An exploration of the construct of psychopathy, its measurement and neuropsychological correlates

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This thesis is submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

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List of Abbreviations

EF	Executive Functions
F1	Factor One (See Figure 1.2)
F2	Factor Two (See Figure 1.2)
PCL-R	Psychopathy Checklist-Revised
ToM	Theory of Mind

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Declaration

This thesis has been written for submission as a partial fulfilment for the requirements for Coventry University and the University of Warwick Clinical Psychology Doctorate Programme. This thesis is the candidate's own work, carried out under the supervision of Dr Ian Hume and Dr Becky Shaw. Authorship of the published papers will be shared with the supervisors. This thesis has not been submitted for a degree at any other institution.

The thesis chapters will be prepared for submission according to the criteria of the following journals:

Chapter 1: Neuropsychological and Neurocognitive Correlates of Psychopathy: Implications for Clinical Psychology. *Journal of Neuropsychology* (see Appendix A for author's instructions).

Chapter 2: What is Psychopathy and how is it measured? An exploration of correlations in performance on measures of psychopathy and empathy. *Personality and Individual Differences* (see Appendix B for author's instructions)

Summary

This thesis consists of three papers, a literature review, an empirical paper and a reflective paper. The literature review explores the neuropsychological and neurocognitive correlates of psychopathy with a view to identify and appraise review papers together. Nine articles were identified and comprised studies of child/adolescent and adult, clinical and nonclinical samples. The review identifies evidence of different patterns of performance on inhibition, working memory, intelligence, emotion recognition and affective theory of mind (ToM). Results are considered in terms of neural correlates, clinical presentations and intervention options. Methodological limitations are discussed, both in terms of the included studies and of the literature review itself. Implications for policy and practice are outlines and directions for further research are highlighted.

The empirical paper investigates the construct of psychopathy and its measurement and relationship with the measures of empathy. Data from a nonclinical sample was collected using an online platform. Using a correlational design, relationships between psychopathy and empathy were investigated. Further analyses examined the different psychopathy subscales, differences in performance according to the emotional valence of the task stimuli and tentative explorations into gender differences. The results are discussed in relation to existing evidence and limitations of the research are highlighted.

Finally, the reflective paper comprised a discussion of conducting clinical research as part of clinical training. This includes critique of the term psychopathy and challenges in professional identity.

Total Word Count:19,300 (excluding tables, figures, references and appendices)

Chapter One; Literature Review

Neuropsychological and Neurocognitive Correlates of Psychopathy: Implications for Clinical Psychology

Written in preparation for submission to *Journal of Neuropsychology*

(See Appendix A for author guidelines)

Overall Chapter Word Count (Excluding tables, figures and references): 9164

1.0 Abstract

Aim

Psychopathy has been associated with specific patterns of neuropsychological performance (Anderson&Kiehl, 2014). Although a number of reviews exist, different aspects of neuropsychological functionng have not been considered together. The aim of this review is to identify and appraise evidence from published systematic and meta-analytic reviews on the neuropsychological and neurocognitive correlates of psychopathy. Further, to consider the implications of such research for clinical psychologists and other clinicians working with this population.

Method

Using psycINFO, Scopus, Medline and EMBASE, nine reviews were identified that met the inclusion and quality assessment criteria, all of which investigated a range of neuropsychological and neurocognitive correlates of psychopathy.

Findings

Results yielded two main themes; different associations of neuropsychological correlates according to the factor structure of psychopathy and the involvement of emotion or reward in neuropsychological processes associated with psychopathy. These were discussed in terms of the different patterns of performance on inhibition, working memory, intelligence, emotion recognition and affective theory of mind (ToM).

Conclusion

It is concluded that the different components of psychopathy are associated with different patterns of neuropsychological processing. Further there is impairment evident on those processes that involve emotion or reward. These different patterns of functioning are associated with different structural and functional brain abnormalities and have different behavioural expressions that clinicians will face. Implications for subtyping of psychopathy, risk management and intervention are also highlighted.

1.1 Introduction

Psychopathy is a developmental disorder, characterised by distinctive patterns in both (i) personality and (ii) behaviour. The psychopathic *personality* is marked by affective and interpersonal deficits including pathological lying, superficial charm, grandiose sense of self, lack of emotional responses, lack of remorse and callousness (Anderson & Kiehl, 2014; Thompson, Ramos, & Willett, 2014). The *behavioural* profile of psychopathy is defined by lifestyle and antisocial acts representative of a disregard for others including impulsivity, unstable or parasitic lifestyle and antisocial behaviour (Bayliss, Miller, & Henderson, 2010; Thompson, Ramos, & Willett, 2014; Wahlund & Kristiansson, 2009). Psychopathy is considered to be a rare personality disorder, affecting less than 1% of the household population (Coid, Yang, Ullrich, Roberts, & Hare, 2009).

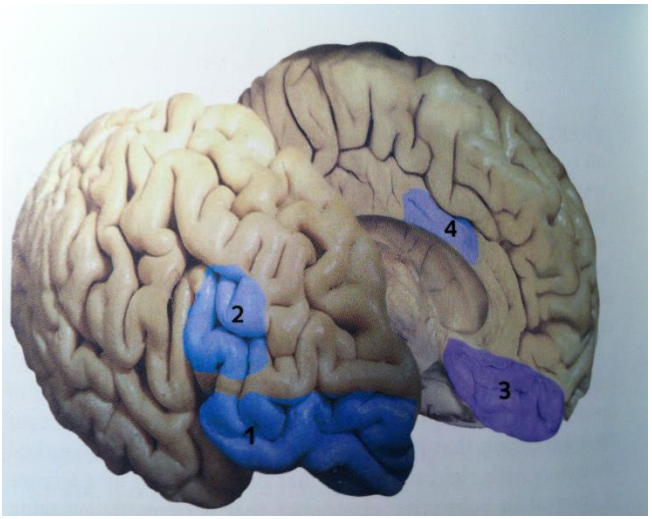
Psychopathy has been linked to increased frequency, variety and severity of criminal activity (Dhingra & Boduszek, 2013; Kotler & McMahon, 2005). Psychopaths are prevalent in forensic settings, constituting a large proportion of those in the prison system (Kiehl & Hoffman, 2011). Psychopathy has been associated with high economic costs and high rates of criminal recidivism (Kiehl & Hoffman, 2011). Psychopathy is a serious developmental disorder with increased risk for aggression and high costs to both psychopathic individuals and to society (Saltaris, 2002).

Despite these risks, intervention efficacy for psychopathy in adulthood is notoriously poor (Harris & Rice, 2006; Thornton & Blud, 2007). This has been

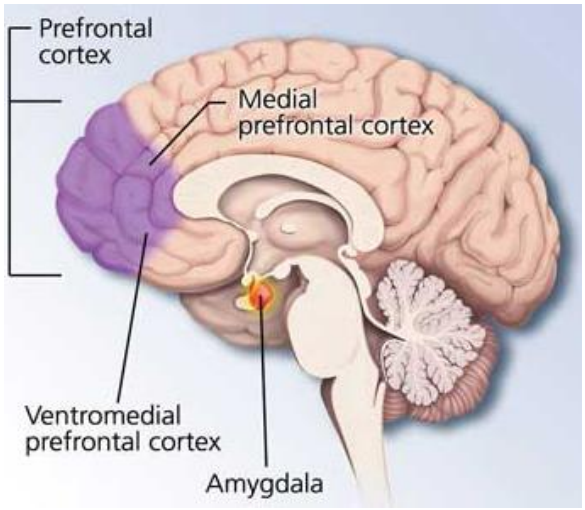
linked to a lack of understanding of the underlying brain mechanisms involved with symptom expression in psychopathy (Anderson & Kiehl, 2014).

1.1.2 Structure and Function of the Brain in Psychopathy

Neuroimaging research has increasingly sought to identify the structural and functional brain abnormalities associated with psychopathy (Koenigs, Baskin-Sommers, Zeier, & Newman, 2011). Although both structural studies (focusing on brain morphology) and functional studies (assessing brain activity) have associated abnormal activity in widespread areas of the brain (Koenigs et al., 2011), convergence is apparent regarding the role of the amygdala and the prefrontal cortex in psychopathy (Anderson & Kiehl, 2012; Thompson et al., 2014; Yang & Raine, 2009). See Figure 1.1 for an overview.



(a)



(b)

Brain Region	Typical Function	Associations with Psychopathy
Prefrontal Cortex	The prefrontal cortex is a region of the frontal lobes which is highly connected to almost all other parts of the brain and consequently has a central role in the control of many aspects of behaviour (DeBrito & Hodgins, 2009;	The prefrontal cortex has been highly implicated in psychopathic behaviour.

	Miller & Cohen, 2001). It consists of several key regions which have functional specificity (Yang & Raine, 2009)	
1. Orbitofrontal Cortex (OFC)	The OFC is closely linked to limbic structures, including the amygdala: 1. Sensory Integration 2. The modulation of autonomic reactions 3. Participation in learning, prediction, and decision making for emotional and reward related behaviours. (Parsons, Young, & Kringelbach, 2013)	Structural and Functional impairments in the right OFC (Yang & Raine, 2009). Reductions in orbitofrontal gray matter (Anderson & Kiehl, 2014).
2. Dorsolateral Prefrontal Cortex (DLPFC)	The DLPFC is involved in: 1. Regulation of intellectual function and action (DeBrito & Hodgins, 2009). 2. Adaptation to new situations by juggling information and redirecting attention (Gerhardt, 2015) 3. Integration of sensory mnemonic information and the regulation of intellectual function and action (DeBrito & Hodgins, 2009).	Structural and Functional impairments in the left dlPFC (Yang & Raine, 2009).
3. Ventromedial Prefrontal Cortex (vmPFC)	The key role of the vmPFC is the integration of emotional information from the amygdala during decision making (Shirtcliff et al., 2009). However it has also been implicated in aspects of self-processing, such as self-reflection and rumination (Beer, John, Scabini, & Knight, 2006; Northoff, et al., 2006)	Structural and functional abnormalities (Koenigs et al., 2011), including reduced prefrontal cortex gray matter.

4. Anterior Cingulate Cortex (ACC)	The ACC is involved in both emotional and cognitive processing. Its connections to other brain regions contribute to its prominent role in behavioural control (DeBrito & Hodgins, 2009).	Structural and functional abnormalities (Koenigs, 2011), lateralised to the right ACC (Yang & Raine, 2009).
Amygdala	The amygdala is part of the limbic system critical for responses to emotion. It has been implicated in the mediation of arousal and vigilance, directing motivation toward relevant stimuli, and broadly responding to ambiguity (Shirtcliff, 2009).	Associated with reduced volume and reduced connectivity to regulatory brain areas (Koenig et al., 2011; Shitcliff et al., 2009; Thompson et al., 2014).

Figure 1.1: Diagrammatic representation of the amygdala and prefrontal cortex their functions and associations with psychopathy

Note. (a) the four regions of the prefrontal cortex. Labels and corresponding information are provided in the subsequent table. (b) Sagittal view of the brain, demonstrating the location of the prefrontal lobes and the amygdala. Adapted from Carter (2010).

1.1. 3 Neuropsychological and Neurocognitive Approach

Structural and functional brain abnormalities associated with psychopathy have severe consequences on cognition and behaviour (Anderson & Kiehl, 2014). As the study of brain-behaviour relationships, neuropsychology is a useful way of conceptualising neuropsychiatric presentations (Noggle & Dean, 2013; Pennington, 2009).

From a neuropsychological perspective[1], psychopathy has been associated with deficits in specific domains including attention, language, Executive Functioning (EFg) and social cognition (Gao, Glenn, Schug, Yang, & Raine, 2009; de Almeida Brites, 2016; Blair & Mitchell, 2009; DeBrito & Hodgins, 2009; Thoma, Friedmann, & Suchan, 2013). These impairments in neuropsychological function have been considered risk factors for aggressive and antisocial behaviour and an inability to acquire key social implements such as conscience, empathy and moral reasoning (Anderson & Kiehl, 2014; Frick & White, 2008) Indeed, it has been suggested that neuropsychological impairments associated with psychopathy can be understood as a mechanism mediating the link between genetic and psychosocial risks and externalising behaviour problems (DeYoung, et al., 2006; Friedman, et al., 2008; Langley, et al., 2010; Ogilvie, Stewart, Chan, & Shum, 2011; Raine & Yang, 2006; Yang, Glenn, & Raine, 2008).

[1] The distinction between neuropsychology and neurocognition is not always clear in the literature. Traditionally neuropsychology typically concerns the study of cognitive domains such as language, memory and attention, while neurocognition has tended to refer to specific neuropsychological information processing patterns (Herpers et al., 2014; Pennington, 2009). However, contemporary neuropsychology is defined by the understanding of psychological processes in terms of brain function, thus both traditional neuropsychological and neurocognitive processes will be covered in the present review.

An understanding of the neurocognitive basis of psychopathy is vital to developing, and increasing participation in, effective treatment strategies (DeBrito & Hodgkins, 2009; Blair & Mitchell, 2009; Dawel, O'Kearney, McKone, & Palermo, 2012). The available evidence suggests that identification of subtypes of individuals, characterised by their performance on neuropsychological tests, can lead to targeted intervention strategies (DeBrito & Hodgkins, 2009).

In summary, psychopathy is associated with brain abnormalities which impact on everyday behaviour. A neuropsychological approach, focusing on brain-behaviour links, is well placed for the study of psychopathy. The neuropsychological impairments associated with psychopathy have behavioural correlates and an understanding of these impairments may assist in planning targeted interventions. However, results regarding the neural correlates of psychopathy have been influenced by the presence of different subtypes of psychopathy and its measurement (Koenigs et al., 2011).

1.1.4 Subtypes

Across the literature, psychopathy has been further divided into subtypes. One such distinction is Karpman's (1946) psychodynamically influenced distinction between primary and secondary psychopathy. Primary psychopaths are considered as having an inheritable, biologically acquired affective deficit and are associated with greater representation of psychopathic *personality* features. Conversely, secondary psychopathy is associated with more environmentally acquired deficits and is characterised by greater representation of psychopathic

behavioural features (Coid, 1993; Skeem, Johansson, Andershed, Kerr, & Louden, 2007; Thompson et al., 2014).

Another distinction between subtypes of psychopathy has been made between successful and unsuccessful psychopathy (Gao & Raine, 2010). Psychopathy is associated with antisocial behaviour that often leads to convictions or at least some contact with the criminal justice system. Thus, successful psychopaths refer to individuals who manifest the core psychopathic traits of the affective/interpersonal domain but manage to stay out of the criminal justice system (Gao & Raine, 2010). Successful psychopathy is hypothesised to relate to the interpersonal aspects of the psychopathic personality traits while unsuccessful psychopathy has been associated more with psychopathic antisocial behaviour.

1.1.5 Factor structure models of psychopathy

Irrespective of the subtype, psychopathy is associated with *both* personality characteristics (emotional callousness, narcissism and interpersonal manipulation) and behavioural features (impulsivity and antisocial tendencies; (Feilhauer & Cima, 2013). This conceptualisation stems from the work of Cleckley (1941) and has served as the basis for the development of the Psychopathy Checklist Revised (PCL-R; Hare, 2003). The PCL-R is the most widely used clinical tool in the measurement of adult psychopathy and has been considered the 'gold standard' in psychopathy assessment (Muller, 2010).

The PCL-R has commonly been found to consist of a number of different factors (Coid, 1993). Two, three and four factor models have been proposed. While it is beyond the scope of this paper to discuss, in depth, the development of these models, it is important to provide a brief overview of the different factors of psychopathy and their interrelationships in order to understand the neuropsychological mechanisms that have been associated with them within this literature base. (Cooke, Michie, & Skeem, 2007 provide a more comprehensive review).

In very broad terms, Factor 1, proposed by Hare, et al., (1990) is conceptualised as Personality characteristics encompassing callous affect, narcissism and tendencies toward interpersonal manipulation. This factor was later subdivided into categories labelled arrogant and deceitful interpersonal style and deficient affective experience (Cooke & Michie, 2001)

Factor 2, also proposed by Hare et al, is conceptualised as the Behavioural characteristics such as impulsive lifestyle and antisocial tendencies. Cooke and Michie's (2001) factor 3 is more specifically conceptualised as 'Impulsive, irresponsible behavioural style' and excludes antisocial behaviour. Hare and Neumann's (2006) four factor model mirrors Cooke and Michie's (2001) model but do include antisocial behaviour, termed factor 4.

For the purposes of brevity and ease of reading, these will be referred to in the present review by the terms denoted in Figure 1.2. Each component of psychopathy has been associated with different brain mechanisms

and behavioural expressions, and it is likely that these have different aetiologies.

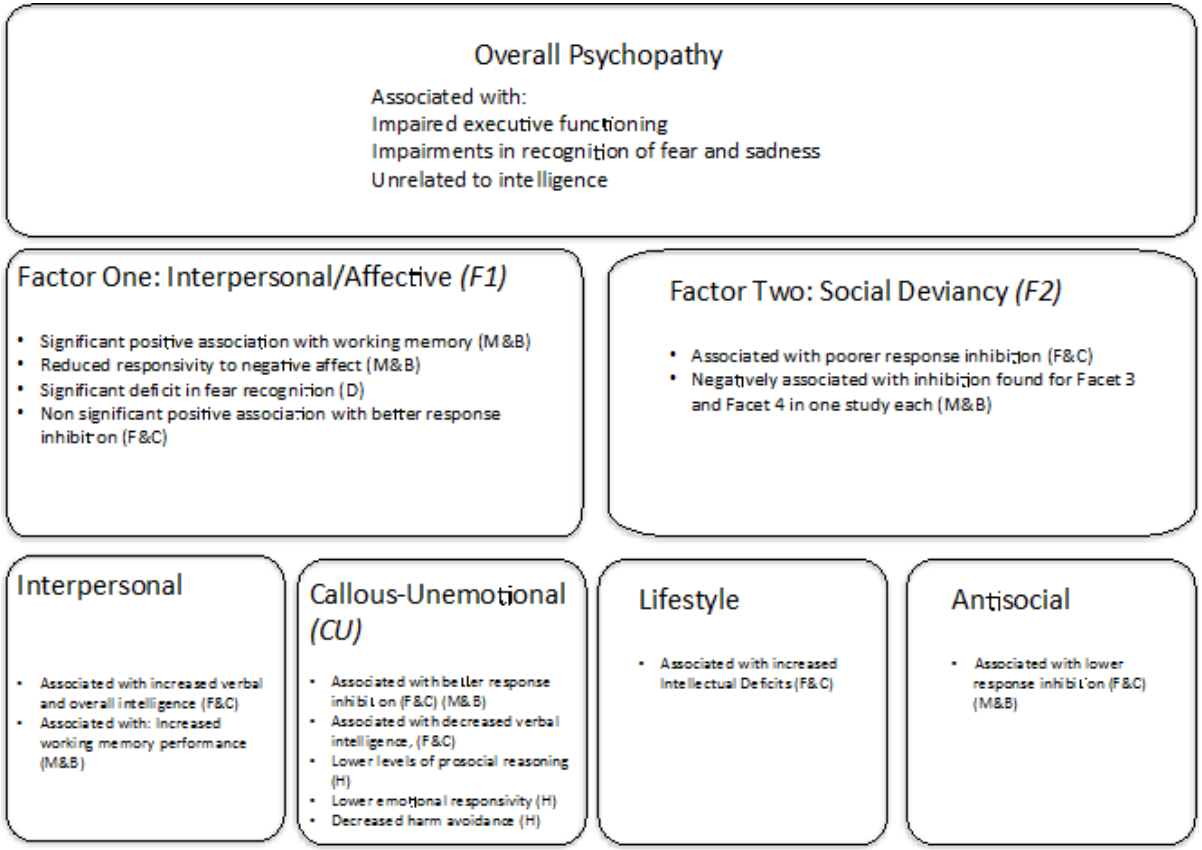


Figure 1.2: The different factor solutions of the Psychopathy Checklist Revised (PCL-R; Hare, 1991).

Note: This includes how these will be referred to in this paper. The two-factor solution will be referred to as F1 and F2. The two and three factor solutions will be referred to collectively as noted above due to their similarities. Any deviations will be highlighted in the text. The use of Callous-Unemotionality (CU) reflects the child/adolescent literature of the same subfactor and protects against confusion of the word affective, used to denote emotion later in the review.

1.1.6 Aims of Present Review

The importance of understanding neuropsychological functioning in psychopathy is evident, not only for psychopathy as a whole but also consideration of its different factors (Anderson & Kiehl, 2014; Feilhauer & Cima, 2013). Treatment outcome in this population is notoriously poor. This has been linked to lack of understanding of the underlying mechanisms involved. While a large number of individual studies and review papers exist on different aspects of neuropsychological functioning, this can be overwhelming for clinicians and policy makers turning to this literature for guidance. Amongst the reviews there remains inconsistency in conclusions and methodological limitations, creating interpretative difficulties.

The aim of the present review is to identify and appraise evidence from published systematic and meta-analytic reviews on the neuropsychological and neurocognitive correlates of psychopathy. The implications of such research for clinicians working with this population will also be considered. The purpose of identifying and appraising all published reviews, is to describe their quality, summarise and compare their conclusions and discuss the strength of these conclusions to provide a detailed and central point of reference for clinicians.

1.2 Method

1.2.1 Scope of the Review

Psychopathy has been associated with different neuropsychological and neurocognitive patterns (Anderson & Kiehl, 2014). A number of reviews exist which assimilate, appraise and summarise individual studies investigating these correlates. These reviews are likely to be of varying quality and scope, therefore a systematic review of reviews is a logical and appropriate next step to critically analyse these review papers and provide clinicians and policy makers with a robust central reference point.

A systematic overview of reviews is a research methodology that is becoming increasingly common to summarise and synthesise the current scientific knowledge in frequently researched areas (eg. Maniglio, 2009; Miyahara, 2013; Monasta, et al., 2010; Shephard & While, 2012). This methodology uses the most comprehensive review data available to confer the advantage of assessing the strength of the evidence and consistency of findings. (Shephard & While, 2012). The present review followed methodology provided by Smith, Devane, Begley and Clarke (2011) and Cochrane guidelines for overview of reviews (Becker & Oxman, 2008).

1.2.2 Literature Search

A systematic search of the literature for systematic reviews or meta-analyses that investigated neuropsychological or neurocognitive correlates among individuals with psychopathy or psychopathic traits was conducted between February and April 2016. The most relevant databases covered literature within psychology and medicine and included PsycINFO, Medline, EMBASE and Scopus.

Searches for online literature and relevant websites were carried out using Google Scholar. In addition, the reference lists of extracted articles were manually searched.

Table 1.1 presents an overview of the key search terms used relevant to the subject area of interest. The search strategy was designed to be as sensitive as possible whilst retaining acceptable specificity. Search terms used in all databases included 'Psychopathy', 'Psychopath', 'callous unemotional', 'neuro*', 'neuropsychol*', 'neurocog*', 'intelligence'. Given that the inclusion of a term for 'review', 'systematic review' or 'meta-analysis' may lead to unreliable identification of the target item, these were selected as a filter once the comprehensive key term search was completed.

Using these search terms, most included studies were generated by the first database. After searching all of the above databases, reference sections were scanned and no new papers were generated, hence individual neuropsychological constructs (eg. Executive functioning, working memory etc) were not searched as it was felt that the search had been comprehensive.

Table 1.1: *Systematic Review Search Terms*

Concept	**Variation**	**Location of Keyword**
Psychopathy	Psychopathy Psychopath Psychopathic Callous-Unemotional	Title and Abstract
Neuropsychology	Neuro* Neuropsychol*	Title and Abstract

	Neurocog*
	Intelligence

Note. Keywords were truncated (indicated with an *) to capture all variations of the term. The term 'psychopath*' was not used due to its correspondence with the word psychopathology which generated a vast number of irrelevant studies. Given that the inclusion of a term for 'review', 'systematic review' or 'meta-analysis' may lead to unreliable identification of the target item, these were selected as a filter once the comprehensive key term search was completed.

1.2.3 Inclusion/Exclusion Criteria

Article titles were initially screened and retained if they: (a) were written in English, (b) appeared in peer review journals, (c) were a systematic review or meta-analysis, (d) either focused on or reported neuropsychological or neurocognitive data, (e) the full text was accessible.

Following initial screening, full text articles were obtained and assessed for eligibility review according to the following set of specific inclusion criteria:

Studies had to include individuals with clinical psychopathy or report on psychopathic traits, as measured by a validated instrument (See Appendix C for instruments). Studies of adult and youth samples were included. Reviews were only included if they were systematic literature reviews or meta-analyses and included results for neuropsychological domains or specific information processing patterns (neurocognition). Unpublished studies and editorial reviews were excluded.

1.2.4 Classification of Studies

The online systematic search identified 72 articles once duplicates were removed. Four were obtained through the references of other texts (See Figure

1.3 for an overview of the systematic search strategy). Following a manual review of the title and abstracts, a further 63 records were excluded due to not reporting on specific neuropsychological or neurocognitive data. The full texts of the remaining 13 articles were reviewed and a further four were removed due to methodological issues. This identified nine reviews relevant to the neuropsychological and neurocognitive correlates of psychopathy.

1.2.5 Quality Assessment

In order to assess the quality of the nine studies identified from the systematic review process, the assessment of multiple systematic reviews was used (AMSTAR; Shea, et al., 2007). This is an 11-item tool that measures the review's design, inclusion and exclusion criteria, quality of included studies, methods of analysis, likelihood of publication bias and statement of conflicts of interest. The maximum score is 11, scores of 0-4 indicate low quality, 5-8 moderate quality and 9-11 high quality (see Appendix D). This tool has been widely used and has demonstrated good psychometric properties (Pieper, Buechter, Li, Predigar, & Eikermann, 2015)[2]. Included reviews were all assessed separately and a total score calculated. To enhance the reliability of the quality assessment, another researcher rated three reviews independently against the same quality assessment criteria and an inter-rater reliability analysis using the Kappa statistic was performed. The results (Kappa=.84) suggest strong inter-rater reliability. Papers were not excluded at this stage based on quality. However,

[2] Similar to this validation study, issues arose with item 5, concerning the inclusion of a list of references for all excluded studies. No included review met this criterion.

the results were considered with respect to the strengths and limitations highlighted by the AMSTAR. While this is not within the usual systematic process, it was thought to be important to recognise the methodological limitations and explore these discursively in relation to the results of each review.

1.2.6 Characteristics of Studies

A summary of the key characteristics of the nine included reviews can be found in Table 1.2. All reviews were written by independent authors. Five meta-analyses and four systematic literature reviews were included. Three reviews included clinical samples only , one used nonclinical only and the remaining five contained both clinical and nonclinical samples. Four papers included adult only samples, two included child/adolescent only and the remaining three included adult and child/adolescent samples. A wide range of instruments were used to assess psychopathy or psychopathic traits. The number of individual studies included in review papers ranged from two to twenty-nine. All studies reported on neuropsychological or neurocognitive correlates of psychopathy.

Table 1. 3: *Characteristics of review papers that met the inclusion criteria (n=9)*

First Author (Year)	Type of Review	Topic of Review	Sample Characteristics	No. of reviewed studies	Psychopathy Measures	Outcome	AMSTAR Rating
Dawel (2012)	Meta-Analysis	Emotion Recognition	Clinical Children/ Adolescents, Adult	26	APSD, BIS/BAS, ICU, PCL-R, PCL:SV, PPI, YPI	Pervasive emotion recognition impairments across facial and vocal modalities with significant deficits for several emotions, most significantly fear and sadness.	8
Feilhauer (2013)	Systematic Literature Review	Cognitive correlates (inhibition and intelligence)	Clinical and nonclinical Child/ Adolescent	2	PCL:YV	Narcissism (Intepersonal) subfactor associated with increased verbal and overall intelligence, CU associated with decreased verbal and overall intelligence. Some evidence for enhanced inhibition with F1 while reverse pattern associated with F2	3
Herpers (2014)	Systematic literature Review	Neurocognition: 1. Prosocial Reasoning 2. Emotional Reactivity 3. Passive Avoidance 4. Emotion Recognition	Clinical Child/ Adolescents with CU traits or juvenile psychopathy	1. 21 2. 12 3. 10 4. 15	APSD, BASC, CBCL, CPS, CSI-IV, ICU, PCL-R, PCL:SV, PCL,:YV, PSD, SRP-II, YPI, YSR	1. Lower levels of prosocial reasoning 2. Lower emotional responsivity 3. Decreased harm avoidance 4. Decreased recognition of fearful and sad expressions	3

Table 1.4: *(continued)* **First Author (Year)**	**Type of Review**	**Topic of Review**	**Sample Characteristics**	**No. of Reviewed Studies**	**Psychopathy Measures**	**Outcome**	**AMSTAR Rating**
Maes (2013)	Systematic Literature Review	Association of psychopathy with cold EFg	Clinical and nonclinical Child/ Adolescent Adult	11	APSD, LSRP, PCL-R, PCL:SV, PCL:YV, PPI, PPI-R, SRP-III	Some evidence for positive associations of F1 with inhibition and memory. Trend towards negative association identified between F2 and inhibition.	6
Morgan (2000)	Meta-Analysis	Executive Function	Clinical Adult	13	Clinical Judgement, Criminal Records, CPI-So, MMPI, PCL-R	Robust significant negative relationships between psychopathy and EFg (*d* = .29)	7
O'Boyle (2013)	Meta-Analysis	Intelligence	Nonclinical Adolescent/ Adult	7	MMPI, PPI, SRP-II, SRP-III	No significant relationship with intelligence	6
Ogilvie (2011)	Meta-Analysis	Executive Function and Psychopathy	Clinical and nonclinical Child/ Adolescent Adult	29	CPI, DSM-III, DSM-IV, MMPI, PCL-R, PCL:SV, PPI, PSD, RBPC, SHAPS	Robust significant negative association between psychopathy and EFg (*d*=.42).	6

Table 1.4:
(Continued)

First Author (Year)	Type of Review	Topic of Review	Sample Characteristics	No. of Reviewed Studies	Psychopathy Measures	Outcome	AMSTAR Rating
Thoma (2013)	Systematic Literature Review	Empathy in Antisocial Personality Disorder/ Psychopathy	Clinical and nonclinical Adult	Not reported	Not reported	Impaired cognitive empathy (considered synonymous with affective ToM in this paper).	5
Wilson (2011)	Meta-Analysis	Facial Affect Recognition	Clinical and nonclinical Adult	22	Not reported.	Significant impairment for fear and sadness. Small effect noted for other emotions.	4

Note. APSD, Antisocial Process Screening Device (Frick & Hare, 2001); BASC, Behavioural Assessment System for Children, BIS/BAS, Behavioural Inhibition System/ Behavioural Activation System (Carver & White, 1994); CBCL, Child Behaviour Checklist (Achenbach, 1991); CPI, Child Psychopathy Scale (Lynam, 1997); CPI-So, California Psychological Inventory-Socialisation Scale (Gough, 1987); CPS, Child Psychopathy Checklist (Lynam, 1997); CSI-IV, Child Symptom Inventory (Gadow & Sprafkin, 1998); ICU, Inventory of Callous Unemotional Traits (Essau, Sasagawa, & Frick, 2006); Levenson Self-Report Psychopathy Scale (Levenson, Kiehl, & Fitzpatrick, 1995); MMPI, Minnesota Multiphasic Personality Inventory PCL-R, Psychopathy Checklist-Revised (Hare, 2003), PCL:SV, Psychopathy Checklist-Revised (Hart, Cox, & Hare, 1995); PCL:YV, Psychopathy Checklist: Youth Version (Forth, Kosson, & Hare, 2003);PPI, Psychopathic Personality Inventory (Lilienfeld & Andrews, Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations, 1996); PSD, Psychopathy Screening Device (Frick & Hare, Antisocial Process Screening Device, 2001); RBPC, Revised Behaviour Problem Checklist; SHAPS, Special Hospital Assessment of Personality and Socialisation; SRP-II, Self-Report Psychopathy Scale- 2nd version (Hare, 1991); SRP-III, Self-Report Psychopathy Scale-3rd Version (Paulhus, Neumann, & Hare, 2012); YPI, Youth Psychopathic Traits Inventory (Andershed, Kerr, Stattin, & Kevander, 2002); YSR, Youth Self Report (Achenbach, 1991).

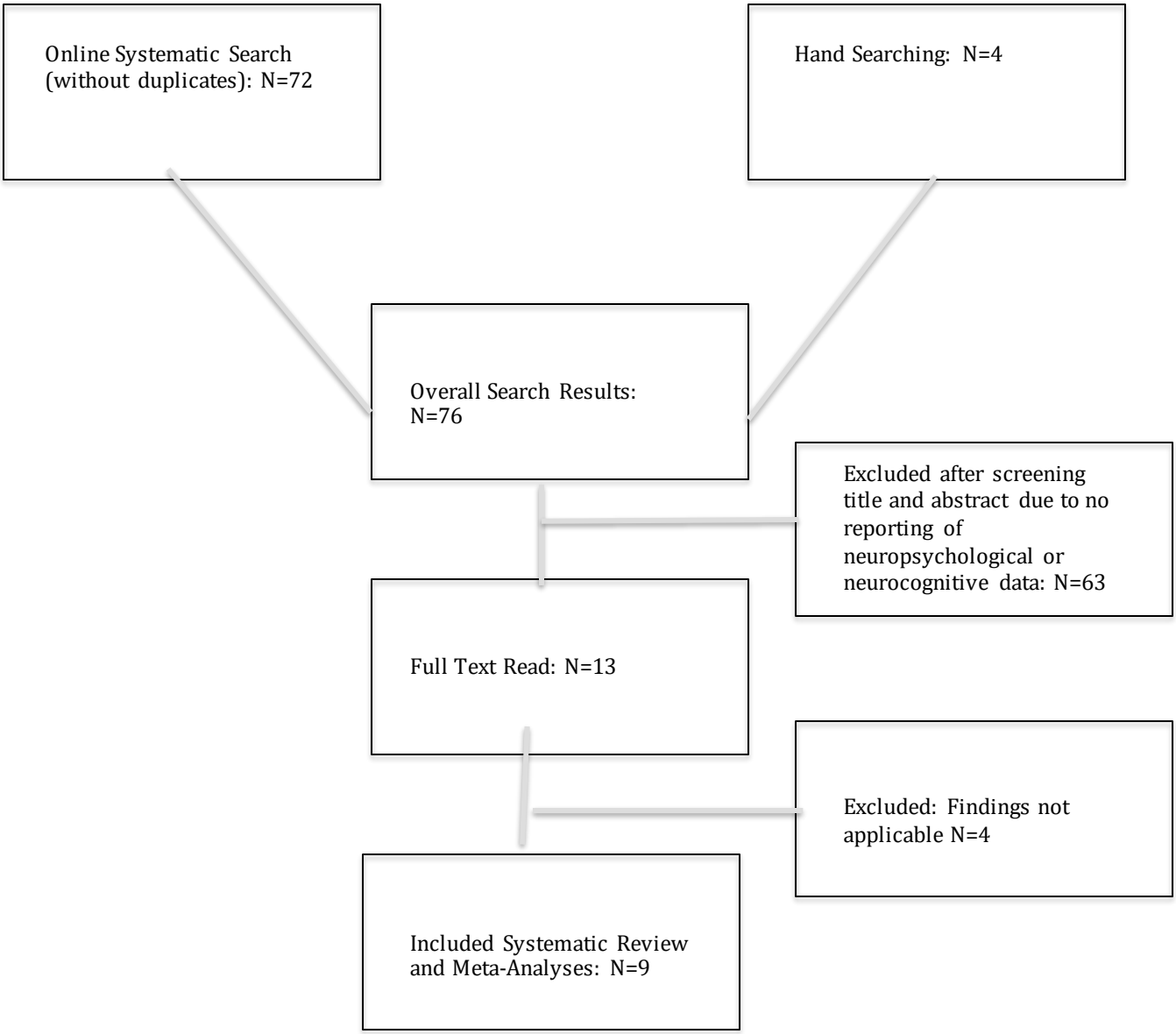


Figure 1. 3: Systematic Search Strategy

1.3 Results

The aim of this paper is to provide a critical review of the neuropsychological and neurocognitive correlates of psychopathy. Results yielded two main themes; different associations of neuropsychological correlates with the factor structure of psychopathy (see Figure 1.4) and involvement of emotion or reward in neuropsychological processes. The remainder of the results section is separated into these themes. Studies that were relevant to different sections have been 'dissected' whereby each review paper may be referred to in distinct paragraphs. Where statistics have been provided in the review, they have been reported.

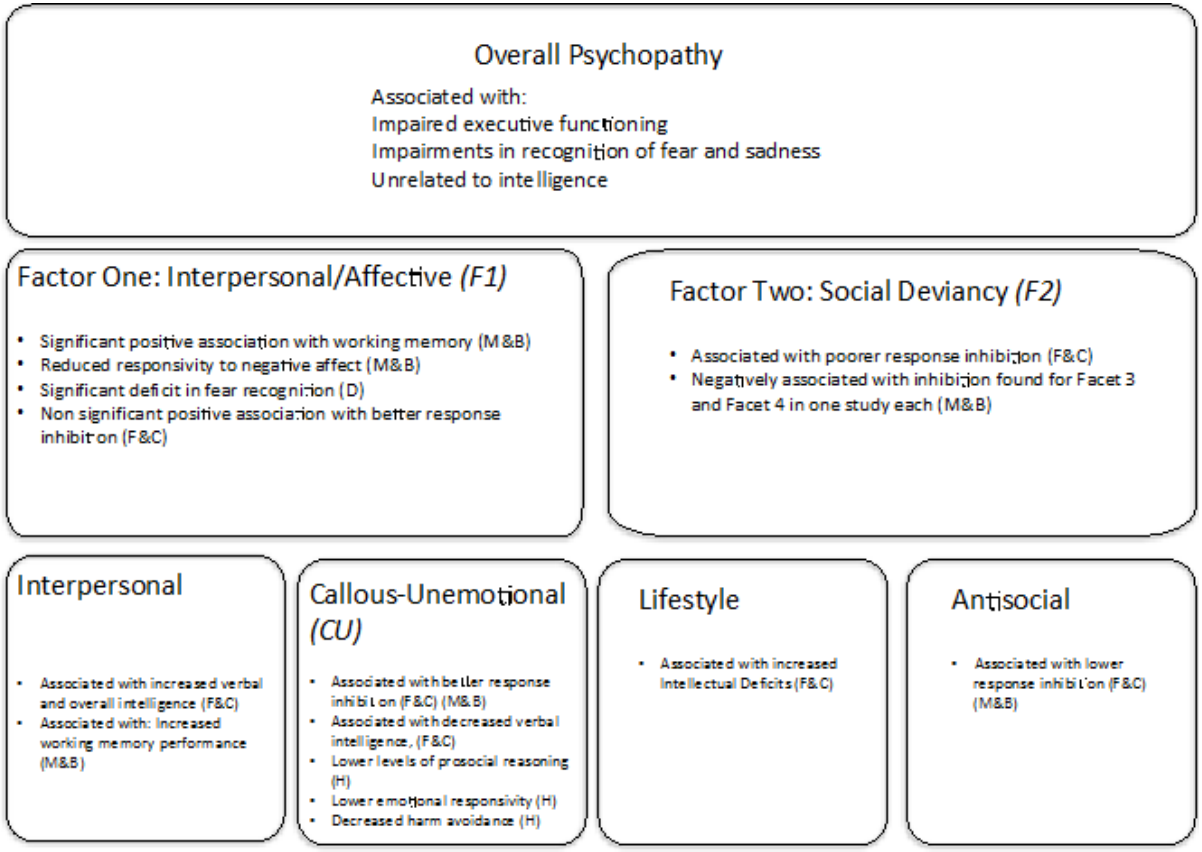


Figure 1.4: Summary of results for the associations of each neuropsychological and neurocognitive correlate of psychopathy with overall psychopathy or the relevant factors

Note. The *Personality* characteristics consist of Factor One: Interpersonal/Affective and the Interpersonal and Callous-Unemotional (CU) subfactors. The *Behavioural* features consist of Factor Two: Social Deviancy and the Lifestyle and Antisocial subfactors.

1.3.1 Associations with Overall Psychopathy (broadly defined as a unitary construct)

Executive Functioning

Ogilvie et al. (2011) conducted a meta-analysis to quantify the association of neuropsychological measures of Executive Function (EF) and Anti-Social Behaviour (ASB), including psychopathy. Their review included clinical and non-clinical, adult and child/adolescent samples. A variety of psychopathy measures were used by the studies involved. A robust and statistically significant association was found between psychopathy and EF with a weighted effect size of d = .42. It was noted that the association between EF and ASB varied across EF measures, with measures of working memory, spatial working memory and attention having some of the largest effects.

Morgan and Lilienfeld (2000) conducted a meta-analysis to quantify the relationship between antisocial behaviour and EF. Their review included studies of adult clinical samples, using a variety of psychopathy measures. Results yielded a robust and statistically significant association between psychopathy and EF, with a weighted effect size of d = .29. Only cold EF measures were included thus providing evidence that psychopathy is associated with deficits in EFs that do not involve emotion or reward. However, included studies used a wide variety of psychopathy measures, some of which have been criticised for their inadequate coverage of the core personality features of psychopathy (Lilienfeld, 1998).

Intelligence

O'Boyle, Forsyth, Banks and Story (2013) conducted a meta-analysis to investigate the relationship between intelligence and psychopathy. All included

studies investigated psychopathy in nonclinical adult and adolescent[3] populations only. Results did not identify any significant relationship between psychopathy and intelligence. While this is the only review of its kind, it is limited by the use of nonclinical samples only and lack of reporting on individual subfactors of psychopathy.

Affect Recognition

Wilson, Juodis and Porter (2011) conducted a meta-analysis of studies investigating the relationship between psychopathy and deficits in facial affect recognition. Their review included adult, clinical and nonclinical samples and only included studies that had used common psychopathy measures. Results identified significant deficits for the recognition of fear and sadness, but small effect sizes were noted for other emotions. This review scored particularly highly on the AMSTAR quality assessment tool.

1.3.2 Associations with Factors of Psychopathy: Personality Characteristics (F1)

The personality characteristics associated with psychopathy are broadly grouped as Factor One (F1), and the Interpersonal and Affective subfactors of psychopathy (See Figure 1.4).

Response Inhibition

Feilhauer and Cima (2013) reviewed studies of the dimensional approach to youth psychopathy. Studies included clinical and detained child and adolescent samples, using well established clinical measures of psychopathy. They reported

[3] Child samples were excluded.

a trend towards a relationship between Callous-Unemotional (CU) and Interpersonal subfactors and better inhibition, particularly for the CU subfactor, although non-significantly.

Intelligence

Feilhauer and Cima (2013) also explored associations with intelligence. Emerging trends indicated that CU traits may be associated with lower overall and verbal intelligence, while Interpersonal sub factors appeared to be associated with higher overall and verbal intelligence. This paper reviewed studies including youth samples that were not defined purely by the presence of CU traits. Further, it compared results of the youth sample to studies of adult community and offender samples. However, the paper had a broad scope and the section on cognition, included only two papers. Although results resembled those using adult samples, they are limited by the small number of studies included.

'Cold' Executive Functions

Maes and Brazil's (2013) systematic review aimed to investigate the hypothesised positive relationship between F1 (personality features) and 'cold' (non emotive/rewarding) executive functioning (EF). Results were reported for inhibition, attentional shifting, working memory and planning. Studies involving incarcerated and non-incarcerated, male and female, adult and youth samples and a wide variety of psychopathy measures were explored. There was inconsistency within results but some trends towards a positive association between inhibitory capacity and F1. However, two papers proposed

that this relationship might relate more specifically to greater inhibitory capacity within the CU subfactor.

Working Memory and Planning

Maes and Brazil's (2013) also reviewed studies that explored associations between working memory and F1. Trends towards a positive relationship were suggested but inconsistent. Associations between the F1 and planning were non-significant. The authors concluded that the association between the F1 and overall EF could be neither refuted nor supported. While this paper attempted to gather the data on F1 and EF, it was limited by the small number of studies available, heterogeneity of samples, tests and measures used and overall mixed results. Further, many of the reviewed papers did not control for the effect of the correlation between F1 and the F2 when assessing the association with EF components, limiting understanding of the link between F1 and EF.

Emotion Recognition

Dawel et al. (2012) conducted a meta-analysis of studies investigating emotion recognition deficits across modalities in psychopathy, with a secondary aim of assessing the influence of F1 specifically. Results from both child/adolescent and adult samples, incorporating a range of psychopathy measures, identified a significant negative association with F1 (personality features) and the emotion of fear. Authors concluded that although a specific deficit for fear recognition was identified, it is not possible to rule out a more general deficit in emotion recognition for the F1. Authors argued that the key component of the affective factor is the CU dimension. However, the data included in their meta-analysis included studies of general F1 traits analysed together with studies of the CU

factor specifically making it difficult to draw conclusions about which features impacted on the results

Emotion Processing

Herpers, Scheepers, Bons, Buitelaar, & Rommelse, (2014) conducted a systematic review investigating the neurocognitive correlates of juvenile psychopathy and CU traits. Studies of child and adolescent, clinical and community samples, using a variety of psychopathy measures suggested negative associations between CU traits and four neurocognitive measures; prosocial reasoning, emotional reactivity, passive avoidance (inhibiting responses known to lead to punishment) and recognition of fear and sadness. Authors included a large number of overall studies, with studies for each neurocognitive domain ranging from 10 to 24, thus increasing reliability of results. However, the studies reviewed included youth with CU traits and those with the broader category of juvenile psychopathy. Given the varying definitions of these terms, the studies together may include a more heterogeneous population than aimed for. Additionally many studies included participants with various co-morbidities and did not control for conduct problems. Thus, it remains unclear whether the identified neurocognitive patterns are primarily related to CU traits or conduct problems and/or aggression more globally.

Summary of associations with Factor 1

In summary, despite the limitations discussed above, analysis of the four studies pertaining to neuropsychological correlates associated with the personality characteristics of psychopathy, does identify patterns of performance and divergence among the factors involved. For the overall domain there does

appear to be an increased working memory performance and a decrease in emotion recognition. Although this result was significant for recognition of fear, some evidence was provided that this impairment may be more pervasive across other emotions. More research has been reviewed in relation to the CU subfactor which has been associated with decreased overall and verbal intelligence, with some evidence for increased response inhibition. Considering more specific neurocognitive processes, the CU factor has been associated with decreased emotional reactivity, response inhibition and passive avoidance. Further, the CU factor has also been associated with deficits in emotion recognition, specifically for fear and, to a lesser extent, sadness. The Interpersonal subfactor has been linked to increased overall and verbal intelligence, demonstrating some divergence between the neuropsychological correlates of the different aspects of the psychopathic personality characteristics.

1.3.3 Associations with Factors of Psychopathy (Factors 2,3 and 4)

Response Inhibition

In the aforementioned review of clinical and detained youth samples (Feilhauer & Cima, 2013), results also identified trends relating to intelligence and the behavioural features of psychopathy. High scores on the Lifestyle subfactor of psychopathy were related to higher creativity, practicality and better analytic thinking but not to verbal abilities.

'Cold' Executive Functioning

The previously discussed review by Maes and Brazil (2013) also investigated the association between F2 (behavioural features) 'cold' executive functions;

inhibition, attentional shifting, working memory and planning. Although results showed more negative associations between F2 and EF than for the F1, they were inconsistent across the studies reviewed. This negative association was most frequently noted for inhibition with no association identified for either working memory or planning. Authors concluded that these results could be partly attributed to the variety of instruments used. Further, they highlighted the suppression effect, whereby the presence of F1 traits supposedly masks the presence of F2 traits and vice versa (Patrick, 1994). Given that the review predominantly investigated F1, included studies may have had featured samples scoring higher on these traits.

The limitations above make it difficult to robustly identify the neuropsychological correlates associated with the behavioural features of psychopathy. There is a trend towards a negative association between response inhibition and F2, however results were not always specific to this domain alone. Of those reporting a significant association, poorer response inhibition has been closely linked to the Antisocial subfactor. The Lifestyle subfactor has been significantly linked to increased creativity, practicality and better analytic thinking. Overall, there appears to be a lack of consensus regarding the neuropsychological correlates of the psychopathic behavioural features. Preliminary evidence suggests that there may be specific patterns associated with different strengths of associations demonstrated among its subfactors.

1.3.4 Involvement of emotion or reward

The distinction between processes that involve emotion or reward and those that do not has often been made in the literature (eg. DeBrito& Hodgins, 2009; Parsons, Young& Kringelbach, 2013).

A previously discussed meta-analysis (Dawel et al., 2012) aimed to quantitatively evaluate emotional recognition deficits across modalities in psychopathy. Results indicated that overall psychopathy was associated with significant impairments for positive and negative emotions across both facial and vocal modalities. While this deficit was greater for fear and sadness, it was pervasive across all emotions. This was the first review to consider recognition of emotions from vocal information in addition to facial expressions.

The neurocognitive domains reported by Herpers et al. (2014) in their review also highlight the involvement of emotion and reward. Results indicated that youths with CU traits demonstrated intact *cognitive* Theory of Mind (ToM; understanding what another thinks; Shamay-Tsoory, 2011). However, they demonstrated impairments for *affective* ToM tasks (tasks involving understanding what another feels). This review also reported that youths with CU traits demonstrated difficulties in recognition of the emotions of fear and sadness across all modalities of presentation (facial, vocal and bodily posture).

Emotional Reactivity

Another neurocognitive domain reviewed is termed 'emotional reactivity'. This refers to the threshold and ease with which individuals become emotionally aroused, encompassing frequency and intensity of emotional arousal (Karrass et al., 2006). Herpers et al. (2014) identified a lower responsiveness to distressing,

aversive stimuli, suggesting impaired emotional reactivity in the presence of CU traits. CU traits were also associated with decreased passive avoidance behaviour, (decreased inhibition of responses known to lead to punishment when individuals with psychopathy are actively involved in reward seeking). This impairment was not due to deficits in attentional shifting or response inhibition. However, studies investigating passive avoidance did not control for conduct problems.

Cognitive vs Affective Empathy

In their systematic review of empathic responding in antisocial personality disorder (ASPD) and psychopathy, Thoma, Friedmann and Suchan (2013) drew the distinction between cognitive and affective empathy. The paper aimed to review neuropsychological evidence of altered empathic responding and included clinical and non-clinical samples and only included data from studies involving validated measures of psychopathy. Results tentatively indicated impaired cognitive empathy and stressed the need for investigation into emotional empathy in psychopathy. Specifically, the authors concluded that a cognitive empathy deficit was associated with impaired affective ToM. Although this study considered ASPD and psychopathy together, it was argued that psychopathic traits were more pertinent to empathic processing in these antisocial populations.

Emotion and Reward: Summary

In summary, studies reporting on the neuropsychological correlates associated with emotion or reward did identify patterns of performance. Psychopathy appears to be associated with deficits in emotion recognition, particularly for fear and sadness. A more pervasive deficit across emotions should be

investigated further. Impairment in responsiveness to aversive stimuli and passive avoidance has also been associated, both linked to emotion processing and reward. Deficits in affective ToM have also been consistently reported across reviews.

1.4 Discussion

The aim of the present review was to critically review the literature on neuropsychological and neurocognitive correlates of psychopathy. Across the reviewed studies two major themes emerged; the associations of neuropsychological processes with different subfactors of psychopathy and the influence of emotion or reward on neuropsychological processes. These themes were emergent in the literature on inhibition, working memory, intelligence, emotion recognition and Affective ToM. Each neuropsychological and neurocognitive correlate will be discussed in terms of its neurological associations, behavioural expressions, similarity to other clinical conditions and treatment options (see table 1.3).

Table 1.3 : *Identified neuropsychological and neurocognitive patterns associated with psychopathy.*

Neuropsychological/ Neurocognitive Correlate	**Results**	**Neurological Association**	**Behaviour**	**Clinical Implication**	**Conditions with similar neuropsychological/ neurocogntive correlates**
			Neuropsychological Correlates		
EF: **Inhibition**	'Hot' Inhibition: Impairment on 'hot' inhibition tasks (passive avoidance)	Subserved by ventromedial pathways and implication of amygdala dysfunction	Difficulties inhibiting responses when in pursuit of reward	Identification: Poor performance on hot EFs highly characteristic of psychopathic individuals	
	'Cold' Inhibition: Increased performance associated with CU subfactor	Associated with ventrolateral and orbitofrontal cortex	Enhanced response inhibition associated with instrumental aggression	Risk assessment: Assessment of CU traits in presence of antisocial behaviour.	
	Impairment on certain 'cold' executive tasks associated with Impulsive/ Antisocial domain	Associated with ventrolateral and orbitofrontal cortex	Impaired response inhibition associated with reactive aggression	Treatment consideration: Conjunctive behaviour therapy and stimulant medication Family based interventions	Behavioural variant fronto-temporal dementia, substance use and addictions, childhood obesity, borderline personality disorder and attention-deficit hyperactivity disorder.
Working Memory	Positive association with Affective/ Interpersonal domain	Dorsolateral prefrontal cortex	Enhanced cognitive abilities may provide an interpersonal advantage and be associated with pathological lying and deception, conning and interpersonal manipulation		

Neuropsychological/ Neurocognitive Correlate	Results	Neurological Association	Behaviour	Clinical Implication	Conditions with similar neuropsychological/ neurocognitive correlates
Intelligence	Increased overall and verbal intelligence associated with Narcissism		Increased verbal intellectual abilities associated with an earlier onset of criminal behaviour Manipulation and conning of others Relational Aggressive Behaviour	Early Identification: due to different risks associated with increased verbal IQ compared to other antisocial populations Treatment: Important to consider interpersonal style in therapeutic setting Psychotherapeutic input to develop accurate self-appraisals	
	Decreased verbal and overall intelligence associated with CU		Increased risk of historic and future crimes against people.	Risk Management and Assessment due to differences with other antisocial populations	
			Neurocognitive Processes		
Emotion Recognition	Deficits in recognition of fear and sadness	Abnormal amygdala structure and function	Lack of affect, poor conscience development, noncompliance with rules or with difficulties interpreting others motives or feelings	Treatment Option: Emotion Recognition Training	Autism
Affective ToM	Impairment in affective ToM	Associated with Orbitofrontal and ventromedial prefrontal cortex	Reports of impaired empathy, social competence, social decision making and social conduct	Treatment Option: ToM teaching intervention Potentially Mentalisation based therapy for mild-moderate psychopathy	Alcohol dependence, Borderline personality disorder, patients with OFC damage, Schizophrenia and Autism.

1.4.1 Inhibition

Response inhibition refers to the suppression of actions that are inappropriate in a given context and which interfere with goal-driven behaviour (Mostosky & Simmonds, 2008). Evidence reviewed has suggested that psychopathy is associated with specific patterns of enhanced or impaired performance on measures of response inhibition. For example, the CU subfactor of psychopathy has been associated with better inhibitory capacities while a negative association exists with F2. Further, psychopathy is associated with impaired passive avoidance learning which is considered a measure of hot EF, tapping the functional integrity of the amygdala (DeBrito & Hodgins, 2009). Passive Avoidance refers to the ability to withhold performing an action to a stimulus that is associated with punishment (Blair, 2008). Results indicate that its associated impairment in psychopathy was not accounted for by performance on cold response inhibition tasks. This implicates a distinct and separate deficit in passive avoidance. Indeed, poor performance on tasks assessing hot EFs has been considered to be a distinguishing characteristic of offenders with high levels of psychopathic traits (DeBrito& Hodgkins, 2009).

It is perhaps unsurprising that differences exist in performance on EF tasks involving emotion or reward and those that do not, given the assumption that they are served by different neural pathways. Where inhibition involves emotion or reward, as in the passive avoidance learning identified here, it is thought to be subserved by ventromedial pathways and deficits implicate amygdala dysfunction. Impairment on cold 'EF' tasks in psychopathy have

previously been identified and linked to processes subsumed by the ventrolateral and orbitofrontal cortex. Not only have results from the present review identified deficits in hot and cold inhibitory capacity but also patterns of enhanced capabilities associated with certain aspects of psychopathy.

Psychopathy has increasingly come to be considered a dimensional construct (Skeem, Johansson, Andershed, Kerr, & Louden, 2007), thus individuals are expected to express psychopathic traits to a greater or lesser extent. Subsequently those who are considered clinically psychopathic or at risk of clinical psychopathy are expected to have an individual profile of psychopathic traits with different expressions on each underlying factor. Results from the present review indicate that those with relatively fuller expressions on the CU factor or the broader F1 will vary in their inhibitory capacities that may account for some of the differences identified in the respective external behavioural correlates. Indeed, response inhibition has been considered central to aggressive behaviour (DeBrito & Hodgkins, 2009).

Deficits in response inhibition, as associated with F2, have been considered an essential predictor for reactive aggression (Tonnaer, Cima, & Arntz, 2016). Reactive aggression is characterised by impulsive and reflexive aggressive behaviour (Fite, Raine, Stouthamer-Loeber, Loeber, & Pardini, 2009) and clinical presentations may include increased frequency and severity of criminal offending or increased fighting in childhood and adulthood (Patrick, Fowles, & Krueger, 2009). The impaired response inhibition associated with F2 has been linked to other conditions with pronounced impulsivity, most notably Attention Deficit Hyperactivity Disorder (ADHD). ADHD has been treated effectively with

stimulant medication (Turner, Clark, Dowson, Robbins, & Sahakian, 2004) and environmental modification (Barkley, 2006). However, what sets those with psychopathy apart from other antisocial populations is the presence of *both* the personality and behavioural characteristics. Although there is limited research available, preliminary work with individuals with psychopathic traits is promising and has highlighted the benefits of behaviour therapy and stimulant medication (Frick & White, 2008). Further, inhibition is assumed to be shaped through thousands of interactions and routines within the family and broader social contexts across development thus family based interventions have also shown promise (Hawes, Price, & Dadds, 2014).

On the other hand, proactive aggression, associated with CU traits, is considered to be more planned and goal directed and may be linked to the association of CU traits and enhanced inhibitory capacities (Blader, et al., 2013; Wahlund & Kristiansson, 2009). This has implications for clinical practice in terms of assessment and treatment; the enhanced inhibitory capacities associated with CU traits may allow the individual to plan and direct aggressive behaviour towards a longer term goal and this risk of proactive aggression is important for forensic assessment. Given that CU traits have also been highly associated with violent crimes against people, there is a clear argument for their assessment when considering antisocial behaviour (Patrick, Fowles, & Krueger, 2009).

In summary, Psychopathy is associated with impairments in inhibiting immediate behavioural responses on tasks that involve emotion or reward and certain types of cold inhibition tasks which each have different functional and regional neural correlates. Results from the present review highlight the

importance of inhibition in psychopathy and identifies reduced or enhanced capacities as being associated with different aspects of psychopathy. These link to different types of aggression and have implication for assessment and treatment.

1.4.2 Working Memory

Working memory refers to the capacity for temporary storage and manipulation of information that will be used to guide a subsequent response (Baddeley, 2012; Fuster, 1997). The results of the present review identified a positive association between F1 working memory, with some suggestion that this positive association is related to the Interpersonal subfactor. Results were less clear for F2.

The positive association between working memory and the Interpersonal subfactor is perhaps unexpected, according to Gao and Raine's (2010) model of successful psychopathy. Successful psychopaths are considered to have a full expression of this subfactor and are expected to demonstrate enhanced EFg and including working memory. This group is hypothesised to have more efficient prefrontal functioning. Successful psychopaths are less likely to present clinically and are thought to enjoy career success and exhibit interpersonal aggression. However, they are characteristically considered to be prone to pathological lying and deception, conning and interpersonal manipulation. Thus their enhanced EFg, including the enhanced working memory identified here, gives these individuals an inherent advantage over others in terms of their ability to con and manipulate.

In summary, preliminary results have identified a positive association between the Interpersonal subfactor of psychopathy and working memory. This appears to coincide with Gao and Raine's (2010) model of psychopathy which links enhanced EFg, including working memory, to the Interpersonal subfactor. Individuals with this enhanced functioning are more likely to be adaptive and less likely to present to services. However identifiable features include interpersonal manipulation, pathological lying and conning others.

1.4.3 Intelligence

Intelligence is the general mental ability for reasoning, problem solving and learning (Colom, Karama, Jung, & Haier, 2010). Psychopathic individuals have previously been hypothesised to be free of intellectual deficits or perhaps to have enhanced cognitive abilities (Fontaine, Barker, Salekin, & Viding, 2008). However, there is limited research into the association between psychopathy and intelligence. Inconsistent results have led some authors to refute the claim of superior intelligence (Hare & Neumann, 2008; Porter & Woodworth, 2006). It should be noted that many studies of intelligence and psychopathy have used total psychopathy rather than subscale scores, potentially obscuring specific associations (Bate, Boduszek, Dhingra, & Bale, 2014). Results from the present review highlight differences in overall and verbal IQ associated with different aspects of psychopathic personality features, an effect that was obscured when considering total psychopathy score. The Interpersonal subfactor has been associated with better performance on both overall and verbal IQ while the CU factor has been associated with poorer performance. In line with previous

reports, the Lifestyle subfactor was associated with decreased intellectual abilities (Fontaine et al., 2008).

Theoretically this association seems unsurprising, particularly for verbal intellectual abilities, as the Interpersonal subfactor involves the manipulation and conning of others, likely to require enhanced verbal abilities (Salekin, Neumann, Leistico, & Zalot, 2004). The Interpersonal subfactor has received considerably less attention in the psychopathy literature, particularly in children but this finding has important implications as higher verbal intelligence scores among psychopathic individuals has been associated with an earlier onset of criminal behaviour (Johansson & Kerr, 2005). Here, psychopathy is in contradiction to other antisocial populations where verbal intelligence serves a protective factor associated with later onset of antisocial behaviour (Bate et al., 2014). Given that full expression of the Interpersonal subfactor is central to the successful psychopathy subtype, the findings of the present review challenge the idea that successful psychopathy is not linked to differences in IQ (Gao & Raine, 2010). Successful psychopathy and the Interpersonal subfactor have been linked to relational aggressive behaviour rather than physical violence and this may be, in part, connected to their enhanced intellectual and specifically verbal intellectual abilities. Again, the importance of assessing for psychopathic traits in antisocial populations is vital as it may assist early identification of individuals at risk of developing psychopathy. Given the association between the Interpersonal subfactor and superior verbal IQ, these individuals may be quite effective at pursuing their own interests using impression management (Salekin, Tippey, & Allen, 2012) and these characteristics would need to be considered in the therapeutic

setting. It has been suggested that interventions should target developing accurate self-appraisals and regulating responses to and coping with perceived threats (Ang & Yusof, 2005; Feilhauer & Cima, 2013).

Less is known about the relationship between CU traits and intelligence (Herpers et al., 2012). Results from the current review, which found an association between low general and verbal IQ with CU traits, stand in contrast to some previous studies (eg. Loney, Frick, Ellis, & McCoy, 1998) but not all (Nijman, Merckelbach, & Cima, 2009). Deficits in verbal intelligence has been linked to patterns of criminal offending, impairment in understanding one's own and others emotions and the development of an egocentric attitude (Nijman et al., 2009). Given that CU traits specifically are associated with historic and future crimes against people and violent criminal offending, interventions for individuals with antisocial behaviour should routinely assess for the presence of CU traits to aid appropriate risk management and treatment. The associations between CU traits and intelligence are unclear. Future research or a targeted systematic review is needed in this area to begin to make sense of the literature.

In summary, what is apparent is that the personality characteristics of psychopathy have specific associations with intelligence that do not appear to resemble those shown by other antisocial populations. In the presence of psychopathic traits, verbal intelligence does not serve as a protective factor for aggressive or antisocial behaviour and may be indicative of an earlier onset of aggressive behaviour. Future research is needed in this area, however clinically these results highlight the importance of assessing for psychopathic personality

traits when conducting risk assessments and when planning interventions due to the key differences with other antisocial populations.

1.4.4 Emotion Recognition

The ability to perceive and discriminate emotions is considered to be a central aspect of interpersonal relations and social development (deRosnay, Harris, & Pons, 2008; Hansen, Johnsen, Hart, Waage, & Thayer, 2008). Psychopathy has previously been linked to deficits in recognising emotions from both facial and vocal cues (Blair & White, 2013; Stevens, Charman, & Blair, 2001). Results from the present review identified a deficit for fear and sadness, consistently reported across included studies. Evidence also indicated that emotion recognition deficits may be present, to a lesser degree, for other emotions. Further, of the four subcomponents of psychopathy, the association with the CU subfactor has received the most attention. Given previous findings that the different subfactors have demonstrated different associations with other emotions (eg. Disgust; Hansen et al., 2008), further research is warranted. However present results clearly identify deficits in recognition of fear and sadness.

Two theories which have attempted to integrate existing knowledge about neuropsychological and neurobiological functioning in psychopathy, the Integrated Emotion Systems (IES; Blair & White, 2013) and the dual-hormone serotonergic hypothesis (DHS; van Honk & Schutter, 2006), have both associated emotion recognition deficits with abnormal amygdala structure and function. This is especially important for children at risk of developing

psychopathy and has been linked to amoral and aggressive behaviour (Renouf, et al., 2009). Psychopathic individuals are thought to experience reduced amygdala activation in response to their own and others distress thus failing to find others distress aversive (Shirtcliff, et al., 2009). While typically developing children learn to avoid the distress of others, by either performing actions to reduce their distress or by avoiding performing actions associated with distress, this learning opportunity is not available to individuals with reduced amygdala activity (Shirtcliff et al., 2009). Clinically, these children may present with a lack of affect, poor conscience development, noncompliance with rules or with difficulties interpreting others motives or feelings (Raine, 2008). Emotion recognition difficulties are present in other clinical conditions, most notably Autism Spectrum Conditions (ASC) where intervention research targeting emotion recognition deficits has had positive outcomes in school aged children (Golan & Baron-Cohen, 2006). A recent randomised controlled trial (RCT) used emotion recognition training alongside parent training and showed promising results in reducing CU traits and problematic behaviour in school aged children (Dadds, Cauchi, Wimalaweera, Hawes, & Brennan, 2012). However, there was no corresponding change in emotion recognition.

In summary, the results from the present review consistently identified a deficit in the recognition of fear and sadness to be associated with psychopathy. Further research is required to investigate impairment of recognition of other emotions and any differences associated with each subcomponent of psychopathy. Emotion recognition difficulties are thought to represent amygdala dysfunction and can present clinically in children who appear to have difficulties associated with social development and aggressive behaviour. This

impairment is also present in ASC and while interventions have shown some promise, it is unclear whether this is due to change in emotion recognition.

1.4.5 Affective ToM

Affective ToM refers to the ability to make inferences about another's emotional state and is linked to the ventromedial and orbitofrontal prefrontal cortex (Dvash & Shamay-Tsoory, 2014). Results from the present review indicated that psychopathy is associated with impaired Affective ToM with an association being reported for overall psychopathy and the CU subfactor.

Individuals with impaired affective ToM may present as having a lack of understanding or care for the feelings of other, manifesting as reports of impaired empathy, social competence, social decision making and social conduct (Eslinger, 1998; Shamay-Tsoory, Tomer, Goldsher, Berger, & Aharon-Peretz, 2004). Impaired Affective ToM has been associated with other clinical presentations, most notably in individuals with Autism (Hadwin & Kovshoff, 2013). Interventions which aim to teach ToM to children with Autism have shown some promise, however many individuals struggle to apply their skills to novel tasks (Hadwin & Kovshoff, 2013). Many studies have focused on Cognitive ToM, with less attention having been paid to Affective ToM. One intervention approach that is more affectively driven is mentalisation-based therapy (MBT), originally developed for individuals with borderline personality disorder (Bateman & Fonagy, 2004). Mentalisation is considered a conceptual derivative of ToM (Choi-Kain & Gunderson, 2008) there is emerging evidence for its use with individuals with Anti-Social personality disorder (Yakeley, 2014).

However, caution has been advised for the use of MBT with individuals scoring high on the PCL-R (Yakeley, 2014). It has been suggested that they have a significantly poorer prognosis than patients with mild-moderate psychopathic traits (Hare, 2003).

In summary, results from the present review have identified deficits in Affective ToM associated with psychopathy. At a subfactor level, these have been associated with the CU subfactor but no conclusions can be drawn for associations with other subfactors of psychopathy. Affective ToM has been associated with the ventromedial and orbitofrontal cortex, which have shown structural and functional abnormalities in psychopathic individuals. While Affective ToM deficits are present in other clinical presentations, intervention research with psychopathy is limited and high psychopathy scores have been used as exclusion criteria when treating individuals with antisocial personality disorder.

Overall what is apparent from the results is the heterogeneity of the concept of psychopathy. Different aspects of psychopathy are associated with different neuropsychological patterns of strength and impairment. These appear to have different neurological correlates, behavioural expressions with different implications for treatment and risk management.

1.4.6 Limitations

While the results of this systematic review provide evidence of the neuropsychological and neurocognitive correlates of psychopathy, the

limitations of the included papers and the methodological limitations of the present review must be considered.

Limitations of included Reviews

Across the individual studies included in each review paper there were generally limitations in measurement, sampling and analysis. Firstly, a major limitation relates to the measurement of the neuropsychological domains involved. While neuropsychological tests aim to tap into specific functions, it may not be possible to get a completely 'pure' measure of the intended function. Thus, controversies do exist surrounding the validity of different measures (DeBrito & Hodgins, 2009) and, given that each review included papers that utilised a wide range of measures, this may impact on the validity of conclusions drawn. Future research should aim to reach some consensus on the most appropriate neuropsychological measures.

Another pertinent limitation across studies results from the differing operationalisation and measurement of psychopathy. The different psychopathy measurement tools have different factor structures and therefore may tap into different aspects of psychopathy. For example, the PPI is purported to measure adaptive tendencies associated with psychopathy and is not directly comparable to Factor One of the PCL-R. While these different tools allow for measurement of aspects of psychopathy, their direct comparisons may have influenced results. The triarchic model of psychopathy (Patrick et al., 2009) has attempted to integrate the findings of the best-validated different psychopathy measures. This model describes psychopathy in terms of three phenotypic constructs; boldness, meanness and disinhibition and suggests corresponding treatment options (Patrick, Drislane, & Strickland, 2012). Given its basis in existing

validated psychopathy measures, this model provides promising new direction for psychopathy research and measurement.

The present review reports on findings from both child/adolescent and adult samples. While there is increasing evidence for the validity of psychopathy in youth (Salekin, 2006), there is also evidence of partly differing associations in childhood (Feilhauer & Cima, 2013). Intense biological, psychological and social changes take place across childhood and the studies included can only claim to report on neuropsychological correlates at that time (Steinberg, 2005). Future longitudinal research is suggested to track changes in neuropsychological correlates across childhood with comparisons to typically developing individuals.

Limitations of the present review

Results must also be interpreted in terms of the methodological limitations of the present review. Firstly, only findings of the studies selected by the nine review papers included in this systematic review were analysed. Therefore, other neuropsychological and neurocognitive correlates of psychopathy may not have been addressed. Results provide a profile of neuropsychological correlates but do not describe causality and are not linked to specific theories of psychopathy. Further, some of the included reviews did not assess data quality and validity and therefore may have aggregated different studies with different levels of methodological quality. Finally, an important caveat with the methodology employed by the present review is the risk of duplication amongst the included papers. A failure to account for overlapping studies has the potential to overemphasise the strength of results, thus the present review has

attempted to consider results in terms of strength of the evidence rather than just frequency of occurrence.

Overall, the present review provides a profile of neuropsychological and neurocognitive correlates of psychopathy, having systematically analysed relevant review papers. This is intended as a starting point as well as a critical analysis of the current evidence. Results must be interpreted in light of the limitations addressed above. Nonetheless, it is the first review of its kind, to the authors' knowledge, that assimilates and analyses the exiting neuropsychological evidence in psychopathy. Despite the limitations, the results have several implications for policy and practice.

1.4.7 Implications for Policy and Practice

Results from the current review have highlighted that different aspects of psychopathy are associated with particular behavioural and information processing correlates which have been linked to structural and functional deficits in the brain (Anderson & Kiehl, 2014). This has implications for clinical practice with regards to early identification, risk management and intervention (see table 1.3). Practice implications for child/adolescent and adult populations will be discussed individually.

Child/Adolescent

Due to the differing neuropsychological and neurocognitive correlates associated with psychopathy, identification of individual psychopathic profiles is a useful starting point when designing interventions. Understanding of an individual's position on each dimension can aide targeted interventions

(Feilhauer & Cima, 2013). The neuropsychological correlates identified in the present review have been associated with predispositions to certain types of aggressive and amoral behaviour. This understanding allows for proactive risk management to protect these vulnerable young people who may be on a developmental trajectory to serious criminal behaviour (Muller, 2010). Indeed, results from the present review have highlighted that psychopathy is associated with different neuropsychological correlates which have different risk factors than other antisocial populations.

Applying the construct of psychopathy to child and adolescent samples has been controversial and met with some resistance, particularly relating to the negative connotations attached, poor treatment success and long term prognosis (Salekin, 2006). However, there is evidence that psychopathy does have its roots in childhood and that psychopathic traits, particularly in young children and adolescents, may be amenable to intervention (Salekin, 2006; Shirtcliff, et al., 2009). It has been suggested that treatment interventions in psychopathy should be guided by the associated neurocognitive patterns with the aim of promoting the adaptive reorganisation of functional circuits (Anderson & Kiehl, 2014; Viding & McRory, 2012). Hence such strategies are considered likely to be more effective in children and adolescents with psychopathic traits due to their greater neuroplasticity and less entrenched social maladjustment (Anderson & Kiehl, 2014; Shirtcliff et al., 2009).

It has been noted that children with CU traits respond less well to some aspects of typical parenting interventions such as punishment-oriented or explicit empathy inducing techniques. Preliminary evidence implicates a role for

positive parenting and parental involvement with application of rewards as potential intervention strategies (Viding & McRory, 2012). The aforementioned RCT (Dadds et al., 2012), investigating emotion recognition training in conjunction with parent training demonstrated reduction in CU traits but with no corresponding increase in emotion recognition abilities. Authors suggested that the mechanism of change may have been the enhanced emotional engagement between parent and child. One important aspect of early bonding and ongoing emotional engagement with others involves reciprocal eye contact and it has been suggested that failure to make eye contact with caregivers is characteristic of children with CU traits (Schore, 2014; Dadds, Jambrak, Pasalich, Hawes, & Brennan, 2011). Previous research has identified that when children with CU traits are instructed to look at the eyes of stimulus faces, their emotion recognition deficits disappeared (Dadds, et al., 2006). Encouragement of increasing eye contact with parents at an early age may increase empathic functioning even when the deficit lies within the child (Dadds, Jambrak, Pasalich, Hawes, & Brennan, 2011).

In summary, children demonstrating psychopathic traits are a high risk population and without intervention may be on a developmental trajectory to serious criminal behaviour, with high costs to the individual and society. Identification of profiles of psychopathic traits in childhood and understanding of the neuropsychological correlates can provide vital direction when planning intervention and developing risk management strategies as these differ from other antisocial populations. Despite the conceptualisation of psychopathy as a developmental disorder, there can be a reluctance to consider psychopathy in

childhood. Yet, childhood is a time when individuals are amenable to intervention, with targeted interventions having shown promising outcomes.

Adults

Historically, treatment of adult psychopathy has been associated with therapeutic pessimism (Harris & Rice, 2006). While barriers do exist, particularly regarding poor motivation for treatment in psychopathic individuals, it has been suggested that further understanding of the underlying mechanisms and their relationships to different components of psychopathy opens up possibilities for future treatment and research (Patrick, Drislane, & Strickland, 2012). The results of the present review provide an initial overview of the range of neuropsychological and neurocognitive correlates of psychopathy that can be used to guide interventions. Two directions for future research have been suggested by Patrick, Drislane and Strickland (2012). They suggest that intervention methods which use feedback-based response modification and attentional retraining techniques may modify symptomatic expressions of psychopathy through alteration of underlying neurobehavioural processes. Indeed another approach, cognitive remediation therapy, has demonstrated efficacy at improving underlying cognitive-affective deficits associated with psychopathic traits (Baskin-Sommers, Curtin, & Newman, 2015). However, it remains unclear whether these changes were associated with changes in behaviour such as aggression or criminal activity.

These results do foster some optimism but it is important to highlight that for many of the neuropsychological correlates identified above, the suggested

clinical response has been to focus on risk management. Results here have shown that different correlates have been associated with predisposition to and risk of certain types of aggressive and amoral behaviour. Particularly in forensic settings, identifying these risks and developing proactive risk management strategies has the potential to decrease the likelihood and severity of dangerous behaviour.

In summary, results from the present review have identified the major neuropsychological correlates associated with psychopathy and outlined their associations with behaviour. It has been suggested that treatments in adults should focus on these underlying correlates (Anderson& Kiehl, 2014) and the information provided here may contribute to the development of such interventions. This approach to treatment is still gathering momentum and many neuropsychologically based treatments are still under development. However, results from the present review provide information that can assist clinicians more immediately to develop proactive risk management plans to protect these individuals and those who work with them.

Implications for Policy

The results of the present review also have relevance for recent policy initiatives, which aim to take a neuropsychiatric approach to studying clinical disorders. The Research Domain Criteria (RDoC) aims to identify reliable and valid psychological and biological mechanisms and their disruptions in an attempt to understand how these drive psychiatric symptoms (Insel, et al., 2010; Sanislow, et al., 2010; Wakefield, 2016). An RDoC framework has recently been applied to psychopathy (Blair, 2015) and it is hoped that results from the present review can supplement this RDoc approach with the ultimate goal of

developing treatments based on underlying mechanisms. Finally, results here may contribute to ongoing discussions regarding the question of legal responsibility in psychopathy (Eastman & Campbell, 2006) and about the role of society in dealing with dangerous people (Muller, 2007).

1.4.8 Future Directions

In addition to the specific research suggestions highlighted throughout the discussion, there are a number of other potential areas of research that emerge from this literature. Firstly, results here highlight the importance of considering the subfactors of psychopathy separately due to identified differences in the literature. The Interpersonal subfactor of psychopathy appears to be associated with enhanced neuropsychological performance that may require further study, particularly in respect to successful psychopathy.

Further, genetic and neurocognitive factors provide vulnerability to the development of psychopathy (Viding& McRory, 2012). Early neurological disadvantages are thought to contribute to a tendency towards interpersonal detachment yet attachment is thought to play a mediating role in 'reconnecting' children born with tendencies towards interpersonal detachment (Saltaris, 2002). Indeed, early attachment relationships have been linked to aggressive behaviour in psychopathic individuals (Schimmenti, et al., 2014; Taubner, White, Zimmerman, Fonagy, & Nolte, 2013; van den Berg & Oei, 2009). Future studies may aim to look at the interaction between presence and development of neuropsychological impairments and their interactions with attachment relationships.

1.4.9 Conclusion

Psychopathy is a clinical disorder that is associated with high risks and poor treatment outcome. It has been suggested that further understanding of the underlying mechanisms involved in psychopathy can aid risk management and treatment of these individuals. The aim of the present review was to identify and appraise evidence from published systematic and meta-analytic reviews on the neuropsychological and neurocognitive correlates of psychopathy. Using a 'review of reviews' methodology, this paper has identified a current clinical picture of these correlates in psychopathy and specific patterns in inhibition, working memory, intelligence, emotion recognition and affective ToM have emerged. However, there are a number of limitations highlighted and results here provide only initial information based on the currently available data. Consequently an immediate research agenda should begin to investigate the emergence and development of these specific information-processing patterns in young children, perhaps using a longitudinal methodology. While interventions targeting neuropsychological correlates have shown some promise in remediating the deficits, it remains to be seen whether this has corresponding changes in functional behaviour. Thus, future research should also be directed at neuropsychologically informed interventions for those individuals already presenting with clinical psychopathy. Results here represent an attempt to bring together a vast amount of information into one clinical picture, however this should not remain static and is intended for revision and update as new information becomes available in an attempt to understand the brain-behaviour links of psychopathy. This echoes the sentiment of Hervey Cleckley (1941, p.415) in his early work on psychopathy "I do not believe that

the cause of the psychopath's disorder has yet been discovered and demonstrated. Until we have more and better evidence than is at present available, let us admit the incompleteness of our knowledge and modestly pursue our inquiry."

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Note. Articles marked with a (*) were included in the systematic review

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Chapter 2: Empirical Paper

What is Psychopathy and how is it measured? An exploration of correlations in performance on measures of psychopathy and empathy

Prepared for submission to *Personality and Individual Differences* (please refer to Appendix B for instructions for author for submission)

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2.0 Abstract

Aim

Limited understanding of the underlying mechanisms of psychopathy has been linked to poor treatment outcomes. Dysfunctional empathic processing has been posited as one of these mechanisms. This study aimed to explore the construct of psychopathy and how it might relate to the construct of empathy in order to better our understanding of potential impairments in this area

Method

This correlational study used a nonclinical sample to investigate the relationship between measures of affective theory of mind, affective empathy and measures of psychopathy. A measure of behavioural self-regulation was used to control for the influence of inhibitory deficits.

Findings

Results identified a negative association between the measure of psychopathy and measures of affective theory of mind and affective empathy, with poorer performance exhibited by individuals who achieved higher scores on the measure of psychopathy. Further analysis suggested that the Antisocial subscale of psychopathy may have different relationships with the components of empathy measured. The Antisocial subscale was also negatively associated with identification of neutral stimuli. Preliminary evidence suggested that there were gender differences in the associations but these require further exploration.

Conclusion

This initial exploration of the relationships between measures of psychopathy and empathy suggests the presence of negative relationships. Global measurement of

psychopathy may obscure differences in the relationship between empathy and the various subfactors of psychopathy. These tentative conclusions are considered in terms of sampling limitations and measurement issues surrounding psychopathy and empathy.

2.1 Introduction

Psychopathy is considered to be a developmental disorder with characteristic patterns of (i) personality and (ii) behaviour (Hare & Neumann, 2009; Vitacco, Neumann, & Jackson, 2005). Although psychopathy has been considered a rare condition, affecting less than 1% of the household population, it is disproportionately prevalent among prisoners and psychiatric admissions (Coid, 2009). Psychopathic individuals have the potential to severely harm those they encounter (Bird & Viding, 2014) and commit a large proportion of crime in the UK (Lockwood, 2015) with significant economic burden. Despite these costs, intervention outcomes are notoriously poor (Harris & Rice, 2006) and this has been linked to a lack of understanding of the underlying processes involved in psychopathy (Anderson & Kiehl, 2014; Coid, 1993). One such mechanism of dysfunction is lack of empathy (Berkout, Gross, & Kellum, 2013). In recent years, research has suggested that empathy may consist of partially dissociable subcomponents. This may facilitate understanding of the mechanisms of empathic functioning associated with psychopathy. This study aims to explore the construct of psychopathy and how it might relate to the construct of empathy in order to better our understanding of potential impairments in this area

2.2.1 Psychopathy and its measurement

Psychopathy has been associated with distinctive personality and behavioural features (Lishner, Hong, Jiang, Vitacco & Neumann, 2015). The personality profile associated with psychopathy involves callous disregard for others and interpersonal manipulation while the behavioural features consist of an impulsive

lifestyle and antisocial tendencies. Psychopathy is considered to develop as a result of genetic predispositions, dysfunction in specific neural systems and the interplay between reduced emotional reactivity and consequent interactions with the environment (Blair & White, 2013; Cleckley, 1941; Hare, 2003; Lockwood, 2015).

In forensic samples Psychopathy is most often defined using the Psychopathy Checklist (Hare, 1991), and its subsequent revisions (PCL-R; Hare, 1991; Hare, 2003). This is an empirically determined formalised tool for the assessment of psychopathy in adults (Pfabigan, Seidel, Wucherer, Keckeis, Derntl, & Lamm, 2014). The PCL-R has been deconstructed into a number of different components, which measure both the *personality* and *behavioural* features of psychopathy (See Figure 2.1).

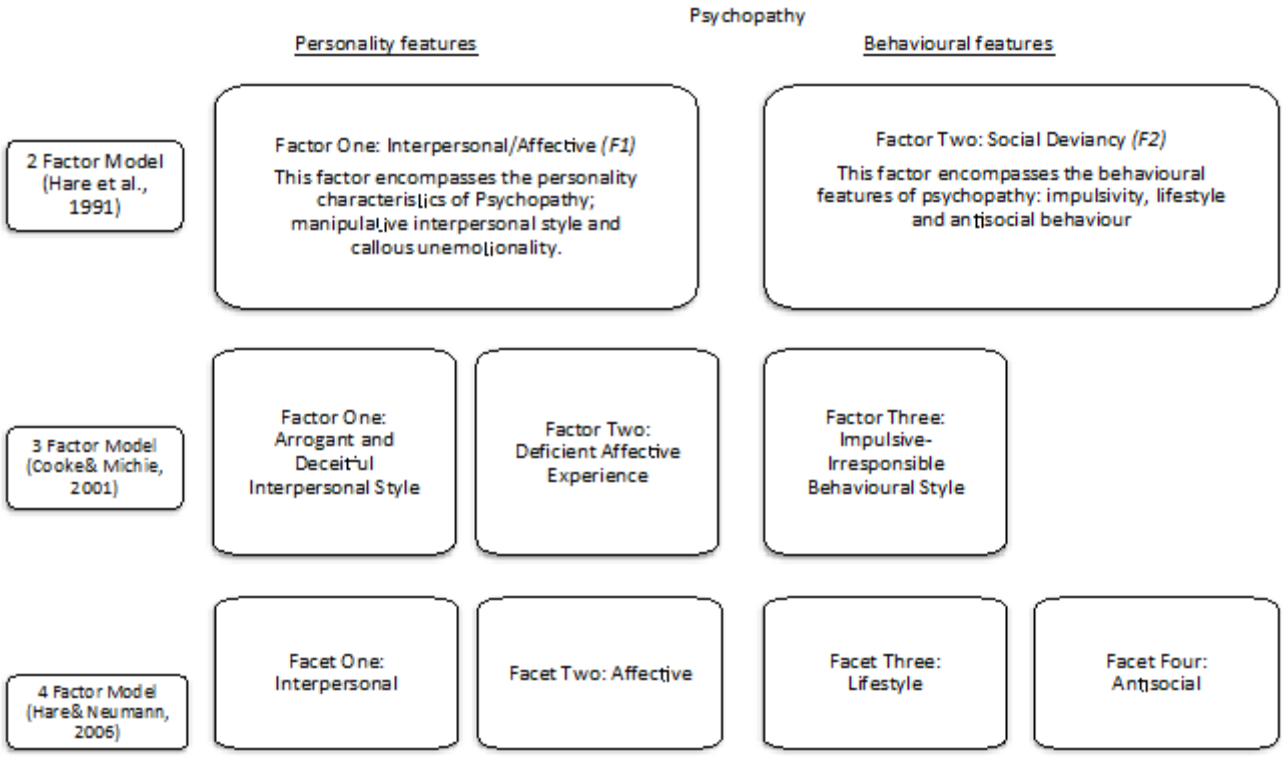

Figure 2.1: Representation of the different factor solutions for the Psychopathy Checklist-Revised (Hare, 1991).

2.2.2 Costs of Psychopathy

Psychopathy is known to have significant consequences for the individual and for society (Saltaris, 2002). Individuals considered to be psychopathic violate social rules, disregard other people's emotions and have the potential to severely harm those they encounter (Bird & Viding, 2014; Lander, 2014; Shamay-Tsoory, Harari, Aharon-Peretz, & Levkovitz, 2010). Psychopathy is associated with a disproportionate amount of violent sexual and nonsexual crime (Kiehl & Hoffman, 2011) and significantly contributes to rates of antisocial behaviour, estimated to cost the UK £3.4 billion (Lockwood, 2015). Indeed, the profile of psychopathy suggests a profound disturbance in appropriate empathic responses to the distress of others and has previously led clinicians to consider that these individuals are without a conscience (Bird & Viding, 2014; Hare, 1993).

Individuals with high levels of psychopathic traits are overrepresented in forensic settings (Atkinson & Tew, 2012) and Psychopathy is a strong predictor of reoffending after release from prison (Hart, Kripp & Hare, 1988; Porter, Birt, & Boer, 2001). These individuals are more likely to reoffend violently and receive probation suspensions (Hart, Kripp & Hare, 1988; Pederson, Kunz, Rasmussen, & Elass, 2010). Within the first year of release, individuals considered to be psychopathic are about three times more likely to recidivate than non-psychopathic offenders and four times more likely to violently recidivate (Hemphill, Hare, & Wong, 1998). Further, while incarcerated, individuals exhibiting psychopathy demonstrate high levels of physical aggression and institutional misconduct and make more attempts to escape

than nonpsychopathic prisoners (Guy, Edens, Anthony, & Douglas, 2005; Hare & McPherson, 1984).

However, arguably the biggest challenge is the lack of response to treatment and, often resultant, therapeutic nihilism (D'Silva, Duggan, & McCarthy, 2004; Zarpantine, 2013). Given the impact these individuals have on their environment while incarcerated and on wider society, there is a continued need to find ways to help and to support them to live more prosocial lives within the community (Atkinson & Tew, 2012).

Statement of problem

Despite the costs of psychopathy, it is particularly difficult to develop treatment programmes as there is no universal consensus of the underlying mechanisms of dysfunction (Berkout, Gross & Kellum, 2013; Coid, 1993). Understanding the mechanisms that underpin psychopathy is critical for providing an improved conceptualisation of psychopathy and to assist development of targeted interventions (Berkout, Gross & Kellum, 2013; Kazdin, 2008; Lockwood, 2015; Muller, 2010). One of the most prominent mechanisms may be empathy (Berkout, Gross & Kellum, 2013)

Empathy

Empathy is a complex interpersonal phenomenon that generally denotes our ability to identify with or to feel what another is feeling (Brook & Kosson, 2013; Perry & Shamay-Tsoory, 2013). Empathy is thought to have its roots in early development and to consist of at least two major components; cognitive empathy and affective empathy (Decety,

2013; Domes, Hollerbach, Vohs, Mokros, & Habermeyer, 2013; Eisenberg & Eggum, 2009). While evidence suggests that these different components interact to generate and modulate empathic responding (Singer & Lamm, 2009), there is evidence that these are partially dissociable psychological and neural mechanisms (Shamay-Tsoory, Harari, Aharon-Peretz, & Levkovitz, 2010). See Figure 2.2 for an illustration of the components of empathy.

Psychopathy has been considered the archetypal empathy disorder (Bird & Viding, 2014) and individuals with psychopathic profiles are expected to exhibit responses that are unempathic, resulting in a general indifference to the cares and sufferings of others (McGeer, 2008). It is the dissociation between cognitive and affective aspects of empathy, that is proposed as part of its underlying aetiology (Domes et al., 2013).

Although it has been suggested that deconstructing empathy into its component processes is beneficial to the exploration of psychopathy (Decety, 2013), there are few studies that specifically examine the relationship between the construct of psychopathy and the construct of empathy (Kirsch & Becker, 2007).

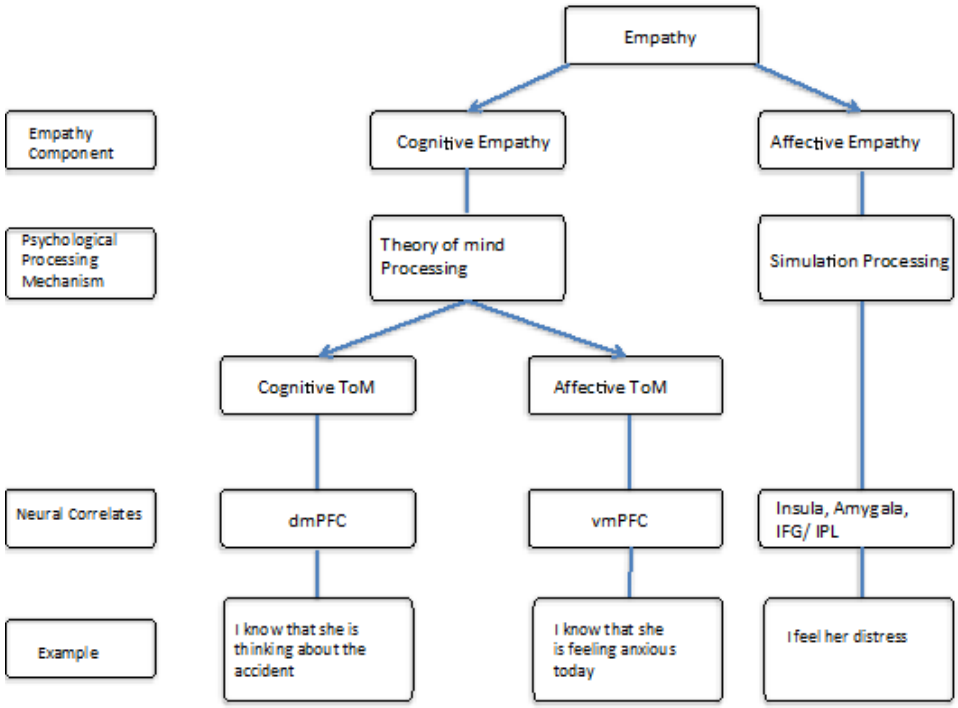

Figure 2.2 : An illustration of the two systems for empathy representing dissociation between cognitive and affective empathy.

Note. A further distinction has been made between two types of ToM processes: Cognitive ToM (taking the cognitive perspective of another) and affective ToM (building a theory over what another person feels). This has been adapted from two previous illustrations (Dvash& Shamay-Tsoory, 2014; Perry& Shamay-Tsoory, 2013). dmPFC, dorsomedial prefrontal cortex; IFG, Inferior frontal gyrus; IPL, Inferior Parietal lobule; ToM, ToM; vmPFC, ventromedial prefrontal cortex.

2.2.3 Cognitive Empathy

Cognitive empathy refers to the ability to understand and infer the internal mental state or emotional experience of another (Blair, 2008). It is considered crucial to the

development of prosocial interpersonal behaviour and the ability to function in social groups (Brook & Kosson, 2013; Hermann, Seidenberg, Lee, Chan, & Rutecki, 2007). Cognitive Empathy is thought to comprise four psychological phenomena (i) accurate identification of what another individual is thinking or feeling, (ii) imagination of what another individual is thinking or feeling, (iii) imagination how one would think or feel in the place of another and (iv) projection of oneself into the mental state of another (Batson, Ahmad, & Lishner, 2009; Lishner et al., 2015). Cognitive empathy relies on theory of mind processes whereby empathy is a result of a cognitive theory and understanding of another's mental state (Shamay-Tsoory, 2011).

Theory of Mind (ToM), also referred to as mentalising, is the ability to take the perspective of another (Baron-Cohen, 2009) and is thought to develop most significantly between the ages of two and four (Smith, Cowie, & Blades, 2007; Wellman, Cross, & Watson, 2001). ToM involves the attribution of mental states, such as thoughts, beliefs, desires, and intentions to oneself and others in order to make sense of behaviour and predict actions (Shaked & Yirmiya, 2008). It has also been further deconstructed into both cognitive and affective components (Shamay-Tsoory, Hariri, Aharon-Peretz & Levkovitz, 2010; Shamay-Tsoory, 2011). *Cognitive* ToM is described as the ability to make inferences regarding other people's beliefs while *affective* ToM refers to the inferences one makes regarding other's emotions (Shamay-Tsoory, 2011). The distinction between cognitive and affective ToM has been further extended and investigated in various lesion studies and functional imaging studies (e.g. Kalbe, et al., 2010). *Cognitive* ToM has been localised to the dorsomedial prefrontal cortex (dmPFC) while *affective* ToM has been localised to the ventromedial prefrontal cortex (vmPFC).

In summary, cognitive empathy involves creation of a theory in order to understand another person's mental or emotional state. Cognitive empathy is proposed to consist of two components; cognitive ToM, the understanding of another's thoughts or beliefs, and affective ToM, the understanding of another's emotions. These have each been structurally and functionally located to specific regions in the medial prefrontal cortex (mPFC).

2.2.4 Cognitive Empathy and Psychopathy

The role of cognitive empathy in psychopathy has been controversial. Some authors argue that there is no impairment in cognitive empathy (Blair, 2008; Blair & White, 2013) while others have highlighted significant impairments (Brook & Kosson, 2013; Thoma, Friedmann, & Suchan, 2013). However, the inclusion of both cognitive and affective theory of mind processes under the broader term 'cognitive empathy' may partly account for these disparities. Indeed, when examining theory of mind processes separately, there does not appear to be a deficit in *cognitive* ToM (eg. Blair et al., 1996) but subtle impairments have been identified on tasks involving the representation of the emotional state of another, i.e. *affective* ToM (Blair & White, 2007; Thoma et al., 2013).

Research has often measured affective ToM processes in psychopathy using the ability to discriminate the emotional state of another from facial expressions, specifically the eyes. Facial expressions are important methods of communicating internal mental and emotional states and several studies have indicated that the eyes are disproportionately important when making judgements about complex mental states (Adolphs, Baron-

Cohen, & Tranel, 2002; Baron-Cohen, Wheelwright, & Jolliffe, 1997; Sandvik, Hansen, Johnsen, & Laberg, 2014).

In summary, of the two processes comprising cognitive empathy, only Affective ToM has been implicated in psychopathy. Thus, it is a review of affective ToM in adult clinical and nonclinical psychopathy to which this discussion now turns.

2.2.5 Affective ToM in psychopathic offenders

Investigations into Affective ToM in psychopathic offenders have yielded mixed results. Some research has reported no impairment (Richell, et al., 2003) whilst others reported participants to view themselves as better able to perceive others emotions (Pham, Ducro, & Luminet, 2010). Yet, many other studies have identified impairments in affective ToM (Dolan & Fullham, 2004; Shamay-Tsoory, Hariri, Aharon-Peretz & Levkovitz, 2010). Further, different patterns of affective ToM performance have been associated with the different underlying components of psychopathy (Brook & Kosson, 2013; Sandvik et al., 2014).

Brook and Kosson (2013) measured affective ToM in psychopathic offenders and provided separate results for differently valenced emotions (i.e. positive, neutral and negative). They reported overall impaired affective ToM and specific impairments for negatively valenced emotions. This study further investigated the associations between the *personality* and *behavioural* characteristics of psychopathy. They found that the personality features were associated with impairments in the recognition of positive emotions while the behavioural features were associated with impairments in the recognition of negative emotions. At the subfactor level the Interpersonal and

Lifestyle subfactors were associated with poorer empathic accuracy for positively valenced emotions while the Affective and Antisocial subfactors were associated with reduced accuracy for negatively valenced emotions. Highlighting impaired Affective ToM in psychopathic offenders, this study also identified specific patterns of association at a subfactor level.

However, Sandvik et al., (2014) used a self-report measure in addition to clinical assessment in order to measure psychopathy in 92 male inmates. Self-reported psychopathy was found to be negatively associated with Affective ToM. Clinically assessed psychopathy was associated with more specific trends; with *personality* features of psychopathy associated with enhanced performance on discrimination of neutral emotions, while b*ehavioural* characteristics were associated with general impairments in identification of stimuli, regardless of emotional valence. Again, results highlighted impairment of Affective ToM associated with psychopathy and suggest different associations for each factor.

2.2.6 Affective ToM in nonclinical samples

Most research in psychopathy has been conducted in male offenders (Verona & Vitale, 2006) using a cut-off score to classify psychopathy. However, Skeem, Polaschek, Patrick, and Lilienfeld (2011) suggest that psychopathy is best formulated as a dimensional rather than categorical construct, i.e. rather than being viewed as 'psychopathic', or 'typical', there is individual variation in the level of psychopathic traits exhibited in any individual. Thus allowing for individual variation in psychopathy and the expectation

that varying degrees of traits will also be found in community samples (Pfabigan et al., 2014).

Indeed, studies using community samples often reflects findings seen in forensic samples, in both behavioural and neural profiles (Lilienfeld & Fowler, 2006), providing support to the argument that there is a common underlying construct (Lockwood, 2015). There has been an increasing interest in assessing psychopathy in nonclinical samples and, more specifically, a call for further research into ToM and nonclinical psychopathy (Ali & Chamorro-Premuzic, 2010; Williams, Paulhus & Hare, 2007).

Results from studies investigating Affective ToM in community samples have been mixed, with one study finding impairment (Ali &Chamorro, 2010) while the other reported no effect (Mullins-Nelson, Salekin, & Leistico, 2006). Ali and Chamorro-Premuzic (2010) measured psychopathy and affective ToM in students and found psychopathy to be negatively associated with affective ToM. Positive, neutral and negatively valenced emotional stimuli were considered and results highlighted a negative association between the psychopathic *personality* features and identification of neutral stimuli. Additionally they reported a negative association between the *behavioural* characteristics of psychopathy and negatively valenced stimuli. In sum, this study identified a negative relationship between psychopathy and Affective ToM in a nonclinical sample. Further, different associations were identified between subfactors and emotional valence of stimuli.

Mullins-Nelson, Salekin and Leistico (2006) also investigated psychopathy and affective ToM in a student sample but found no significant relationship. However, on

analysis of the personality and behavioural characteristics separately, the *personality* features were actually positively related to affective ToM while the *behavioural* features demonstrated a significantly negative relationship with affective ToM. Hence, providing further evidence of different associations with aspects of psychopathy. Further, they noted gender differences and highlighted the need for future research across gender.

In summary, across both clinical and nonclinical samples, there appears to be evidence of impaired Affective ToM associated with psychopathy. Relatively few studies have investigated this relationship at a subfactor level but emerging evidence suggests that different relationships exist. Further, there has been evidence of gender differences and reviewed studies are supportive of further investigation of psychopathic factors, affective ToM and gender.

2.2.7 Affective Empathy

Affective empathy is defined as the capacity to vicariously experience the emotional states of others (Decety & Jackson, 2004; Joliffe & Farrington, 2004). It is an important aspect of social cognition and contributes to the ability to understand and adaptively respond to others emotions, succeed in emotional communication and have the capacity to engage in prosocial behaviour (Spreng, Kinnon, Mar, & Levine, 2009). Affective Empathy is considered to comprise three distinct and interrelated psychological phenomena; (i) feeling the same emotion as another, (ii) feeling other-oriented concern for another and (iii) feeling personally distressed by another's negative situation (Batson, Ahmad & Lishner, 2009; Lishner et al., 2015). Affective Empathy has been

explained using the simulation perspective (Gallese & Goldman, 1998) which explains that the mental states of others are represented by tracking or matching these states with resonant states of one's own (Dvash & Shamay-Tsoory, 2014). It is considered to involve perceptual and motor components and thus relies on regions that mediate emotional experiences (i.e. amygdala, insula) and corresponding motor region related to that emotion (eg. Inferior parietal lobule, inferior frontal gyrus; Perry & Shamay-Tsoory, 2013).

The affective component of empathy is thought to develop earlier than the cognitive component (Decety, 2013; Decety & Svetlova, 2012) and developmental research has indicated that concern for others typically emerges before aged two. The vicarious sharing of another's emotional state provides a signal that can foster empathic concern (Blair, et al., 1996; Decety, Michalska, Akitsuki, & Lahey, 2009). That is, in order to be motivated to help another, one needs to be affectively, empathically aroused and needs to anticipate the ending of mutually experienced personal distress (Decety, 2013). The absence of this vicarious emotional experience impedes normal socialisation.

2.2.8 Psychopathy and Affective Empathy

Psychopathy is characteristically associated with a lack of affective empathy (Decety, Chen, Harenski, & Kiehl, 2013). Associations between psychopathic traits and reduced affective resonance have been identified with adults (e.g. Lockwood, 2013) and children with callous and unemotional traits (Decety, Michalska, Akitsuki, & Lahey, 2009). Further, it has been suggested that psychopathy results in a specific impairment of the experience of distress and negative arousal cues such as sadness and fear (Bird &

Viding, 2014; Decety, 2013). Neuroimaging research has highlighted functional deficits and reduced grey matter in brain regions known to be involved in vicarious responses (de Oliveira-Souza, et al., 2008; Meffert, Gazzola, den Boer, Bartels, & Keysers, 2013). However, direct investigations concerning responsiveness to another person's affective state has not been tested frequently in psychopaths (Domes et al., 2013; Pfabigan et al., 2014).

Nonclinical psychopathy has been associated with deficits in affective empathy (Ali & Chamorro-Premuzic, 2009; Andrew, Cooke, & Muncer, 2008; Mahmut, Menictas, Stevenson, & Homewood, 2011) with this general impairment of empathic response present regardless of the emotional valence (Lockwood, Bird, Bridge, & Viding, 2013). Lishner et al. (2015) assessed whether psychopathy was linked to impairment in affective empathy. They administered the Self-Report Psychopathy Scale-version 3 (SRP-III; Paulhus, Neumann & Hare, 2015) to a nonclinical sample and used an self-devised affective empathy task. Results indicated consistent evidence of affective empathy impairment for the callous affect subfactor only which was consistent with findings from a previous study (Lishner, et al., 2012).

In summary, it appears that psychopathy is associated with significant impairments in Affective Empathy. Research at a subfactor level is limited however two studies have identified impairments associated with the Callous Affect subfactor. Further exploration of associations between different factors of psychopathy and affective empathy is needed to elucidate these relationships.

2.2.9 Gender

Much research on psychopathy has been conducted with incarcerated male samples and relatively little is known about psychopathy in females (Verona & Vitale, 2006). Indeed, there is a paucity of research investigating the nature of the empathic profile associated with psychopathic traits in women (Verona, 2013). Given the evidence for diverse expressions of both the personality and behavioural characteristics of psychopathy in females (Forouzan & Cooke, 2005; Rogstad & Rogers, 2008), it is has been recommended that research should include female samples (Saltaris, 2001).

2.2.10 Summary and restatement of problem

Psychopathy is thought to be a developmental disorder resulting in significant costs to both the individual and to wider society. There are poor predicted treatment outcomes associated with psychopathy and this has been linked to a lack of understanding of the underlying mechanisms of dysfunction. One such mechanism is empathy, but there is a paucity of studies investigating associations between these constructs. Empathy has been considered in terms of cognitive and affective components. Cognitive empathy is thought to involve the creation of a cognitive theory about another's mental state (ToM). Psychopathy has been associated with impairments on those processes involving identification of another's *emotional* state (Affective ToM). Affective empathy is thought to rely on simulation processing whereby the affective state of another is represented by tracking or matching those states with resonant states of ones own. Psychopathic traits have demonstrated an inverse relationship with affective empathy across samples. However, some recent studies that have deconstructed psychopathy into its different factors have found specific relationships with affective empathy and affective ToM.

Further, there have been preliminary findings of differences between genders. Theoretically these findings highlight the importance of further examining the relationships between psychopathy, empathy and gender.

Such research potentially holds the key to greater clinical understanding of this condition, and has direct implication for intervention. Empathy has been highly associated with successful interpersonal functioning, moral behaviour and low aggression, all characteristically impaired in the clinical picture of the psychopath. Indeed impaired empathy in psychopathy has been associated with a number of social functioning deficits including dysfunctional economic decision making (Koenigs et al., 2010) and a lack of concern about self-initiated moral and immoral actions (Cima, Tonnaer, & Hauser, 2010). Some of these deficits are not unique to psychopathy and, clinically, there may be lessons to learn from research into other conditions in which similar deficits are theorised. Targeted interventions for empathy have demonstrated some success in other populations, such as individuals with Autism Spectrum Conditions (Hadwin & Kovshoff, 2013), thus highlighting the importance of advancing the understanding of empathic dysfunction in psychopathy. Further, given the relationship between empathy and risky or aggressive behaviour, an understanding of empathy and its relation to psychopathy could aid the development of early identification and proactive risk management strategies. Overall, little is known about the relationships between psychopathy, its subcomponents, (or factors), and different aspects of empathic functioning. There is a strong theoretical and clinical rationale for further investigation of these relationships and for investigation of their differences across gender.

2.2.11 Aims and Hypotheses

The primary aim of the present study is to begin to explore the construct of empathy and how it relates to the construct of psychopathy and its different component factors. Given the aforementioned evidence of dimensional expression of psychopathic traits, the present study explored the relationships between psychopathy and the proposed four factors (Hare & Neumann, 2006) with two components of empathy; affective ToM and affective empathy. As a secondary aim, the present study also investigated differences in these relationships between males and females.

In light of the variability in previously cited studies, it is difficult to make predictions about particular factors of psychopathy and their relationships to Affective ToM or Affective Empathy. As such, this study is largely an exploration of these relationships. However, based on the evidence presented, the following hypotheses are broadly posed:

Hypothesis 1. That scores produced on measures of Psychopathy will be negatively associated with scores produced on measures of Affective Empathy.

Hypothesis 2. That there will be differences in the relationship between subfactors of psychopathy and performance on an Affective Empathy measure.

Hypothesis 3. That scores produced on measures of Psychopathy will be negatively associated with scores produced on measures of Affective ToM.

Hypothesis 4. That there will be differences in the relationship between subfactors of psychopathy and performance on an affective ToM measure.

Hypothesis 5. That the emotional valence of stimuli will impact on correlations between the different subfactors of psychopathy and performance on a ToM task.

Hypothesis 6. That there will be differences between scores produced on measures of psychopathy, measures of Affective Empathy and measures of Affective ToM according to gender.

2.3 Method

2.3.1 Participants

In all, 86 students (58 female, 28 male) participated in the study. Ages ranged from 18 to 69 (mean 30.60, SD=9.13).

2.3.2 Design and Measures

A correlational design was employed. Relationships between Psychopathy, Cognitive Empathy and Affective Empathy were investigated. All constructs were treated as dimensional for the purposes of this study and all measures included have sound psychometric properties and have been used extensively in other research (see sections 2.3.3 - 2.3.5). Measures were completed online using Bristol Online Surveys. Online data collection allowed access to a large sample size using participants (students) who would be familiar with conducting online research. Each variable was measured as follows:

2.3.3 Psychopathy:

Self-report psychopathy scale 3rd version (SRP-III; see Appendix E)

The Self-report Psychopathy scale (SRP; Paulhus, Neumann, & Hare, 2012) is analogous to the PCL-R. The SRP has been found to correlate highly with other self-reports on psychopathy (e.g., Psychopathic Personality Inventory [PPI]; Benning, Patrick, Hicks, Blonigen, & Krueger, 2003). The current version, SRP-III (Paulhus, Neumann & Hare, 2012), consists of 64 items, with responses made on a five-point Likert-scale (1–5). It has demonstrated good convergent validity and discriminate validity (Mahmut, Menictas, Stevenson, & Homewood, 2011). Similar to the PCL-R, the SRP-III has demonstrated a four-factor structure with its subfactors consisting of Interpersonal Exploitation (IPE), Callous Affect (CA), Erratic Lifestyle (ELS) and Antisocial Behaviour (ASB). The internal consistencies for these subscales were also found to range from 'nearly acceptable' to 'excellent' (range from $\alpha = .69$ to $\alpha = .90$).

2.3.4 Affective Empathy

The Toronto Empathy Questionnaire (TEQ; See Appendix F)

The TEQ is a 16-item self-report questionnaire that measures affective empathy (Youssef, Nunes, Bidyadhar, & Williams, 2014). Respondents answer on a 5 point Likert scale ranging from 0=never to 4=always. It was developed from reviewing other widely used empathy instruments and ascertaining a single common factor from the measures. The TEQ conceptualises empathy as primarily an emotional process hence measuring affective empathy only. Cronbach-α value was reported as .85 and the TEQ was found to

have a positive correlation with a similar scale (Empathic Concern, Davis, 1983). Test-retest reliability coefficient was .81. In a recent validation of the Turkish adaptation of the TEQ, it was found to have significantly positive correlations with other measures of affective empathy. The internal consistency coefficient and test-retest reliability coefficients in this study were .79 and .73 respectively (Totan, Doğan, & Sapmaz, 2012).

2.3.5 Affective ToM

*The Reading the Mind in the Eyes Test (*RMET*; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001; See Appendix G)*

The RMET is an advanced measure of Affective ToM. Respondents are presented with 36 photographs of pairs of eyes, which demonstrate a range of facial expressions, and must select the word, which describes the presented expression from a list of four options. Although the RMET yields an overall accuracy score, it was considered as a dimensional construct in this study. It is considered to have relatively low inhibitory demands and involves automatic decoding of emotional expressions in eyes, or affective ToM (Baron-Cohen, Wheelwright, Hill, Raste & Plumb, 2001). A recent review reported internal consistency as .605 with internal consistency reliability at .719. Test-retest reliability for the test was .833. (Vellante, et al., 2013).

Separate positive, negative and neutral valence scores were also computed. Using a similar methodology to Ali and Chamorro-Premuzic (2010), eight independent raters

rated the images from the Eyes test with the correct answer (with no foil word) below each picture. The raters scored the stimuli for emotional valence on a 7-point scale with 1-very negative, 4=neutral and 7=very positive. Those stimuli that had mean rating significantly below neutral were classified as negative, those stimuli that had mean ratings significantly above neutral were classified as positive and those stimuli that did not differ significantly from neutral were classified as neutral.

2.3.6 Consideration of potential confounds: Inhibition

However, it is acknowledged that performance on any of these measures may be influenced by a myriad of different confounds commonly associated with psychopathy. The wider literature relating to underlying neurocognitive correlates of psychopathy makes reference to the importance of inhibition and behavioural self regulation for our understanding of this condition (Burgess, 2016). Hence, in order to account for the possibility that deficits of behavioural regulation have impacted on performance on the ToM and RMET measures, the Conners adult ADHD rating scale was administered.

Conners adult ADHD rating scale, short version (CAARS-S; Conners et al., 1999; See Appendix H).

The CAARS-S is a measure of behavioural self-regulation used for assessment of ADHD symptoms in adults ages 18 and up. Respondents answer on Likert scale, i.e. severity from 0 (not at all/ never) to 3 (very much/ very frequently). It consists of 26 items and can be broken down into different indices to identify specific ADHD symptoms. For the purposes of the present study, this measure of behavioural self-regulation was used as a

dimensional construct. The CAARS-self-report (CAARS-S) has been psychometrically well validated in two studies (Conners, Erhardt, & Sparrow, 1999). Test-retest correlations range between 0.80 to 0.91 and construct validity with the Wender Utah Rating Scales (WURS) reached moderate to satisfying correlations of 0.37 to 0.67.

2.3.7 Procedure

Ethical approval was granted by Coventry University (Appendix I) and the study protocol adhered to the British Psychological Society's Code of Conduct (2010). Recruitment and task completion was completed online using Bristol Online Surveys. A participant information sheet was provided (See Appendix J). Consent (See Appendix K) and basic demographic information (See Appendix L) were gathered. Participants were assured that they were able to decline participation or withdraw at any time, before response submission, without it impacting on their learning. All data was anonymous and participants were advised that once submitted there would be no way to retract their responses. All measures were completed online, with identical instructions and ordering of questions. Material was presented to participants in the following order: information sheet, consent form, basic demographic information, SRP-III, RMET (with word glossary attached to each page), TEQ, Conners: SV and debriefing. Participants were given the option to receive overall results on completion of the study and were advised that although this compromised participation anonymity, their email addresses would be in no way linked to their individual results. Testing took approximately 25-35 minutes. A debrief sheet was provided on completion (See Appendix M).

2.3.8 Analysis

The Statistical Package for Social Sciences Analysis of Moment Structures (SPSS/AMOS) was used to conduct correlations for the main hypotheses and tests for differentiation of the stimuli on the RMET.

2.4 Results

2.4.1 Descriptive Statistics

Before the analyses were computed, data screening was performed for all analyses. It was originally intended to perform hierarchical multiple regression using the four subfactors of the SRP III as predictor variables whilst controlling for scores on the CARRS-S. However, it was revealed that there was excessive multicollinearity between the different factors of the SRP-III, thus the assumptions of multiple regression analyses were violated. As a result, independent partial correlation coefficients were calculated for each hypothesis controlling for impulsivity. Psychopathy has been highly associated with impulsivity (Burgess, current thesis) and results here indicated that this was also true of the present results. Hence, the Conners: SV was controlled for in all analyses.

2.4.2 Aim One: Psychopathy and Empathy (See Table 1)

Hypothesis 1: Psychopathy and Affective Empathy

A partial correlation coefficient was computed to assess the relationship between psychopathy, as measured by the SRP-III, and Affective Empathy, as measured by the TEQ. As predicted there was a significant negative relationship identified between psychopathy and affective empathy: r=-.63, n= 83, p<.01.

Hypothesis 2: Psychopathy subfactors and Affective Empathy

A partial correlation coefficient was calculated to assess the relationship between Affective Empathy, as measured by the TEQ, and each of the four subscales of the SRP-III

(IPE, CA, ELS and ASB). Results yielded significantly negative associations between all subscales and affective empathy (see Table 2.1).

Hypothesis 3: Psychopathy and Affective ToM

A partial correlation coefficient was computed to assess the relationship between psychopathy, as measured by the SRP-III, and Affective ToM, as measured by the RMET. As predicted there was a significant negative relationship identified between psychopathy and Affective ToM: r=-.18, n= 83, p=.05.

Hypothesis 4.: Psychopathy Subscales and Affective ToM

Partial correlation coefficients were calculated to assess the relationship between Affective ToM, as measured by the RMET, and each of the four subscales of the SRP-III (IPE, CA, ELS and ASB). Three of the psychopathy subscales (IPE, CA and ELS) demonstrated no significant relationship with affective ToM, as measured by the RMET. The Antisocial Behaviour subscale (ASB), yielded a significant negative relationship with affective ToM: r= -.24, n= 83, p= .024.

Hypothesis 5. Psychopathy, its subscales and Emotionally Valenced Stimuli

Partial correlation coefficients were calculated to assess the relationship between total psychopathy, as measured by the SRP-III and each of its four subscales (IPE, CA, ELS and ASB) with differently valenced stimuli on the RMET (Positive, Neutral and Negative). Three of the psychopathy subscales (IPE, CA and ELS) yielded no significant correlations

with differently valenced stimuli. The Antisocial Behaviour (ASB) subscale yielded a significant negative relationship with the neutrally valenced eyes: *r*=.-.24, n= 83, *p*=.03.

Table 2.1: Results: correlation coefficients produced across measures

	TEQ	RMET total	Positive Eyes	Neutral Eyes	Negative Eyes
SRP-III	-.63*	.18*	-.09	-.19*	-.05
IPE	-.56**	-.15	-.12	-.16	.02
CA	-.77**	-.11	.04	-.15	-.08
ELS	-.31**	-.05	-.02	-.04	-.04
ASB	-.25**	-.24**	-.18*	-.24**	-.04

*p<.05 (1-tailed)

**p<.05 (2-tailed)[4]

Note: SRP-III, Self-report psychopathy scale 3rd version (Paulhus, Neumann & Hare, 2012); IPE, Interpersonal Exploitation; CA, Callous Affect; ELS, Erratic Lifestyle; ASB, Antisocial Behaviour; TEQ, Toronto Empathy Questionnaire, RMET, Reading the Mind in the Eyes Test.

Hypothesis 6.: Differences between males and females

An independent samples t test was conducted to investigate the gender differences in total scores on the SRP-III, its four subscales (IPE,CA,ELS,ASB), the TEQ, and the RMET.

Gender and the SRP-III

Differences existed between males and females on the total SRP-III score; $t_{(84)}$=2.91,p= .005, with males obtaining a significantly higher total psychopathy score than females,

Gender and subscales of the SRP-III

i IPE, there were no significant differences between scores produced by males and females on this subscale (p=.13)

ii CA; there was a significant difference between scores produced by males and females, $t_{(84)}$= 3.93, p<.01, with males producing significantly higher scores on the Callous Affect psychopathy subscale.

[4] Results are reported for one and two tailed results in line with the direction of the hypotheses to which the result pertains.

iii ELS; there was a significant difference between scores produced by males and females on the Erratic Lifestyle Scale; $t_{(84)}$= 3.25, p<.01, with males producing significantly higher scores.

iv ASB; there were no significant differences between scores produced by males and females on this subscale (p=.73)

Gender and the TEQ

There were no significant differences between scores produced by males and females on the TEQ (p= .16)

Gender and the RMET

There were no significant differences between scores produced by males and females on the RMET (p= .33)

Post hoc analyses of these differences between the scores produced by males and females suggested: (a), exploration of mean scores and (b) correlations

1. Gender, Psychopathy subscales and Affective Empathy

Significant negative relationships were identified between scores produced on the Affective Empathy measure and scores produced on two of the SRP-III subscales for both males and females; Interpersonal Exploitation and affective empathy (females: r =-.54, n= 55, p< .01, and males : r=-.638, n=55, p<.01) and Callous Affect (CA) and affective empathy (females: r=-.79, n=55, p<.01, and males, r=-.74, n=55, p<.01)). A further

significant negative relationship was identified between scores produced on the Affective Empathy measure and scores produced on the ELS subscales within the SRP-III, but only for females; r=-.31, n=55, p=.02.

2. Gender, Psychopathy subscales and Affective ToM

Results indicated that psychopathy, as measured by the SRP-III, was not significantly negatively associated with Affective ToM in males. However, this negative association was observed for females (r= .-.23, n=55, p= .04).

2.5 Discussion

Psychopathy has been related to a core deficit in empathy since its earliest classification (Blair, 2008; Cleckley, 1941; Hare, 2003). Increasingly empathy has been deconstructed into different aspects, each with at least partially dissociable psychological and neural mechanisms (Blair& White, 2013; Shamay-Tsoory, 2011).

Two components of empathy that have been implicated in psychopathy are Affective Empathy (emotional resonance with another's feelings; Thoma et al., 2013) and Affective ToM (a cognitive understanding of someone else's feelings; Poletti, 2012.) Figure 2.2 illustrates the hypothesised structure of Empathy and the psychological and neural dissociations between some of these constructs. It is worth noting the complexity surrounding the terminology used to describe Empathy, with frequent use of the terms Affective and Cognitive. These terms are sometimes used interchangeably and inconsistently throughout the literature. In order to facilitate conceptual clarity these terms will be used as set out in Figure 2.2. However, it is acknowledged that use of this terminology can potentially lead to confusion when discussing posited relationships. See Section 2.5.6.1.

The primary aim of the current study was to begin to explore the construct of empathy and its relationship to measures of psychopathy. The present study investigated measures of Psychopathy, measures of Affective Empathy, measures of Affective ToM, the emotional valence of stimuli and gender differences.

2.5.1 Psychopathy and Affective Empathy

2.5.1.1 Total Psychopathy Score

Impaired emotional empathy is often cited in relation to psychopathy (eg. Blair, 2008). The results of this study confirmed the hypothesis that scores on measures of psychopathy are negatively associated with scores on measures of affective empathy, both for the combined sample and for each gender. That is, the greater the score on the psychopathy measure, the lower the self-report of ability to resonate with other's emotions.

According to the literature the greater the expression of psychopathic traits then the lesser the ability to experience a vicarious response to another person's emotional state (Thoma et al, 2013). These results are in line with those previously found in forensic (Sandoval, Hancock, Poythress, Edens, & Lilienfeld, 2000), non-clinical (Mullins-Nelson et al., 2006) and clinical youth samples (Pardini, Lochman, & Frick, 2003). Affective Empathy is considered to be simulation driven and involves brain regions that mediate emotional experiences (eg. Amygdala, insula) and corresponding motor representations related to emotion (eg. Inferior frontal gyrus). Impaired affective empathy has been linked to developmental difficulties in learning about emotional communication with cascading effects on the development of morality, prosocial behaviour and intimate relationships (Blair & White, 2013; Mullins-Nelson et al., 2006). Difficulties with affective empathy may contribute to the clinical picture of the psychopath as having no feelings for others, shallow relationships and inability to develop attachment to others. However, it must be noted that two recent studies failed to find a significant association between psychopathy and affective empathy (Domes et al., 2012; Lishner et al., 2012),

with one study (Lishner, 2012), identifying evidence for *increased* affective empathy and psychopathy. Further, it has been suggested that affective empathy deficits may be selective to specific emotions (Blair & White, 2013). This may contribute to the conflicting results with some studies and future research should aim to investigate affective empathy for specific emotions.

2.5.1.2 Subscales of Psychopathy

Given the multidimensional nature of psychopathy, the relationship between its four subscales and affective empathy were explored. Results of the present study identified a negative relationship between all four psychopathy subscales and affective empathy. Thus, hypothesis 2 was not substantiated and there were no differences observed in scores produced on the subscales and the self-reported measure of affective empathy.

2.5.2 Psychopathy and Affective ToM

2.5.2.1 Total Psychopathy Score

Results of the present study confirmed the hypothesis that scores on measures of psychopathy were significantly negatively associated with scores on a measure of Affective ToM. In other words, the higher the score produced on the psychopathy measure, the poorer the performance on the Affective ToM Task. The current literature suggests that, the greater the expression of psychopathic traits then the lower the ability to make inferences about others emotional states (Poletti, 2012). These results are in line with studies of clinical (Brook& Kosson, 2013; Shamay-Tsoory, Hariri, Aharon-Peretz & Levkovitz, 2010), nonclinical (Ali & Chamorro-Premuzic, 2010) and youth samples (Anastassiou-Hadjicharalambous & Warden, 2008).

Impaired Affective ToM has been linked to specific neural correlates and external behaviour. Affective ToM has been associated with the orbitofrontal and ventromedial cortex (OFC), areas of the brain that are associated with structural and functional deficits in psychopathy (Yang & Raine, 2009). Indeed, similar Affective ToM deficits have been identified in individuals with OFC lesions (Shamay-Tsoory, Hariri, Aharon-Peretz & Levkovitz, 2010). Affective ToM is considered crucial to the development of prosocial interpersonal behaviour (Preston & de Waal, 2002) and Affective ToM dysfunction has been suggested as a contributing factor to the development and expression of antisocial behaviour.

2.5.2.2 Subscales of Psychopathy

Few studies have investigated the relationships between Affective ToM and the different subfactors of psychopathy. Results of the present study identified that scores produced on the Antisocial subscale were significantly negatively associated with performance on the Affective ToM task. The higher the score on the Antisocial subscale then the poorer the performance on this task.

One previous study of criminal offenders also found a negative association between the behavioural characteristics of psychopathy and Affective ToM. However, the present study has used a measure that claims to deconstruct the behavioural features into subfactors; Lifestyle and Antisocial. Results here indicate that it may be Antisocial traits that account for this trend. This association between Antisocial traits and impaired Affective ToM corresponds with the proposed link between mentalising (a theoretical derivative of ToM; Choi-Kain & Gunderson, 2008) and antisocial and aggressive

behaviour whereby mentalising is thought to have an inhibitory effect on antisocial behaviour (Fonagy & Target, 1997; Taubner, White, Zimmerman, Fonagy & Nolte, 2013).

2.5.3 Psychopathy and Valenced Affective ToM Stimuli

Previous research has identified specific empathic reactions to differently valenced emotional stimuli. Therefore, the present study aimed to explore these relationships and identified a significant negative relationship between scores produced on the Anti social subscale of Psychopathy and scores produced for neutrally valenced stimuli. In other words, the higher the score on the Antisocial component of psychopathy then the poorer the ability to correctly identify neutrally valenced items on the RMET.

This finding partially corresponds to previous studies. Sandvik et al (2014), in their study of incarcerated male offenders, also found a negative association between the behavioural features of psychopathy and neutral stimuli on the RMET. The results of the present study further extend these findings and associated this negative relationship with scores on the Antisocial subscale specifically. However, using a non-clinical sample, Ali and Chamorro-Premuzic, 2010, did not produce these findings. Rather, results implicated personality features of psychopathy rather than the behavioural features later suggested by Sandvik et al (2014.)

2.5.4 Gender

The present study also explored gender differences in scores produced on measures of psychopathy and empathy. Results were limited by the small sample size, particularly

for males. However, as predicted, differences did emerge from the results. Males produced higher scores than females on the measure of psychopathy and two psychopathy subscales, Callous Affect and Erratic Lifestyle.

This is perhaps unexpected given acknowledged trends in gender differences across measures of empathy and behaviour. However, these differences were explored within the current study as an initial exploration of any gender differences across, between and within measures of empathy and subscales of psychopathy. Initial tentative exploration of raw data suggested associations between scores produced on the Affective Empathy measure and scores produced on the ELS subscale of psychopathy, but for females only. Further, scores produced by males on the psychopathy measure were not significantly associated with scores produced on the Affective ToM measure. However, this exploration of the data was neither planned nor systematic enough in its approach and has not been explored in further detail within the current study. This is now a suggested area for further investigation, as there is little within the current evidence that offers a starting point for comparison of the current findings.

Overall, the present study attempted to understand the relationships between psychopathy, its factors, and empathy. From these results what is clear is that global measurement of psychopathy may obscure the different associations with each factor and future research should continue to measure individual factors of psychopathy. Results demonstrated impairments in both Affective Empathy and Affective ToM in psychopathy but with different associations with each psychopathy factor. The Antisocial factor particularly demonstrated different associations with Affective

Empathy and Affective ToM. Further, the results have indicated some tentative relationships between measures of psychopathy and empathy across males and females.

2.5.5 Overall Discussion and Clinical Implications

Results from the present study confirmed the hypotheses that, in a nonclinical sample, scores on measures of psychopathy were negatively associated with scores on measures of affective empathy and affective ToM. These aspects of empathic functioning have been localised structurally and functionally to the amygdala and ventromedial/orbitofrontal cortices respectively. In clinical psychopathy dysfunctional fronto-limbic circuitry is thought to contribute to these impairments in empathy. The present study did not use brain imaging techniques however what can be ascertained is that even in nonclinical samples, similar associations appear to exist between clinical and nonclinical psychopathy, whereby psychopathic traits as measured on the SRP-III are potentially associated with deficits in the processing of emotional stimuli, as indexed using the RMET and TEQ. Clinically, impaired affective empathy and reduced affective ToM have both been associated with impairments in moral reasoning and aggressive behaviour (eg. Renouf et al., 2010). Further, it can significantly impact the ability to make meaningful connections with others, including clinicians (Dekeyser, Elliott, & Leijssen, 2011). Future studies in nonclinical samples could aim to further aim to elucidate the relationship between impairments in the different types of empathy and types of amoral or aggressive behaviour to assist in targeting interventions and risk assessments.

Psychopathy is considered to consist of multiple component factors. Recent reviews of psychopathy have highlighted the importance of measuring these factors individually as they may have different aetiologies with different treatment and risk management implications (eg. Feilhauer & Cima, 2013). Most studies of psychopathy, to date, have considered it as a unitary construct or have considered it in terms of its personality and behavioural features. The present study has further considered these features in terms of the two personality subfactors; Interpersonal and Callous Affect and the two behavioural subfactors; Lifestyle and Antisocial behaviour as measured by the SRP-III. The Antisocial subfactor was implicated in the results and appeared to have slightly different relationships to scores produced on the RMET and TEQ than the other subfactors of psychopathy.

The Antisocial behaviour subscale comprises items regarding poor behavioural controls, early behaviour problems, juvenile delinquency, revocation of conditional release and criminal versatility (Neumann, Hare, & Pardini, 2015). Given the inhibitory effects affective ToM has on development and expression of aggressive or antisocial behaviour (Fonagy & Target, 1997) it may be that early difficulties in Affective ToM constitute part of the developmental pathway to antisocial behaviour in psychopathy. However, what is evident from the present results is that this negative association between Affective ToM and the Antisocial subfactor is present even in nonclinical samples. This association with Affective ToM is important clinically as the Antisocial subfactor has been associated with externalising psychopathology, severe aggressive behaviour and has been identified as the most important subfactor for predicting

recidivism (Neumann, Hare & Pardini, 2015; Walters, Knight, Grann, & Dahle, 2008). Thus, an understanding of the affective ToM abilities in psychopathic individuals can contribute to developing risk assessments that aim to prevent rather than react to antisocial behaviour. This is important when considering psychopathic individuals as vulnerable and at-risk for committing serious offences. Additionally, this link between affective ToM and Antisocial behaviour can assist early identification of young people on a developmental pathway to psychopathy in adulthood. Finally, targeting Affective ToM may be a promising treatment approach for psychopathic individuals, particularly those scoring highly on the Antisocial factor.

2.5.6 Limitations

While it is tempting to make larger claims about the role of personality and behaviour and their relationships with psychopathy and empathy, it is important to remember that this study only offers insight into the relationship between the performance across these specific measures in a nonclinical sample. This paper is an initial, tentative study that has started to look at these constructs using established measures. Although findings cannot be generalised, they offer an initial insight and future directions for investigation. Indeed, there are a number of limitations of the present study that must be considered when interpreting results.

2.5.6.1 Validity of constructs and measures

Firstly, an issue referred to earlier in the paper, regards the terminology involved in the study of empathy. 'Affective' and 'Cognitive' are used to describe different processes that can be difficult to make sense of initially. While this study has adopted a model of empathy developed by Shamay-Tsoory (2011), discrepant definitions of empathic processing do exist in the literature and these can cause interpretative difficulties (Thoma et al., 2013).

Measures included in this study have commonly been used to measure the respective constructs. However, they are not without their limitations and some issues have been raised. The RMET is a well-established measure of affective ToM (Ali& Chamorro-Premuzic, 2010). However, ecological validity concerns have been raised surrounding the use of static pictures of the eye region alone to capture the complexity of real life affective ToM (Brook & Kosson, 2012). Studies investigating other clinical and nonclinical populations have started to employ tasks of real life scenarios in an attempt to capture the nuances of human behaviour (eg. Nandrino, et al., 2014). The RMET has also been associated with IQ (Buitelaar, ven der Wees, Swaab-Barnevald, & van der Gaag, 1999), an effect that was not measured or controlled for in the present study.

Further, issues have been raised as to the suitability of self-report measures of affective empathy in psychopathy (Berkout et al., 2013). Defined as the vicarious response to the

emotional experience of another (Decety & Jackson, 2004), this may be problematic in psychopathic individuals as their lack of self-oriented emotional experience may impact on their own operationalisation of the construct (Berkout, Gross & Kellum, 2013). Further, one recent study (Meffert et al., 2013), using a brain imaging methodology, associated psychopathy with a reduced ability for spontaneous empathic reactions. However, when instructed to empathise in the task, activated brain regions indicated that vicarious responses were not dissimilar to the control sample. These limitations highlight some of the issues surrounding the measurement of affective empathy in individuals with psychopathic traits.

However, a major caveat in the study of psychopathy is the understanding and measurement of the construct itself. Traditionally psychopathy was viewed as a categorical construct, most frequently measured by the PCL-R, an instrument that relies on criminal record history records (Hare, 2003). This definition of psychopathy has a basis in forensic settings but limits the application of the construct elsewhere. Further, the inclusion of antisocial behaviour in the clinical definition of psychopathy has been debated and one possible factor structure excludes PCL-R items pertaining to antisocial behaviour (See Figure 2.1; Cooke & Michie, 2001). This is an important consideration due to the implication of the Antisocial subfactor in empathic processing identified within the present study.

More recently, psychopathy has been considered a dimensional construct and attention has been paid to measurement of psychopathic traits in community samples (Skeem, Johansson, Andershed, Kerr, & Louden, 2007). The SRP-III is a measure that was

developed from the PCL-R, i.e developed from the clinical construct. However, evidence suggests that individuals with psychopathy who do not come into contact with the criminal justice system may have differing profiles of neurocognitive functioning (Gao & Raine, 2010). Indeed, it has been proposed that there are adaptive functions associated with psychopathy, which may not be present in clinical samples and thus not featured in measurement tools derived from this definition (Patrick, Fowles, & Krueger, 2009).

Although considered useful to provide an initial understanding of psychopathic traits in the community (Lilienfeld & Fowler, 2006; Gordts, Uzieblo, Nuemann, Van den Bussche, & Rossi, 2015), the use of self-report measures of psychopathy has received some criticism in the literature (eg. Sandvik et al., 2014).

2.5.6.2 Participant sample and research design limitations

Issues regarding small sample size were present and this study featured a majority female sample. This may make generalisability to other nonclinical groups difficult and a larger sample would have great statistical power to detect subtle differences between males and females. This study is limited by the restricted demographic information available from participants that may have been relevant to the results (eg. Socio-economic status, comorbidity, forensic history). As a result, it may be difficult to accurately compare these results with other studies and difficult to replicate.

The method used to discriminate between valences of stimuli from the RMET followed the same procedure as the two other papers that reported this data (Ali & Chamorro - Premuzic, 2010; Sandvik et al., 2014). However, this instrument was not initially designed to identify the emotional valence of individual items and these were distinguished for the purposes of the present study. Thus, these have not been validated and some differences in emotional ratings may have occurred in comparison to other studies.

Finally, in order to assess for curvilinearity between variables, the scatterplots of the relationships between variables were inspected and no curvilinear relationships were found. Therefore, given the linear nature of the relationships between variables, and the excessive multicollinearity between the four facets of the SRP-III, Pearson's correlations and partial correlations were deemed the most suitable method of analysis. Although this was not the intended method of analysis, it was considered the most appropriate way to handle the collected data.

2.5.7 Conclusions

In summary, psychopathy and empathy are vast clinical constructs that are confounded by validity and measurement issues. These, in addition to highlighted sampling and design limitations, are important when considering conclusions. However, this study does attempt to consider specific measures of psychopathy and empathy and offers tentative and initial results of their interrelationships. Some interesting trends have

begun to emerge from the data and these provide a starting point for future research and clinical consideration.

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Chapter 3: Reflective Paper

Reflections on conducting research as part of clinical training

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3.1 Introduction

This paper is my reflective account of the process of conducting research as part of clinical psychology training. The report begins by exploring my initial responses to psychopathy and highlights the personal and professional tensions that I encountered. The account then addresses specific reflections on each chapter and concludes with a consideration of how research forms part of the professional identity of a clinical psychologist.

3.2 Initial Response to Psychopathy

Beginning research into psychopathy, it was a term that I was more familiar with from the media rather than from clinical training. Psychopathic individuals and others who commit crimes create fear, anxiety and excitement in us to varying degrees (Davies, 2007). I considered psychopathy as an interesting concept from TV or film more so than a presentation that I may encounter clinically. Yet, the further I have gone into my research, the further away I have moved from my initial understanding and almost moved to, what feels like a colder, and narrower position.

Given the stigma and pessimism attached to the term 'psychopath' I had reservations about conducting research in the area. Psychopath indicates that someone either is or is not a psychopath, which seems rooted in a purely diagnostic approach. As a trainee Clinical Psychologist this sits quite uncomfortably with my own sense of professional identity, whereby emphasis is placed upon integration of psychological theory in a formulation based approach. Much of the literature on psychopathy is very focused on diagnosis and risk management and seems steeped in pessimism (Zarpantine, 2013). Personally, work as a Clinical Psychologist allows to develop and build on a sense of hope, understanding and choice so this approach to

psychopathy felt at odds with my own clinical practice. Yet, this approach to the literature and topic seems parallel to the experiences of clinicians working with psychopathic individuals.

3.3 Countertransference and the Psychopath

Countertransference is a psychoanalytic term that refers to the thoughts and feelings that the therapist or clinician has towards the patient (Yakeley, 2007). Common countertransference responses from therapists working with psychopathic individuals include therapeutic nihilism, fear, denial and deception, devaluation, hatred and fascination (Meloy & Reavis, 2007). A reluctance to work with psychopathic individuals has been noted in the literature (Kernberg, 1997) and on reflection, many of these responses were similar to my own aversion to the topic.

Initially I felt very overwhelmed with the literature base, the terminology used was complex and it was a long process from grasping the area to being able to be critical and thoughtful about the subject material. I wonder whether this complexity contributes to the absence of psychopathy in clinical teaching or exploration beyond forensic settings. It has been important to bear in mind these initial reactions to the research, as I would also be asking a reader to do the same with my paper. I found myself pulled between maintaining accuracy to the research papers I had read, yet also making my own text accessible, addressing some of the confusing and conflicting terminology. Indeed, one paper (Coid, 1993) highlighted a history of the concept of psychopathy, discussing how terms had changed use or been misunderstood in the literature. This was a key paper in my research journey and almost gave me the lens through which to approach this vast research.

3.4 Others response to Psychopathy Research

When others have asked about the topic of my clinical research, my response of 'psychopathy' has often been met with excitement and comments about how interesting it must be. Indeed, as

part of the reflective process for this chapter I asked a number of people to name three associations to the word psychopath. Responses had a number of themes and largely focused on terms such as 'serial killer', 'manipulative', 'cruel' or mentioned films or reknowned criminals and fictional characters. While this is certainly not a robust research method, it did pull me back out of my detailed conceptual understanding and remind me of the more widespread associations to the term. What I noticed was that I had two extreme understandings of psychopathy; one based outside my research while the other was very much rooted in a theoretical understanding. In fact, in my mind these two conceptualisations of psychopathy felt realms apart and I wonder now whether this is partly to do with the focus of my paper on very specific aspects of psychopathic functioning, rather than on the global individual.

This led me to reflect on my knowledge of psychopathy from the literature base, what was missing was an understanding of the experience of psychopathic individuals. The human individual of the psychopathic individual still feels lost, or perhaps inaccessible.

Conducting a literature search on the experience of psychopathy yields few results. Although clinical research has increasingly valued the role of understanding individual experiences, this is still lacking in the field of psychopathy. As a gap in research I found this quite interesting. To better understand psychopathic individuals, the pursuit has tended to focus on detailed, abstract aspects of functioning, in a sense 'bypassing' the individual. Psychopathy, associated with emotional and interpersonal detachment, appears to be studies similarly. Indeed, at times throughout the project I felt myself detached from the subject matter, psychopathy was not something I had encountered clinically. It was an aspect of my clinical career that I could observe, work on but did not feel a strong attachment to. The complex, depersonalised language and detailed research aims maintained this distance. In many ways it seems as though aspects of the internal world of the psychopathy have filtered in to the way in which I have related to the project.

3.5 Reflections on the Empirical Paper

At this stage, nearing completion, it feels as though the empirical paper has been with me throughout my whole clinical training. From the outset I had wanted to conduct research in a clinical population. Thinking back, I had the idea that only a project with a clinical sample would be useful for my career. However, I feel a different type of learning has been as much the focus of this project as the content itself; that is, adopting a critical stance and being able to adapt to change. The evolving process of research was challenging for me and I found myself resistant to change method, measures and hypotheses at different times. However, this difficult process of continual update and revision has enhanced my confidence at conducting research and highlighted the importance of supervision in the process. On reflection, my initial approach to conducting research was perhaps focused on finding a gap, addressing it, finding results and writing up. Within this there is a need to control, to finish and I wonder now whether this came from a place of uncertainty in my abilities. Training can feel quite outcome driven, passing placements and assignments, moving every six months. Immersing in the research process and finding space for speculative thought did not sit so well with this mindset and led to me feeling behind. This need for certainty and a finished product did in fact stifle creativity. That said, real pressures do exist and I think the balance between allowing ideas to develop whilst having a timescale would be a position to strive for in future research

3.6 Ethical Issues

The ethical process was an aspect of research that I perhaps underestimated both in terms of its workload and its importance. The ethics for this project was my first experience of submitting for ethical approval and when the application was initially rejected I felt quite disheartened. Not

only was I now further behind, on a tight time scale for recruitment, but I also doubted my abilities to make appropriate amendments. However, this turned out to be a valuable stage of the research process. The intricacies involved in planning and implementing research seem to fade into memory once the chapters have been written. Yet, it seems important to acknowledge this aspect here. The feedback from the failed application highlighted gaps in my methodology and rationale that I had not considered. Had the research proceeded without these changes I would have encountered difficulties further down the line, potentially wasting the time of the participants who had agreed to take part. Although this was one of the most disheartening times during training, on reflection the process of making amendments gave me much more clarity and ownership over the project and reminded me of why I was interested in the subject to begin with.

However, this process also reminded me that I was conducting research with volunteers who were contributing time and effort to take part. As a clinician, it is central to practice to consider client choice and safety. Somehow, this position had been lost in the process of research. I now wonder whether the time pressures of the research had left me so focused on getting to the next stage that I lost sight of the individual participants behind the ethics application.

3.7 Reflections on writing the Literature Review

Selecting a topic for the literature review was another challenging aspect of the research journey. Having gone through the process of identifying a gap, formulating a question and searching databases, this idea was not viable after I found a January 2016 article already addressing the topic. Again, the uncertainty and sense of falling behind cast doubt on my abilities to complete the project. Previously, when I felt uncertain and didn't have an outcome to present at my research meetings I had less frequent contact with supervisors because I didn't want to meet them without something done. Having learned how unhelpful this was at earlier stages in the process, I made greater use of supervision at this time to help me think about a topic for the literature review. Completing an overview of reviews was a step, which I was uncertain about taking. Although the methodology has come to be used more frequently, in heavily researched areas, I had not seen another thesis that had taken this approach. At this stage my supervisor and I formulated my reluctance to pursue the topic further. Although I was moving towards a position of feeling more confident in my ability to complete doctoral research, I was still held back by a part of me that wanted to keep the project very safe. Looking back, I recognise the progress I had made, even by that point, to confront the issue and explore my reservations. This development is an aspect of research that has been of value to me personally and professionally and provided me with renewed energy for conducting research.

3.8 The place of neuropsychology in clinical psychology

The clear gap in my own knowledge was of the brain behaviour links in psychopathy. Throughout the literature on the psychopathic profile there were frequent links to neurology and different types of behaviour but the link were an area that I struggled to conceptualise. Having used my own lack of clarity as a tool to provide research direction, I began my systematic search of the literature and discussed the ideas with my supervision team and those in the wider

research network. There were some reservations that neuropsychology would not be suitable for a clinical psychology research project. This resonated with me due to my strong interest in neuropsychology particularly its applications in mental health. I reflected on this comment considerably and set out to also address that gap. Neuropsychological approaches are a useful tool but they do have their limitations (Pennington, 2009). Thus, receiving feedback allowed me to consider the limitations of the neuropsychological approach and integrate these into my thinking and final piece of work.

3.9 Conclusions: Application of Research into clinical practice

Beginning the research process, my ideas were that I wanted to acquire knowledge that I could apply to my clinical practice. However, these ideas were quite narrow and I considered this only if I completed a project with a clinical sample, with whom I would later work. I understand this position but the research process has been a lot more than that and has a wider impact than just knowledge. The project that I have completed has been intellectually stimulating, with much a much broader knowledge base than of psychopathy alone. Hence, my original hopes for research have in fact been met. However, in addition to this the whole process has been a valuable learning point. Again, this has involved professional learning about how to conduct research, be critical of the evidence base and consider relevance of research to clinical psychologist. Additionally, on a personal level I have learned a lot about managing conflicting sources of information without becoming completely overwhelmed. Overall, the research process has been challenging but have given me the confidence and background to further develop research skills as a practicing Clinical Psychologist.

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Appendix A: Author Guidelines for publication in the Journal of Neuropsychology

Journal of Neuropsychology

Edited By: Stephen Jackson

Impact Factor: 2.486

ISI Journal Citation Reports © Ranking: 2014: 26/85 (Psychology Experimental); 28/76 (Psychology)

Online ISSN: 1748-6653

Journal of Neuropsychology

Author Guidelines

The Journal of Neuropsychology publishes theory-driven patient studies. The central brief is to learn more from patients with brain dysfunctions to gain a better understanding of brain-behaviour relationships and to help future patients. Important developments in neuropsychology will follow from a multidisciplinary approach embracing neighbouring fields such as developmental psychology, neurology, psychiatry, physiology, endocrinology, pharmacology and imaging science. The journal publishes group and case studies addressing fundamental issues concerning the cognitive architecture of the brain. In addition, the journal includes theory-driven studies regarding the epidemiology of specific deficits, new assessment tools, and the evaluation of treatment regimes.

The journal is committed to a fast and efficient turn-around of papers, aiming to complete reviewing in under 90 days. Submissions are processed via a web-based system and reviewers are required to complete their referee report within 28 days.

Papers will be evaluated by the Editorial Board and referees in terms of scientific merit, readability, and interest to a general readership.

All papers published in The Journal of Neuropsychology are eligible for Panel A: Psychology, Psychiatry and Neuroscience in the Research Excellence Framework (REF).

1. Quality Control

The content, format, quality and ambition of the JNP as a major outlet for theory-driven neuropsychological studies is under constant review by the Consulting Editors:

- Kenneth M. Heilman (University of Florida College of Medicine, Gainesville, USA)
- Donald T. Stuss (Rotman Research Institute, Baycrest, University of Toronto, Canada)
- Giuseppe Vallar (University of Milan-Bicocca, Italy)
- Elizabeth Warrington (National Hospital for Neurology and Neurosurgery, London, UK)

2. Circulation

The circulation of the Journal is worldwide. Papers are invited and encouraged from authors throughout the world.

3. Paper formats and length

Research papers are full-length reports of original scientific investigations. Papers should normally be no more than 6000 words excluding abstract (maximum 250 words) and references. Multiple citations for a single point are usually duplicative and authors are urged to cite the best reference. The Editor retains discretion to publish longer papers.

Theoretical or review articles are full-length reviews of, or opinion statements regarding, the literature in a specific scientific area. They need not be exhaustive but should give an interpretation of the state of research in a given field. They should normally be no more than 4000 words excluding abstract (maximum is 250 words) and references. The number of references should not exceed 40-45. Multiple citations for a single point are usually duplicative and authors are urged to cite the best reference. The Editor retains discretion to publish longer papers.

Brief communications are short reports of original research or case reports. They contain no more than 1500 words excluding abstract (maximum is 80 words), references, a total of up to three tables or figures, and no more than 10 references.

Fast-track papers are timely and relevant reports that, to the discretion of the Editor, are included in the issue following acceptance. Authors may ask that their submitted manuscripts are considered for fast-track.

Commentaries and rejoinders are short reactions to publications in JNP followed by an invited rejoinder from the original authors.

Special issues may be proposed to the Editor. The proposal should include a short description of the topic and a number of (possible) contributors. The same quality criteria apply as for other submissions.

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All manuscripts must be submitted via Editorial Manager. The Journal operates a policy of anonymous (double blind) peer review. We also operate a triage process in which submissions that are out of scope or otherwise inappropriate will be rejected by the editors without external peer review to avoid unnecessary delays. Before submitting, please read the terms and conditions of submission and the declaration of competing interests. You may also like to use the Submission Checklist to help you prepare your paper.

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• Contributions must be typed in double spacing with wide margins. All sheets must be numbered.

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• The main document must be anonymous. Please do not mention the authors' names or affiliations (including in the Method section) and refer to any previous work in the third person.

• Tables should be typed in double spacing, each on a separate page with a self-explanatory title. Tables should be comprehensible without reference to the text. They should be placed at the end of the manuscript but they must be mentioned in the text.

• Figures can be included at the end of the document or attached as separate files, carefully labelled in initial capital/lower case lettering with symbols in a form consistent with text use. Unnecessary background patterns, lines and shading should be avoided. Captions should be listed on a separate sheet. The resolution of digital images must be at least 300 dpi. All figures must be mentioned in the text.

• All articles should be preceded by an Abstract (see point 3 for guidelines), giving a concise statement of the intention, results or conclusions of the article.

• For reference citations, please use APA style. Particular care should be taken to ensure that references are accurate and complete. Give all journal titles in full and provide DOI numbers where possible for journal articles.

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• In normal circumstances, effect size should be incorporated.

• Authors are requested to avoid the use of sexist language.

• Authors are responsible for acquiring written permission to publish lengthy quotations, illustrations, etc. for which they do not own copyright.

For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association.

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At the editors' discretion, colour figures can be provided for use in the journal. Good quality photographs will be considered for inclusion where they add substantially to the argument, to a maximum of three per article. These can be supplied electronically as TIF files scanned to at least 300dpi. If they are not printed in colour, then they can be reproduced in colour online and black and white in print.

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Authors for whom English is a second language may choose to have their manuscript professionally edited before submission to improve the English. A list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.
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Further information about the process of peer review and production can be found in this document. What happens to my paper?

Appendix B: Author Guidelines for publication in Personality and Individual Differences

NEW SUBMISSIONS

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.
As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or lay-out that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

References
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

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If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.
Divide the article into clearly defined sections.

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Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file.

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Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). See also the section on Electronic artwork.
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

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Subdivision - numbered sections
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods
Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.

Theory/calculation
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results
Results should be clear and concise.

Discussion
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

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An abstract, not exceeding 200 words should constitute the first page of the article.

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List funding sources in this standard way to facilitate compliance to funder's requirements:

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• Use a logical naming convention for your artwork files.
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Or
Thompson, J. (2006). The Mad, the 'Brut', the 'Primitive' and the Modern. A discursive history. In F. Andrada, E. Martin, & A. Spira (Eds.), Inner worlds outside (pp. 51-69). Dublin: Irish Museum of Modern Art.

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• References are in the correct format for this journal
• All references mentioned in the Reference list are cited in the text, and vice versa
• Permission has been obtained for use of copyrighted material from other sources (including the Web)
• Color figures are clearly marked as being intended for color reproduction on the Web (free of charge) and in print, or to be reproduced in color on the Web (free of charge) and in black-and-white in print
• If only color on the Web is required, black-and-white versions of the figures are also supplied for printing purposes

• Title page has to be uploaded separately and it is a mandatory submission item
• Cover letter has to be uploaded as a separate document
• Articles should contain page number
• Ensure that the manuscript including the references are in double line spacing
• Ensure that the author's identity is removed from the original manuscript
• Highlights are submitted in the proper format
• Acknowledgments has to be uploaded as separate document

Appendix C: Summary of inventories for the assessment of psychopathy in differing participant samples.

Sample/Inventory	Rating Format	Total Items	Facets/Factors Assessed
Adult			
Criminal			
PCL-R	Interviewer	20	Interpersonal, Affective, Lifestyle, Antisocial
PCL: SV	Interviewer	12	Interpersonal-Affective, Antisocial behaviour
Noncriminal			
PPI	Self-Report	187	Fearless Dominance, Impulsive Antisociality, Cold-heartedness
LSRP	Self-Report	26	Primary psychopathy, Secondary psychopathy
SRP-III	Self-Report	64	Interpersonal exploitation, callous affect, erratic lifestyle, antisocial behaviour
Youth			
Delinquent			
PCL:YV	Interviewer	18	Interpersonal, Affective, Lifestyle, Antisocial
APSD	Parent/Teacher	20	Impulsive/Conduct problems, Callous-Unemotional
CPS	Parent/Teacher	41	Affective-Interpersonal, Behavioural deviance
Non-delinquent			
YPI	Self-report	53	Grandiose-manipulative, callous-unemotional, impulsive-irresponsible

Note: PCL-R, Psychopathy Checklist-Revised (Hare, 2003), PCL:SV, Psychopathy Checklist-Revised (Hart et al., 1995); PPI, Psychopathic Personality Inventory (Lilienfeld & Andrews, 1996); Levenson Self-Report Psychopathy Scale (Levenson, Kiehl & Fitzpatrick, 1995); Self-Report Psychopathy Scale-3rd Version (Paulhus, Neumann& Hare, 2012); PCL:YV, Psychopathy Checklist: Youth Version (Forth et al., 2003); APSD, Antisocial Process Screening Device (Frick & Hare, 2001); Child Psychopathy Scale (Lynam, 1997); YPI, Youth Psychopathic Traits Inventory (Andershed et al., 2002).

Appendix D: AMSTAR rating tool
AMSTAR

1. