in emotion processing and the psychopathy subtypes. More specifically, the current model (Figure 5.5.) could be tested more robustly by measuring emotional deficits at one time point, then measuring psychopathic traits at a future time point, thereby addressing the limitation of using a cross-sectional design. It could perhaps be argued that appropriate time points would be at key developmental landmarks across the lifespan, that is, emotional deficits could be measured in childhood or adolescence to see if they predict psychopathy scores in adulthood. Such a research design would be able to more rigorously test proposed causal relationships between certain emotion processing variables and primary and secondary psychopathy.

While most of the emotion processing variables included in the proposed model were found to be significant predictors of psychopathy, all except emotion manipulation and trait anxiety were

relatively weak predictors. This opens up the possibility for other emotion processing variables to be explored in order to explain more variance in the prediction of psychopathy. One suggested area is the cognitive processing of emotional material. Other researchers that have investigated emotional deficits in relation to psychopathy have suggested that individuals high in psychopathy do not necessarily have difficulties with lexical understanding of emotionally laden words, however they do not experience the affective value attached to those words (Blair et al., 2006). In other words, where psychopathic individuals lack internal emotional experience, they somewhat make up for this in cognitive methods of processing of emotional information. This point makes sense in light of the fact that anecdotal evidence of psychopathic individuals has described them as 'cold' and 'unemotional', while also being very attuned to emotional vulnerabilities in others for the purposes of exploitation (Hare, 1999). Future research could investigate cognition associated with emotion processing in conjunction with emotional experience, with the purpose of determining their relative contributions to prediction of psychopathy. This furthers the current research by including cognitive processes and exploring how much extra explanation they may offer over and above self-reported perceived emotional deficits in the prediction of psychopathy.

5.4.7. Conclusion

The current study was the first of its kind designed to test the relative contributions of trait anxiety and emotion processing variables in the prediction of primary and secondary psychopathy. Hypotheses were developed that formed two possible models of predicting primary and secondary psychopathy in a non-criminal sample. The first was a simple predictor model that posited differing contributions of trait anxiety and emotion processing variables to the prediction of primary and secondary psychopathic traits. Analyses supported a revised model that excluded suppression and emotional concealment (two variables notably related) as predictors. The second model proposed trait anxiety as a moderator of the relationships between emotion processing and primary and secondary psychopathy; such a proposal was not supported. The findings as a whole provide further

support for the existence of psychopathy as a personality dimension in the community, while also furthering the field by demonstrating that trait anxiety and certain deficits of emotion processing predict primary and secondary psychopathy dimensions. Notable strengths of the study include the diversity of the sample, the sophisticated methodology adopted to analyse the proposed models and the integrative approach taken to explore fields of psychopathy that have largely been examined separately. Limitations of this study included the use of a cross-sectional design, sampling issues that may affect the generalizability of the findings and the use of self-report measures. In conclusion, the outcomes of this study have contributed significantly to the field of psychopathy research by adding to the growing body of research on non-criminal psychopathy, in addition to offering further explanations concerning how psychopathy is related to trait anxiety and emotional processing deficits and emotional manipulative ability.

Chapter Six: General Discussion

The following chapter will comprise of several sections. The first section will summarise the key findings from both Study One and Two, as well as providing a general description of psychopathy measured by the LSRP-R across both the studies. The next section is a discussion of both the theoretical and applied implications drawn from the general findings of the two studies. The next two sections evaluate the general strengths and limitations of this body of research. Following this, some possible avenues for future research are discussed. The chapter ends with some concluding remarks positioning the findings from this thesis within the field of psychopathy research.

6.1. Summary of Findings

This section will provide a summary of the key findings from Study One and Study Two, as well as some broad information regarding the dimensionality of LSRP-R-measured psychopathy in both studies.

6.1.1. Study One findings

The aims of Study One were to improve the psychometric properties of two self-report measures that were deemed necessary for use in the investigation of relationships between psychopathy as a personality dimension and emotional processing deficits. These two measures were the Secondary Psychopathy subscale of the Levenson's Self-Report Psychopathy Scale (LSRP-S; Levenson et al., 1995) which was revised to include eight new items, and the Poor Emotional Skills subscale of the Emotion Manipulation Scale (EMS-POS; Austin et al., 2007) which was revised to include nine new items. The addition of these new items improved the internal consistency of each measure. The LSRP-S improved from a Cronbach's alpha value of .71 of the original subscale, to .84 of the revised subscale. The EMS-POS improved from a Cronbach's alpha value of .69 of the original subscale, to .77 of the revised subscale. Construct reliability quantified

by Hair and colleagues (1998) of the LSRP-S-R and EMS-POS-R were .83 and .82 respectively, which are considered more than adequate values.

These improvements are substantial when considering levels of internal consistency of these measures when used in previous research. The LSRP-S has seen Cronbach's alpha values ranging between from .57 to .71 (mean = .64) in non-forensic samples (e.g. Elwood, Poythress, & Douglas, 2004; Falkenbach, Poythress, Falki, & Manchak, 2007; Miller, Gaughan, & Pryor, 2008). The EMS-POS has been deemed inadequate regarding internal consistency, with Cronbach's alpha being .66 in the both its pilot stage and the one other known published study adopting the measure (Austin et al., 2007; Grieve & Mahar, 2010). An important contribution had been made to the literature by revising these two measures, as both scales now appear to have adequate psychometric properties for research purposes. As previously mentioned, however, further research regarding direct assessment of the construct validity of these two scales should be a priority, as this has not been directly assessed in this program of research.

6.1.2. Study Two findings

The aim of Study Two was to investigate relationships between trait anxiety, emotion processing variables and primary and secondary psychopathy, while also examining whether trait anxiety acts as a moderator of any of these relationships. Through testing models through the use of SEM techniques, some key findings were revealed.

First, it was demonstrated that trait anxiety is a key predictor of secondary psychopathy in a non-criminal sample. This finding is consistent with other research which has also demonstrated moderate relationships between trait anxiety and PCL or PCL-R Factor 2 scores (Hale et al., 2004; Harpur et al., 1989). It was further concluded that, at most, trait anxiety appears only to be a weak positive predictor of primary psychopathy. Non-equivalence in conceptualisation and measurement of anxiety and primary psychopathy across different studies may be contributing to the

inconsistencies of findings across studies in relation to the anxiety-primary psychopathy relationship.

Second, it was established that emotion manipulation predicts both primary and secondary psychopathy, but appears to be a much more important predictor of primary than secondary psychopathy in a non-criminal sample. These findings are in contrast to earlier theory suggesting that being emotionally manipulative is associated with primary rather than secondary psychopathy (Skeem et al., 2007). There is currently very little research that the current study can be compared to, with one known published study demonstrating emotion manipulation to significantly predict primary and secondary psychopathy in an Australian undergraduate sample (Grieve & Mahar, 2010).

The findings also demonstrated that perceived poor emotional skills and general emotion dys-regulation were both significant predictors of secondary psychopathy. Previous research has reported a similar positive relationship between poor emotional skills and secondary psychopathy (Grieve & Mahar, 2010). Previous research also partially supports a relationship between general emotion dys-regulation and secondary psychopathy, where four of the six subscales of the DERS were found to be correlated with LSRP-S scores (Ridings, 2011).

Last, tests of moderation revealed that trait anxiety does not appear to moderate the relationship between emotion processing variables and primary and secondary psychopathy. Further, the results suggest an alternative possible interaction, whereby a perceived lack of emotional skills and general difficulties in emotion regulation may possibly partially mediate the relationship between trait anxiety and secondary psychopathy. When considering all of these findings, it is concluded that there is an additive relationship between trait anxiety and emotion processing variables, in regards to their relationships with primary and secondary psychopathy.

6.1.3. Evidence of psychopathy subtypes as personality dimensions

Across both studies of this thesis, the LSRP was used as a measure of psychopathy in community samples. As mentioned, Study One aimed to revise the LSRP for its use in Study Two. As previously mentioned in Chapter Four (Table 4.8), the mean scores for LSRP-P and LSRP-S-R were 28.50 (7.67) out of 64 and 40.79 (7.65) out of 72 respectively in Study One, while Study Two achieved similar means of 29.23 (6.27) and 41.76 (6.63) for LSRP-P and LSRP-S-R respectively (see Table 5.2 in Chapter Five). Ranges of scores on both subscales were also obtained in each sample and demonstrated a moderate spread of scores across both studies. These values demonstrate a presence of psychopathy as a personality dimension in two separate non-criminal samples. Further support for both primary and secondary psychopathy as personality dimensions can be evidenced in histograms which display a close to normal distribution of scores in both psychopathy subtypes across both studies of this thesis (see Appendix 6.1).

6.2. Wider implications

The results from both studies in this thesis have important implications for psychopathy theory, particularly regarding psychopathy as a multidimensional personality trait. There are also some tentative suggestions for how the results from the studies in this thesis can be applied in forensic, workplace and clinical settings.

6.2.1. Theoretical implications

There are a number of theoretical implications of both studies in this thesis, which include implications for how psychopathy is conceptualised, how the findings have implications for non-criminal psychopathy and the relevance of accurately measuring psychopathy in online settings.

6.2.1.1. Conceptualisation of psychopathy as multiple personality dimensions

The findings concerning the prevalence and distribution of LSRP-R scores in two separate community samples offer support for descriptions of psychopathy as a personality trait which is

comprised of multiple dimensions, primary and secondary. This is based on a number of aspects of the current studies. Firstly, support for psychopathy as dimensional comes from the previous section outlining the prevalence of LSRP-R-measured psychopathy in two samples. This supports previous empirical evidence that has shown the LSRP to have a dimensional rather than taxonic latent structure in a large ($N = 1972$) mixed gender offender sample (Walters et al., 2008). More interestingly, close to normal distributions of both LSRP-P and LSRP-S-R scores across studies suggest that moderate primary and secondary psychopathy scores are most common in a community setting, with extremely low or high scores being less common. This finding furthers the understanding of psychopathy in non-forensic settings as it not only supports the existing notion that high levels of psychopathy are less likely outside of a forensic setting, but also tentatively suggests that extremely low psychopathy levels may be equally as unlikely. It is possible, of course, that such distributions may be due to sampling error, however given the multiple occurrences across two studies, this possibility is low.

Second, findings from both studies demonstrated further support for primary and secondary psychopathy as two separate dimensions. Across both studies, primary and secondary psychopathy were found to be moderately correlated with each other, ($r = .51$ and $.41$ in Study One and two respectively). This is supported by previous research that has shown the two subtypes to be distinct but correlated constructs (e.g. Brinkley et al., 2001; Douglas et al., 2011; Levenson et al., 1995). Study Two's results more specifically suggest that prediction of the antisocial behavioural components associated with secondary psychopathy appear more susceptible to influence from levels of trait anxiety and general deficits in processing and regulating emotions than interpersonal personality aspects of primary psychopathy. Conversely, perceived ability to manipulate emotions was demonstrated to be a much stronger predictor of primary psychopathy than secondary psychopathy. This is consistent with current theoretical understandings that emotional manipulation is a key interpersonal facet of primary psychopathy (Skeem et al., 2007).

The use of ‘subtype’ as terminology to describe the primary and secondary components of psychopathy may not lend itself particularly well to the underlying theme of this thesis that psychopathy is dimensional in nature. ‘Subtype’ seems to imply a taxonomy; although the term has been used throughout this thesis for the sake of consistency, in future perhaps a more appropriate description to apply would be to label primary and secondary psychopathy as ‘sub-dimensions’ of the construct.

6.2.1.2. Implications for conceptualisation of non-criminal psychopathy

The evidence across both studies also demonstrates that individuals in the community have comparable scores on psychopathy scales as individuals in forensic settings. Previous research using the LSRP in forensic settings has produced mean LSRP scores that are partially comparable to the current studies. For example, Brinkley and colleagues (2001) reported the mean LSRP-P score to be 32.99 (*S.D.* = 8.19) and the mean LSRP-S score to be 21.68 (*S.D.* = 5.05) in a male offender sample (*N* = 549). Walters and colleagues (2008) found similar mean scores and also noted positively skewed values for both subscales of the LSRP, demonstrating scores to be skewed towards the lower end of both psychopathy dimensions. Note that the mean LSRP-P scores in both Study One and Two of this thesis closely reflect these results, however LSRP-S-R scores are not comparable given the current studies used a revised version of the measure. This suggests that the idea of non-criminal psychopathy being a subclinical manifestation of criminal psychopathy (Hall & Benning, 2006) may be unfounded. Instead, results may indicate that non-criminal and criminal psychopathy differ in type of behavioural manifestation rather than degree. More information on the criminal activity in both samples would be needed, however, in order to more accurately infer this.

The use of the terminology ‘successful psychopathy’, frequently equated with non-criminal psychopathy (Hall & Benning, 2006), must also be questioned. In their summary of the existing literature, Hall and Benning (2006) describe the ‘successful psychopath’ as one who exhibits psychopathic personality traits in the absence of serious antisocial behaviour. Even in light of such

a definition, there is a lack of consistency regarding what constitutes ‘successful’ psychopathy. Even if it were the case that none of the participants in the two samples reported on in this thesis were engaging in criminal activity, their only real ‘success’ arguably is in the avoidance of being detected by the criminal justice system. The term ‘successful’ could also have positive connotations, implying that exhibiting these traits without the criminal behaviour attached to it is somehow adaptive. Psychopathic traits have been argued to be advantageous in such settings as the corporate world where individuals displaying ruthlessness and willingness to succeed at all costs are a direct benefit at the company level (Babiak & Hare, 2006). At an individual level, however, those with ‘successful’ psychopathic traits are anecdotally just as emotionally destructive as their criminal counterparts, with the potential to leave just as many victims in their wake (Babiak & Hare, 2006). Overall, the argument for the conceptualisation of subclinical or ‘successful’ psychopathy in non-forensic settings seems weaker in light of the evidence obtained in both the current studies.

6.2.1.3. Online data collection of psychopathy scores

A further finding arising from this thesis is the notion that self-report psychopathy can be measured accurately through online mediums. Both the current studies employed online data collection methods that produced a range of psychopathy scores comparable to earlier studies that used offline methods for collecting data. This has implications for future research into psychopathy in online communities (see section 6.5.), as well as for the possible methods for administration of psychopathy measures and screening tools in a variety of settings (e.g. non-criminal, forensic). The findings from this study support previous evidence that demonstrates the equivalence of online versus offline versions of psychological measures, further suggesting that Internet-based questionnaires are suitable alternatives to paper-based measures (Casler et al., 2013).

6.2.2. Applied implications

There are also applied implications resulting from the findings from this thesis. These address psychopathy in the workplace, forensic and clinical settings.

6.2.2.1. Corporate psychopathy

The presence of high levels of psychopathic traits in workplace settings is known to have a detrimental effect (Babiak & Hare, 2006). In light of evidence from this thesis (Study Two) that emotion manipulation is a key predictor of primary psychopathy, there may be potential relevance of this finding in workplace settings. More specifically, screening tools may be developed that include a specific focus on assessing levels of ability to manipulate emotions. The development and use of such screening tools could help detect individuals that may pose a potential threat to a given workplace, without having to directly administer psychopathy measures. Avoiding the use of direct measures of psychopathy will become increasingly necessary as the general population becomes educated through the media of descriptions of psychopathic traits. As a result of this education, the intent of certain psychopathy measures will become more transparent to respondents that are exposed to them, and therefore result in inaccurate responses and render such measures as less valid.

6.2.2.2. Criminal psychopathy

Another point to consider is whether there could be implications for the current findings in forensic settings. Is there a place for psychopathy to be considered a dimension in criminal settings? Some evidence already suggests that this is the case. As previously mentioned, Walters and colleagues (2008) demonstrated the dimensional nature of LSRP-measured psychopathy in a large forensic sample. In light of this evidence, there may be implications surrounding the future use of measures that employ 'cut-off' scores for the purposes of categorisation and diagnosis, such as the PCL-R (Hare, 2003). As previously mentioned, however, there is existing evidence of the dimensionality of the PCL-R in a forensic sample (Guay et al., 2007). Further to this, if a 'normal' distribution of

psychopathy scores could be demonstrated in criminal samples, it may be of interest to explore what makes offending individuals achieve very low scores on certain psychopathy measures.

6.2.2.3. Treatment of psychopathy: Some tentative conclusions

It is too presumptuous to state that results from Study Two have clear implications for psychopathy treatment because of the nature of the sample from which the findings were produced, as well as the notion that psychopathy was conceptualised as a personality dimension rather than a disorder. However, the results of the current studies lend credence to the idea that identifying emotion regulation difficulties in those high in psychopathy levels (particularly secondary psychopathy) may be a predicate to developing and implementing programs that assist in 'reigning in' the behavioural manifestations of psychopathy that often have antisocial, if not criminal, characteristics. This idea is tentative, however, given the correlational nature of the studies in this thesis, which limit the ability to comment on whether a change in emotional deficits could lead to a change in levels of psychopathic traits. Clearly future research is required to determine if treatments designed to improve emotional regulation can decrease secondary psychopathy.

6.3. Strengths of thesis

There are a number of strengths that can be noted that span both studies in this thesis, which include the use of diverse international samples, sophisticated analysis techniques and adopting the contemporary view of psychopathy as a personality trait.

6.3.1. Use of international online samples

Both studies utilised online recruitment methods for data collection. The use of such methods allowed for an international sample to be reached that was fairly diverse in regards to demographic information, or at least more diverse than previous psychopathy research. Across both studies approximately half of the participants were not students. This is in contrast to many other

non-criminal psychopathy studies which have used undergraduate samples (e.g. Long & Titone, 2007; Ross & Rausch, 2001; Williams et al., 2007). Further to this, most continents were represented across samples in both studies, indicating that the aim to obtain samples that were representative of the global community was partially met, as the predominance of responses were from Australasia. The diversity of participants allows for the findings to be more accurately generalised to the general population.

6.3.2. Sophisticated analytical techniques

Both studies are arguably analytically superior to previous research in the area, as complex CFA and SEM data analysis techniques were used in an appropriate manner. Study One included CFA which was adopted appropriately in that every attempt was made to follow a theory-driven process, while limiting the number of decisions made that were solely based on statistical reasoning. In Study Two, SEM was adopted to test a predictor model of psychopathy. In addition, multi-group analyses were conducted to test trait anxiety as a moderator variable. The advantages of such analyses have been elaborated previously (see section 5.4.2.2.) and include the accounting for measurement error and the ability to include multiple criterion variables simultaneously.

6.3.3. Support for contemporary view of psychopathy

Across both studies there is clear support that viewing psychopathy as a dimensional personality trait is the appropriate trajectory for the field to be headed, as evidenced by the varied and normal distribution of LSRP scores. This is a strength of this thesis because it shows that the findings appropriately sit amongst contemporary research that has also adopted such a view. The traditional view of psychopathy as a taxon whereby individuals were simply classed as a psychopath or not via clinical diagnostic methods is becoming increasingly less popular as more evidence for the dimensionality of the construct is produced (e.g. Edens et al., 2006; Guay et al., 2007). The current studies have added to this growing body of research by further demonstrating

not only that psychopathy appears to be dimensional, but that it comprises of multiple dimensions, primary and secondary.

6.4. Limitations of thesis

While there are clear strengths of this thesis, there are also notable limitations to the design and methodology employed across both studies. These include sampling issues such as a clear gender bias and lack of adequate sample sizes, as well as the use of self-report scales as the primary method of measurement.

6.4.1. Sampling issues

A limitation within both studies was the less than ideal sample sizes that were appropriate for the analyses used. For testing measurement models, a minimum sample size of 5 participants per parameter ratio is suggested, although Kline (2005) recommends 10-20 participants per parameter as an ideal. In Study One, the absolute minimum requirements were met but the ideal ratio of participants to parameters was not met for either the LSRP or the EMS sample. Study Two did not meet the minimum requirements in regards to testing the measurement model. Less than optimal sample sizes for the measurement components tested means that results should be interpreted cautiously, particularly for the multi-group analyses testing moderation in Study Two.

Another sampling issue relates to the clearly unequal gender distribution across both studies. In both samples the majority of the participants (approximately 75%) were female. As previously mentioned, such an uneven gender split could have potentially been a problem for Study Two in particular, given that evidence suggests that psychopathy manifests itself differently across males and females (Forth et al., 1996). However, the influence of gender was subsequently controlled for before the main analyses which limits the effect this sampling bias had on the results.

6.4.2. Measurement limitations

Both studies adopted the use of self-report scales, which was deemed the most practical method of data collection given the sample sizes required. The use of such measures, however, introduces flaws to the research that could potentially affect the interpretability of the findings. One significant flaw which is of particular relevance when measuring psychopathy is issue of obtaining accurate and honest responses. Given that pathological lying is a key component of psychopathy (Hare, 1999), researchers should be rightly concerned about the accuracy of their self-reported data collected when investigating such an area.

Measures such as the PCL-R which are frequently used in forensic settings have the advantage of relying on clinician ratings (Hare, 2003). It may be beneficial for future research to develop 'other-report' components to support existing self-report psychopathy measures which could bolster the validity of measurement. To ensure this reliability, however, it would be important to evaluate the closeness of the relationship between the individual in question and their respective rater. Colleagues and acquaintances are likely to know a psychopathic individual on a superficial level and may be yet to see through their charming façade, while family members are probably more likely to have a more accurate insight into the individuals' stable demeanour, that is, their personality traits.

It should be noted, however, that the approach of the current study was to examine psychopathy as a dimensional personality trait, so such an issue of dishonest responding may only be relevant when considering individuals scoring on the higher end of the psychopathy spectrum. The current study has provided evidence that suggests that individuals with high psychopathy scores appear to be the minority in community samples.

6.5. Future research directions

There are several possible avenues for future research that have been developed as a result of the findings from this thesis. These include examining the distribution of psychopathic traits in

the community, further research adopting Australian samples, explorations of psychopathy in the workplace, and investigating psychopathy in specific online communities. The following section will elaborate on these future research directions.

6.5.1. Distribution of psychopathic traits in community samples

Further investigation into the distribution of primary and secondary psychopathy in the community is needed, with a more specific focus on low levels of non-criminal psychopathy. This suggestion is borne from the findings in the current studies that psychopathy scores appear to approximate a normal distribution. In other words, there appear to be less individuals scoring not only extremely high but also extremely low on LSRP-R-measured psychopathy, with more individuals with moderate scores on both primary and secondary subtypes. Further, if such a normal distribution is replicated in future studies, it would be interesting to explore possible commonalities of individuals with ‘abnormally low’ scores, with the aim to reveal possible protective factors to having high levels of psychopathy, beyond what is already known.

6.5.2. Investigating psychopathy in different cultures

There is a lack of psychopathy research that has adopted Australian samples. While there are currently published studies that have used Australian samples that have revealed useful findings regarding non-criminal psychopathy (e.g. Douglas et al., 2011; Grieve & Panebianco, 2012), more research is necessary to build on what currently exists. The majority of published research, regarding both criminal and non-criminal samples, has been obtained from North America (Lynam et al., 1999; Newman et al., 2005), the United Kingdom (Cooke, 1995) and other areas of Europe (Uzieblo et al., 2010). More specifically, it is important to obtain more information within Australia for the purposes of international cross-cultural comparison. Previous research has investigated cross-cultural differences across the UK and US (Cooke & Michie, 1999). Further research including Australia and other countries under-represented in psychopathy research is a necessity,

however, if a future aim is to make more appropriate cultural and geographical comparisons of psychopathy on a global scale.

6.5.3. Exploring psychopathy in the workplace

While interest in ‘corporate psychopathy’ appears to have risen in recent years, this is more reflected in media attention rather than empirical investigation. Smith and Lilienfeld (2012) have pointed out while media interest flourished across the beginning of the 21st century, this is disproportionate to the amount of academic publications actually produced across the same time period. This suggests that more empirical evidence is necessary inform the sensationalist descriptions of the aptly named ‘snakes in suits’, a term coined by Babiak and Hare which was subsequently used as a title of their successful book on how to spot the corporate psychopath (Babiak & Hare, 2006). A specific focus here may also be to reiterate to the media that psychopathy considered less as a taxon and more as a dimensional personality trait, which will result in the general public being educated on the contemporary view of psychopathy.

More specifically in relation to this thesis, future research may warrant further validating the LSRP in corporate settings, as well as testing the current emotion processing model of psychopathy in such settings to investigate whether the current findings can be replicated. Further, by adopting samples from the workplace, the hypothesis that non-criminal psychopathy differs from criminal psychopathy in type rather than degree of behavioural manifestation can be tested.

6.5.4. Exploring psychopathy in online communities

A further potential avenue of research is investigating psychopathy in specific online communities, particularly those that may be otherwise difficult to access in offline, real-world settings. Using online methods to reach difficult-to-access samples has been found to be advantageous in health-based research (Ahern, 2007). This future research direction is supported by the current studies evidence that psychopathy can be accurately measured, at least with the use of

the LSRP-R, through online methods. Such communities may be sensitive in nature (e.g. racist hate groups) and therefore community members may prefer participating in research in a completely online setting where anonymity can be ensured.

6.5.5. An integrative approach to investigating psychopathy

Finally, it is recommended that further research within the field adopts an integrative approach to the investigation of psychopathy and its possible correlates. This thesis has demonstrated an integrated approach in Study Two, combining two existing research avenues of emotional processing and trait anxiety with the aim of demonstrating their relative contributions in the prediction of primary and secondary psychopathy. Of particular interest to future researchers may be the closer investigation of particular emotional processes as mediators of the relationships between trait anxiety and secondary psychopathy.

6.6. Concluding remarks

The construct of psychopathy has come a long way in terms of the change in its conceptualisation across time. Its popularity began with Cleckley's (1976) clinical conceptualisations of psychopathic individuals, along with the perspective that one was either classified as a psychopath or not. The contemporary view is now a dimensional approach; the findings from both studies in this thesis have supported the dimensionality of psychopathy as a personality trait in a non-criminal sample.

The two studies comprising this thesis have elicited some important findings regarding psychopathy as a personality trait. Study One revealed that the LSRP (self-report psychopathy measure) has had its psychometric properties improved upon through the addition of new items to the secondary psychopathy subscale. In addition, the EMS (self-report emotion manipulation measure) also had its psychometric properties improved, making the EMS-R and the LSRP-R appropriate for use in future research, including Study Two of this thesis. One should not

undermine the importance of improvements made to the measurement of psychopathy and emotional manipulation, given that accurately interpreting any relationships between constructs is contingent on the reliability and validity of the measurement of such constructs. A particularly noteworthy point is that the process of revising and validating the LSRP has contributed further to the understanding of secondary psychopathy, a construct of which the definition has been under dispute (e.g. Brinkley et al., 2001). Study Two revealed, through testing proposed correlates of primary and secondary psychopathy, that trait anxiety is an important predictor of secondary psychopathy. It was also concluded that emotion manipulation is an important predictor of both primary and secondary psychopathy; however it is more strongly related to primary psychopathy.

The findings of this thesis are well-placed in the current body of research concerning anxiety, emotion processing and psychopathy. What is particularly noteworthy is that the current research as well as other contemporary research is suggesting that the traditional idea of ‘primary psychopathy equating to low anxiety’ may be beginning to become less of a mantra within the field (e.g. Hale et al., 2004; Lilienfeld & Penna, 2001). They appear to further support the idea that the focus on trait anxiety and primary psychopathy may not be as important as the exploration of trait anxiety and secondary psychopathy. These findings have advanced the field of psychopathy research in that there is now more information known about the intrapersonal emotional correlates of self-report psychopathy.

The findings also provide clear guidance for future research trajectories. In this research, these relationships have been established in a non-criminal community sample. Psychopathy outside of forensic settings is an expanding area of research, of which there will likely be ongoing interest which will span from academia and into the general community. It is hoped that future published research will continue to have a focus on psychopathy in the community, particularly in areas that this thesis has begun to touch upon, such as the investigation of how levels of anxiety, aspects of emotion processing and psychopathic traits interact.

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Appendix 4.1.

Participant Information Sheet – Study One

My name is Sarah Burns and I am a Ph.D. Psychology student at Curtin University of Technology. I am conducting research into personality traits and their association with how individuals regulate and manipulate emotions. In the first phase of my study I have modified two existing measures, which I would like to test to see if they are reliable for further use in the second phase of my study.

If you are over the age of 18 I would like to invite you to partake in my research, which will involve completing an online survey. The questions are simple and should only take approximately 20 minutes of your time. They will ask about certain aspects of your personality, as well as how good you feel you are at handling emotions. **By clicking the submit button at the end of the survey, you are indicating your consent for your responses to be used in the research.** Participation is voluntary, and you are welcome to withdraw at any time prior to submitting your completed survey. Only the group results will be reported, and may be used for academic publications and conference presentations, as well as for my thesis.

You will have the option of entering your email address at the end of the survey to have a chance to win one of three \$50 iTunes vouchers, with an approximately 1 in 90 chance of winning. To protect your anonymity email addresses and answers to the surveys will be stored in separate locations so there will be no way to link your email address to the survey data that you provide.

A link to the survey can be found at the Curtin University School of Psychology home page:

(link will be inserted here)

Any further questions can be answered by me or my supervisors, Dr. Lynne Roberts and Dr. Sarah Egan.

Sarah Burns: sarah.burns@postgrad.curtin.edu.au

Dr. Lynne Roberts (Supervisor): Lynne.Roberts@curtin.edu.au ph: 9266 7183

Dr. Sarah Egan (Co-Supervisor): S.Egan@exchange.curtin.edu.au ph: 9266 2367

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number HR 114/2010). The Committee is comprised of members of the public, academics, lawyers, doctors and pastoral carers. Its main role is to protect participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University, GPO Box U1987, Perth 6845 or by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

Appendix 4.2.

Measures for Study One Questionnaire

The following the final list of scales to be used online for the 1st phase of the study (80 items in total, including demographic questions).

Levenson's Primary and Secondary Psychopathy Scales (LSRP; Levenson et al., 1995) plus new items being tested.

- Items in the LSRP are measured on a 4-point Likert scale:

Strongly disagree – disagree – agree – strongly agree

Primary Psychopathy subscale

1. Success is based on survival of the fittest; I am not concerned about the losers.
2. For me, what's right is whatever I can get away with.
3. In today's world, I feel justified in doing anything I can get away with to succeed.
4. My main purpose in life is getting as many goodies as I can.
5. Making a lot of money is my most important goal.
6. I let others worry about higher values; my main concern is with the bottom line.
7. People who are stupid enough to get ripped off usually deserve it.
8. Looking out for myself is my top priority.
9. I tell other people what they want to hear so that they will do what I want them to do.
10. I would be upset if my success came at someone else's expense.*
11. I often admire a really clever scam.
12. I make a point of trying not to hurt others in pursuit of my goals.*
13. I enjoy manipulating other people's feelings.
14. I feel bad if my words or actions cause someone else to feel emotional pain.*
15. Even if I were trying very hard to sell something, I wouldn't lie about it.*

16. Cheating is not justified because it is unfair to others.*

Secondary Psychopathy subscale

1. I find myself in the same kinds of trouble, time after time.
2. I am often bored.
3. I find that I am able to pursue one goal for a long time.*
4. I don't plan anything very far in advance.
5. I quickly lose interest in tasks I start.
6. Most of my problems are due to the fact that other people just don't understand me.
7. Before I do anything, I carefully consider the possible consequences.*
8. I have been in a lot of shouting matches with other people.
9. When I get frustrated, I often "let off steam" by blowing my top.
10. Love is overrated.
11. *I have been described as a bully*
12. *I enjoy a good physical fight*
13. *At times, I feel guilty about my behaviour toward others*
14. *If I fail at something, I tend to feel anger and disgust towards myself*
15. *I often act without thinking when I am upset*
16. *I have lost a friend because of the irresponsible things I've done*
17. *I think I am worthy of praise from others**
18. *I think of myself as self-assured and confident**
19. *I have a tendency to be mistrusting of others*
20. *I am often suspicious of other peoples motives*
21. *I wish I were more assertive*

Items in the Emotional Manipulation Scale (EMS; Austin et al., 2007) plus the new items being test

Emotion Manipulation subscale

1. I know how to embarrass someone to stop them behaving in a particular way.
2. I know how to make another person feel uneasy.
3. I know how to play two people off against each other.
4. I know how to make someone feel ashamed about something that they have done in order to stop them from doing it again.
5. I know how to 'wind up' my close family and friends.
6. I can use my emotional skills to make others feel guilty.
7. I can make someone feel anxious so that they will act in a particular way.
8. I can pay someone compliments to get in their 'good books'.
9. I am good at reassuring people so that they're more likely to go along with what I say.
10. I sometimes pretend to be angrier than I really am about someone's behaviour in order to induce them to behave differently in future.

Poor Emotional Skills subscale

1. I am not very good at motivating people.
2. I feel that I lack emotional skills.
3. I'm not very good at changing someone's mood, even if doing so would make them more likely to behave in a way that I want them to.
4. I am not very good at giving positive encouragement to others.
5. *Sometimes the way I express myself emotionally is not appropriate for the situation I'm in*
6. *I've been known to take out my frustrations on others who didn't deserve it*
7. *When others are happy, I am pleased for them**

8. *When another person tells me about an event in their lives, I almost feel as though I have experienced this event myself**
9. *I think I can adequately communicate the way I am feeling to other people without speaking**
10. *I don't like to share my emotions with others*
11. *I can recognise when something I've said or done has upset someone**
12. *I find it hard at times to tell how other people are feeling*
13. *I notice when other people are happy**
14. *Sometimes I find it hard to 'keep it together' emotionally*
15. *When I'm excited about something I get really excited and find it hard to calm down*
16. *When I experience a positive emotion, I know how to make it last**
17. *Sometimes I have feelings which I don't know how to describe*
18. *I am aware of the non-verbal messages I send to others**
19. *I know why my emotions change**

Emotional Concealment subscale

1. When someone has made me upset or angry, I tend to downplay my feelings.
2. When someone has made me upset or angry, I often conceal my feelings.
3. I often conceal feelings of anger or distress from others.
4. I don't believe in telling others about my problems – I keep them to myself.

Demographic questions:

What is your age in years? (enter in text box)

Gender: M/F

What is your country of origin? (enter in text box)

English your first language? Yes/no

What is your highest level of education completed?

Primary/Elementary School

Some High School

High School graduate

Some undergraduate study

Completed undergraduate study

Some postgraduate study

Completed postgraduate study

Which of the following listed below most accurately describes your area of occupation?

Agriculture, forestry & fishing

Mining

Manufacturing

Electricity, gas, water & waste services

Construction

Wholesale trade

Retail trade

Accommodation & food services

Transport, postal & warehousing

Information media & telecommunications

Financial & insurance services

Rental, hiring & real estate services

Professional, scientific & technical services

Administrative & support services

Public administration & safety

Education & training

Health care & social assistance

Arts & recreation services

Other services (please specify)

Student

Retired

What is your current employment status?

Unemployed

Self-employed

Casual employment

Part-time employment

Full-time employment

Appendix 4.3.

Template for Debriefing Page for Study One and Two

Thank you for submitting your data!

By completing the survey you have the choice of entering into a prize draw where you could win one of three (Study One)/six (Study Two) \$50 Amazon vouchers. Just enter your email address into the box provided and click the 'enter draw' button!

Enter email address here: (box provided)

The prize draw will be conducted in October 2011 (Study One)/early August 2012 (Study Two) and the winner will be notified via the email they provided.

Appendix 5.1

Participant Information Sheet – Study Two

My name is Sarah Burns and I am a Ph.D. Psychology student at Curtin University. I am conducting research into personality traits and their association with how individuals manage their emotions. If you are over the age of 18, I would like to invite you to partake in my research, which will involve completing an online survey. The questions are simple and should only take approximately 15 to 20 minutes of your time. The questions will ask about certain aspects of your personality, as well as how good you feel you are at handling emotions. **I will assume that you consent to your data being used in this research when you click the ‘submit’ button at the end of the survey.** Participation is voluntary, and you are welcome to withdraw at any time prior to submitting your completed survey. Only the group results will be reported, and may be used for academic publications and conference presentations, as well as for my thesis.

You will have the option of entering your email address at the end of the survey to have a chance to win one of six \$50 Amazon.com vouchers. To protect your anonymity email addresses and answers to the surveys will be stored in separate locations so there will be no way to link your email address to the survey data that you provide.

A link to the survey can be found at the Curtin University School of Psychology home page:

(link will be inserted here)

Any further questions can be answered by me or my supervisors, Dr. Lynne Roberts and Dr. Sarah Egan.

Sarah Burns: sarah.burns@curtin.edu.au

Dr. Lynne Roberts (Supervisor): Lynne.Roberts@curtin.edu.au ph: 9266 7183

Dr. Sarah Egan (Co-Supervisor): S.Egan@exchange.curtin.edu.au ph: 9266 2367

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number HR 114/2010). The Committee is comprised of members of the public, academics, lawyers, doctors and pastoral carers. Its main role is to protect participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University, GPO Box U1987, Perth 6845 or by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

Appendix 5.2.

Measures for Study Two Questionnaire

List of scales to be used online for the 2nd phase of the study (151 items in total, including demographic questions). Note that there are revised versions of the LSRP and EMS, with italicised items being the new included items.

Items in the Revised Levenson's Primary and Secondary Psychopathy Scales (LSRP; Levenson et al., 1995).

- Items in the LSRP are measured on a 4-point Likert scale:

Strongly disagree – disagree – agree – strongly agree

Primary Psychopathy subscale

17. Success is based on survival of the fittest; I am not concerned about the losers.
18. For me, what's right is whatever I can get away with.
19. In today's world, I feel justified in doing anything I can get away with to succeed.
20. My main purpose in life is getting as many goodies as I can.
21. Making a lot of money is my most important goal.
22. I let others worry about higher values; my main concern is with the bottom line.
23. People who are stupid enough to get ripped off usually deserve it.
24. Looking out for myself is my top priority.
25. I tell other people what they want to hear so that they will do what I want them to do.
26. I would be upset if my success came at someone else's expense.*
27. I often admire a really clever scam.
28. I make a point of trying not to hurt others in pursuit of my goals.*
29. I enjoy manipulating other people's feelings.
30. I feel bad if my words or actions cause someone else to feel emotional pain.*

31. Even if I were trying very hard to sell something, I wouldn't lie about it.*

32. Cheating is not justified because it is unfair to others.*

Secondary Psychopathy subscale

22. I find myself in the same kinds of trouble, time after time.

23. I am often bored.

24. I find that I am able to pursue one goal for a long time.*

25. I don't plan anything very far in advance.

26. I quickly lose interest in tasks I start.

27. Most of my problems are due to the fact that other people just don't understand me.

28. Before I do anything, I carefully consider the possible consequences.*

29. I have been in a lot of shouting matches with other people.

30. When I get frustrated, I often "let off steam" by blowing my top.

31. Love is overrated.

32. At times, I feel guilty about my behaviour toward others

33. If I fail at something, I tend to feel anger and disgust towards myself

34. I often act without thinking when I am upset

35. I have lost a friend because of the irresponsible things I've done

*36. I think I am worthy of praise from others**

37. I have a tendency to be mistrusting of others

38. I am often suspicious of other peoples motives

39. I wish I were more assertive

Items in the Revised Emotional Manipulation Scale (EMS; Austin et al., 2007)

Emotion Manipulation subscale

11. I know how to embarrass someone to stop them behaving in a particular way.
12. I know how to make another person feel uneasy.
13. I know how to play two people off against each other.
14. I know how to make someone feel ashamed about something that they have done in order to stop them from doing it again.
15. I know how to 'wind up' my close family and friends.
16. I can use my emotional skills to make others feel guilty.
17. I can make someone feel anxious so that they will act in a particular way.
18. I can pay someone compliments to get in their 'good books'.
19. I am good at reassuring people so that they're more likely to go along with what I say.
20. I sometimes pretend to be angrier than I really am about someone's behaviour in order to induce them to behave differently in future.

Poor Emotional Skills subscale

20. I am not very good at motivating people.
21. I feel that I lack emotional skills.
22. I'm not very good at changing someone's mood, even if doing so would make them more likely to behave in a way that I want them to.
23. I am not very good at giving positive encouragement to others.
24. *When another person tells me about an event in their lives, I almost feel as though I have experienced this event myself**
25. *I think I can adequately communicate the way I am feeling to other people without speaking**
26. *I can recognise when something I've said or done has upset someone**
27. *I notice when other people are happy**

28. *Sometimes I find it hard to 'keep it together' emotionally*

29. *When I experience a positive emotion, I know how to make it last**

30. *Sometimes I have feelings which I don't know how to describe*

31. *I am aware of the non-verbal messages I send to others**

32. *I know why my emotions change**

Emotional Concealment subscale

5. When someone has made me upset or angry, I tend to downplay my feelings.
6. When someone has made me upset or angry, I often conceal my feelings.
7. I often conceal feelings of anger or distress from others.
8. I don't believe in telling others about my problems – I keep them to myself.

Items in the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003).

- Each of the ERQ items will be measured on a 7-point Likert scale:

Strongly agree – agree – somewhat agree – undecided – somewhat disagree – disagree – strongly disagree.

Reappraisal subscale

1. I control my emotions by changing the way I think about the situation I'm in.
2. When I want to feel less *negative* emotion, I change the way I'm thinking about the situation.
3. When I want to feel less *positive* emotion, I change the way I'm thinking about the situation.
4. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.
5. When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.

6. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.

Suppression subscale

1. I control my emotions by not expressing them.
2. When I am feeling negative emotions, I make sure not to express them.
3. I keep emotions to myself.
4. When I am feeling positive emotions, I am careful not to express them.

Items in the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004).

- Each of the DERS items will be measured on a 5-point Likert scale:

Almost never – rarely – sometimes – often – almost always

'Non-acceptance of emotions' subscale

1. When I'm upset, I feel guilty for feeling that way.
2. When I'm upset, I feel ashamed with myself for feeling that way.
3. When I'm upset, I become embarrassed for feeling that way.
4. When I'm upset, I become angry with myself for feeling that way.
5. When I'm upset, I become irritated with myself for feeling that way.
6. When I'm upset, I feel like I am weak.

'Difficulties in engaging in goal-directed behaviour when distressed' subscale

1. When I'm upset, I have difficulty concentrating
2. When I'm upset, I have difficulty focussing on other things
3. When I'm upset, I have difficulty getting work done
4. When I'm upset, I have difficulty thinking about anyone else

5. When I'm upset, I can still get things done *

'Impulse control difficulties' subscale

1. When I'm upset, I lose control over my behaviours
2. When I'm upset, I have difficulty controlling my behaviours
3. When I'm upset, I become out of control
4. When I'm upset, I feel out of control
5. I experience my emotions as overwhelming and out of control
6. When I'm upset, I feel like I can remain in control of my behaviours *

'Lack of awareness of emotions' subscale

1. I am attentive to my feelings *
2. I pay attention to how I feel *
3. When I'm upset, I acknowledge my emotions *
4. When I'm upset, I believe that my feelings are valid and important *
5. I care about what I am feeling *
6. When I'm upset, I take time to figure out what I'm really feeling *

'Limited access to emotion regulation strategies' subscale

1. When I'm upset, I believe that I'll end up feeling very depressed
2. When I'm upset, I believe that I will remain that way for a long time
3. When I'm upset, I believe that wallowing in it is all I can do
4. When I'm upset, it takes me a long time to feel better
5. When I'm upset, I believe that there is nothing I can do to make myself feel better
6. When I'm upset, I know that I can find a way to eventually feel better *
7. When I'm upset, my emotions feel overwhelming

8. When I'm upset, I start to feel very bad about myself

'Lack of emotion clarity' subscale

1. I have difficulty making sense out of my feelings
2. I have no idea how I'm feeling
3. I am confused about how I feel
4. I know exactly how I'm feeling *
5. I am clear about my feelings *

Items for the State-Trait Anxiety Inventory Trait subscale (STAI-T; Spielberger et al., 1970)

- Each STAI-T item is measured with a 4-point Likert scale:

almost never – sometimes – often – almost always

1. I am happy*
2. I am content*
3. I feel satisfied with myself*
4. I feel pleasant*
5. I feel secure*
6. I lack self-confidence
7. I feel inadequate
8. I feel like a failure
9. I am a steady person*
10. I wish I could be happy as others seem to be
11. I make decisions easily*
12. I am 'calm, cool and collected'*

13. I feel rested*
14. Some unimportant thought runs through my mind and bothers me
15. I worry too much over something that really doesn't matter
16. I get in a state of tension or turmoil as I think over my recent concerns and interests
17. I have disturbing thoughts
18. I take disappointments so keenly that I can't put them out of my mind
19. I feel that difficulties are piling up so that I can't overcome them
20. I feel nervous and restless

Items for the Marlowe-Crowne Social Desirability Scale – Short Form C (SDS Form C; Reynolds, 1982)

- Items for the SDS Form C are measured with a true/false response format.
1. It is sometimes hard for me to go on with my work if I am not encouraged.
 2. I sometimes feel resentful when I don't get my way.
 3. On a few occasions, I have given up doing something because I thought too little of my ability.
 4. There have been times when I felt like rebelling against people in authority even though I knew they were right.
 5. No matter who I'm talking to, I'm always a good listener.
 6. There have been occasions when I took advantage of someone.
 7. I'm always willing to admit it when I make a mistake.
 8. I sometimes try to get even rather than forgive and forget.
 9. I am always courteous, even to people who are disagreeable.
 10. I have never been irked when people expressed ideas very different from my own.

11. There have been times when I was quite jealous of the good fortune of others.

12. I am sometimes irritated by people who ask favours of me.

13. I have never deliberately said something that hurt someone's feelings.

Demographic questions:

What is your age in years? (enter in text box)

Gender: M/F

What is your country of origin? (enter in text box)

English your first language? Yes/no

What is your highest level of education completed?

Primary/Elementary School

Some High School

High School graduate

Some undergraduate study

Completed undergraduate study

Some postgraduate study

Completed postgraduate study

Which of the following listed below most accurately describes your area of occupation?

Agriculture, forestry & fishing

Mining

Manufacturing

Electricity, gas, water & waste services

Construction

Wholesale trade

Retail trade

Accommodation & food services

Transport, postal & warehousing

Information media & telecommunications

Financial & insurance services

Rental, hiring & real estate services

Professional, scientific & technical services

Administrative & support services

Public administration & safety

Education & training

Health care & social assistance

Arts & recreation services

Other services (please specify)

Student

Retired

What is your current employment status?

Unemployed

Self-employed

Casual employment

Part-time employment

Full-time employment

Appendix 5.3

Composition of Parcels and their EFA Factor Loadings for SEM Analyses

Parcel	Items	EFA Factor Loading
Primary Psychopathy_1	<i>3. In today's world, I feel justified in doing anything I can get away with to succeed.</i>	.730
	<i>5. Making a lot of money is my most important goal.</i>	.570
	<i>12. I make a point of trying not to hurt others in pursuit of my goals.</i>	.367
	<i>13. I enjoy manipulating other people's feelings.</i>	.570
	<i>16. Cheating is not justified because it is unfair to others.</i>	.461
Primary Psychopathy_2	<i>1. Success is based on survival of the fittest; I am not concerned about the losers.</i>	.564
	<i>4. My main purpose in life is getting as many goodies as I can.</i>	.653
	<i>6. I let others worry about higher values; my main concern is with the bottom line.</i>	.572
	<i>8. Looking out for myself is my top priority.</i>	.446
	<i>14. I feel bad if my words or actions cause someone else to feel emotional pain.</i>	.402
Primary Psychopathy_3	<i>2. For me, what's right is whatever I can get away with.</i>	.644
	<i>7. People who are stupid enough to get ripped off usually deserve it.</i>	.504
	<i>9. I tell other people what they want to hear so that they will do what I want them to do.</i>	.591

	<i>10. I would be upset if my success came at someone else's expense.</i>	.352
	<i>11. I often admire a really clever scam.</i>	.420
	<i>15. Even if I were trying very hard to sell something, I wouldn't lie about it.</i>	.430
Secondary Psychopathy_1	<i>4. I don't plan anything very far in advance.</i>	.348
	<i>5. I quickly lose interest in tasks I start.</i>	.614
	<i>9. When I get frustrated, I often "let off steam" by blowing my top.</i>	.500
	<i>11. At times, I feel guilty about my behaviour toward others</i>	.375
	<i>14. I have lost a friend because of the irresponsible things I've done</i>	.503
	<i>18. I wish I were more assertive</i>	.200
Secondary Psychopathy_2	<i>2. I am often bored.</i>	.575
	<i>7. Before I do anything, I carefully consider the possible consequences.</i>	.336
	<i>8. I have been in a lot of shouting matches with other people.</i>	.478
	<i>10. Love is overrated.</i>	.307
	<i>12. If I fail at something, I tend to feel anger and disgust towards myself</i>	.375
	<i>13. I often act without thinking when I am upset</i>	.535
Secondary Psychopathy_3	<i>1. I find myself in the same kinds of trouble, time after time.</i>	.568
	<i>3. I find that I am able to pursue one goal for a long time.</i>	.319

	<i>6. Most of my problems are due to the fact that other people just don't understand me.</i>	.551
	<i>15. I think I am worthy of praise from others</i>	.331
	<i>16. I have a tendency to be mistrusting of others</i>	.381
	<i>17. I am often suspicious of other peoples motives</i>	.427
Trait Anxiety_1	<i>3. I feel satisfied with myself</i>	.793
	<i>10. I wish I could be happy as others seem to be</i>	.705
	<i>12. I am 'calm, cool and collected'</i>	.518
	<i>13. I feel rested</i>	.530
	<i>16. I get in a state of tension or turmoil as I think over my recent concerns and interests</i>	.632
	<i>18. I take disappointments so keenly that I can't put them out of my mind</i>	.616
	<i>19. I feel that difficulties are piling up so that I can't overcome them</i>	.709
Trait Anxiety_2	<i>1. I am happy</i>	.702
	<i>4. I feel pleasant</i>	.673
	<i>5. I feel secure</i>	.726
	<i>7. I feel inadequate</i>	.753
	<i>9. I am a steady person</i>	.665
	<i>17. I have disturbing thoughts</i>	.603

Trait Anxiety_3	2. <i>I am content</i>	.691
	6. <i>I lack self-confidence</i>	.685
	8. <i>I feel like a failure</i>	.730
	11. <i>I make decisions easily</i>	.386
	14. <i>Some unimportant thought runs through my mind and bothers me</i>	.583
	15. <i>I worry too much over something that really doesn't matter</i>	.584
	20. <i>I feel nervous and restless</i>	.737
Reappraisal_1	2. <i>When I want to feel less negative emotion, I change the way I'm thinking about the situation.</i>	.854
	3. <i>When I want to feel less positive emotion, I change the way I'm thinking about the situation.</i>	.344
Reappraisal_2	1. <i>I control my emotions by changing the way I think about the situation I'm in.</i>	.776
	4. <i>When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.</i>	.483
Reappraisal_3	5. <i>When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.</i>	.554
	6. <i>When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.</i>	

		.578
Suppression_1	<i>1. I control my emotions by not expressing them.</i>	.874
Suppression_2	<i>2. When I am feeling negative emotions, I make sure not to express them.</i>	.815
Suppression_3	<i>3. I keep emotions to myself.</i>	.906
Suppression_4	<i>4. When I am feeling positive emotions, I am careful not to express them.</i>	.478
General Dysregulation_1	<i>1. When I'm upset, I feel guilty for feeling that way.</i>	.667
	<i>2. When I'm upset, I feel ashamed with myself for feeling that way.</i>	.675
	<i>7. When I'm upset, I have difficulty concentrating</i>	.607
	<i>11. When I'm upset, I can still get things done</i>	.440
	<i>15. When I'm upset, I feel out of control</i>	.648
	<i>17. When I'm upset, I feel like I can remain in control of my behaviours</i>	.602
	<i>19. I pay attention to how I feel</i>	.358
	<i>21. When I'm upset, I believe that my feelings are valid and important</i>	.443
	<i>24. When I'm upset, I believe that I'll end up feeling very depressed</i>	.692
	<i>28. When I'm upset, I believe that there is nothing I can do to make myself feel better</i>	.703
	<i>31. When I'm upset, I start to feel very bad about myself</i>	.785
	<i>35. I know exactly how I'm feeling</i>	.644

General Dysregulation_2	4. <i>When I'm upset, I become angry with myself for feeling that way.</i>	.690
	6. <i>When I'm upset, I feel like I am weak.</i>	.661
	9. <i>When I'm upset, I have difficulty getting work done</i>	.605
	10. <i>When I'm upset, I have difficulty thinking about anyone else</i>	.503
	13. <i>When I'm upset, I have difficulty controlling my behaviours</i>	.618
	14. <i>When I'm upset, I become out of control</i>	.637
	18. <i>I am attentive to my feelings</i>	.398
	20. <i>When I'm upset, I acknowledge my emotions</i>	.362
	27. <i>When I'm upset, it takes me a long time to feel better</i>	.679
	30. <i>When I'm upset, my emotions feel overwhelming</i>	.740
	32. <i>I have difficulty making sense out of my feelings</i>	.712
	33. <i>I have no idea how I'm feeling</i>	.646
General Dysregulation_3	3. <i>When I'm upset, I become embarrassed for feeling that way.</i>	.627
	5. <i>When I'm upset, I become irritated with myself for feeling that way.</i>	.685
	8. <i>When I'm upset, I have difficulty focussing on other things</i>	.589
	12. <i>When I'm upset, I lose control over my behaviours</i>	.622
	16. <i>I experience my emotions as overwhelming and out of control</i>	.727

	22. <i>I care about what I am feeling</i>	.370
	23. <i>When I'm upset, I take time to figure out what I'm really feeling</i>	.380
	25. <i>When I'm upset, I believe that I will remain that way for a long time</i>	.729
	26. <i>When I'm upset, I believe that wallowing in it is all I can do</i>	.643
	29. <i>When I'm upset, I know that I can find a way to eventually feel better</i>	.598
	34. <i>I am confused about how I feel</i>	.685
	36. <i>I am clear about my feelings</i>	.652
Poor Emotional Skills_1	5. <i>When another person tells me about an event in their lives, I almost feel as though I have experienced this event myself</i>	.206
	6. <i>I think I can adequately communicate the way I am feeling to other people without speaking</i>	.501
	7. <i>I can recognise when something I've said or done has upset someone</i>	.519
	10. <i>When I experience a positive emotion, I know how to make it last</i>	.614
Poor Emotional Skills_2	2. <i>I feel that I lack emotional skills.</i>	.715
	9. <i>Sometimes I find it hard to 'keep it together' emotionally</i>	.327
	11. <i>Sometimes I have feelings which I don't know how to describe</i>	.303
	12. <i>I am aware of the non-verbal messages I send to others</i>	.532

	<i>13. I know why my emotions change</i>	.486
Poor Emotional Skills_3	<i>1. I am not very good at motivating people.</i>	.470
	<i>3. I'm not very good at changing someone's mood, even if doing so would make them more likely to behave in a way that I want them to.</i>	.556
	<i>4. I am not very good at giving positive encouragement to others.</i>	.537
	<i>8. I notice when other people are happy</i>	.481
Emotion Concealment_1	<i>1. When someone has made me upset or angry, I tend to downplay my feelings.</i>	.687
Emotion Concealment_2	<i>2. When someone has made me upset or angry, I often conceal my feelings.</i>	.887
Emotion Concealment_3	<i>3. I often conceal feelings of anger or distress from others.</i>	.862
Emotion Concealment_4	<i>4. I don't believe in telling others about my problems – I keep them to myself.</i>	.553
Emotion Manipulation_1	<i>1. I know how to embarrass someone to stop them behaving in a particular way.</i>	.696
	<i>5. I know how to 'wind up' my close family and friends.</i>	.655
	<i>7. I can make someone feel anxious so that they will act in a particular way.</i>	.756
Emotion Manipulation_2	<i>3. I know how to play two people off against each other.</i>	.739
	<i>6. I can use my emotional skills to make others feel guilty.</i>	.755
	<i>9. I am good at reassuring people so that they're more likely to go along with what I say.</i>	.644

Emotion Manipulation_3	2. <i>I know how to make another person feel uneasy.</i>	.748
	4. <i>I know how to make someone feel ashamed about something that they have done in order to stop them from doing it again.</i>	.748
	8. <i>I can pay someone compliments to get in their 'good books'.</i>	.574
	10. <i>I sometimes pretend to be angrier than I really am about someone's behaviour in order to induce them to behave differently in future.</i>	.484

Appendix 5.4

Correlation matrix for control variables and parcels representing latent criterion variables

	PP_1	PP_2	PP_3	SP_1	SP_2	SP_3	Age	Gender ^a	Total_SDS
PP_1	1								
PP_2	.640**	1							
PP_3	.690**	.607**	1						
SP_1	.349**	.289**	.323**	1					
SP_2	.416**	.351**	.358**	.617**	1				
SP_3	.369**	.351**	.355**	.644**	.605**	1			
Age	-.137*	-.128*	-.128*	-.185**	-.191**	-.205**	1		
Gender ^a	-.175**	-.128*	-.194**	-.033	.001	-.078	-.112*	1	
Total_SDS	-.240**	-.148*	-.190**	-.316**	-.343**	-.388**	.245**	-.050	1

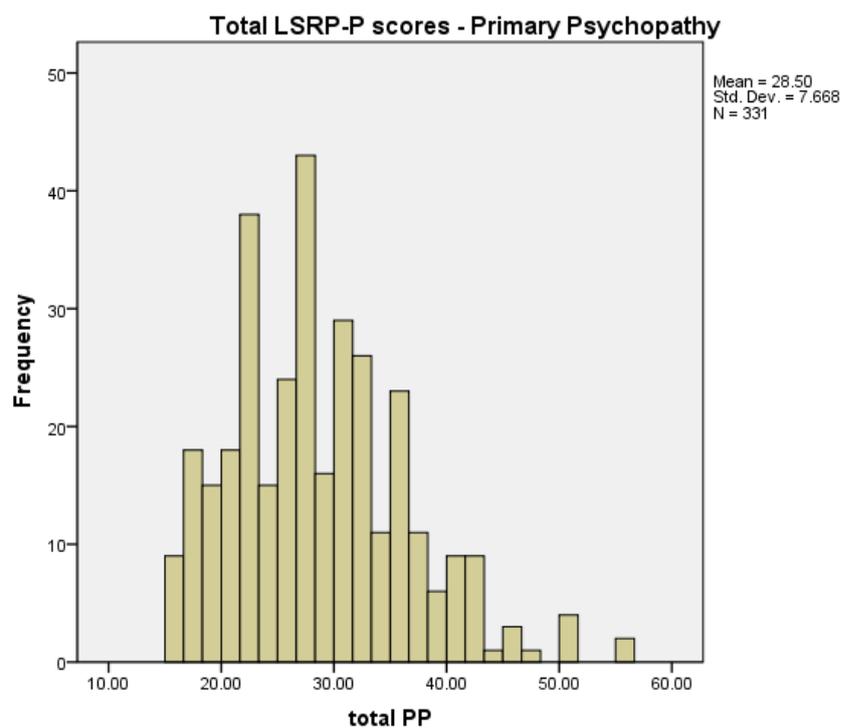
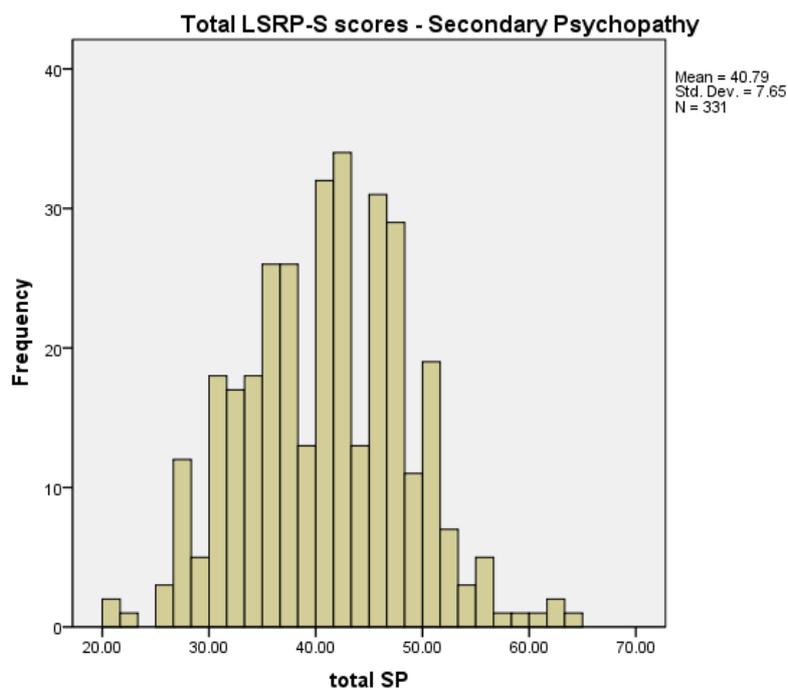
* $p < .05$, two-tailed. ** $p < .001$, two-tailed.

Note: ^a denotes Spearman's Rho correlations for categorical variables

Appendix 6.1

Histograms illustrating distribution of LSRP scores in Study One and Two

Study One:



Study Two:

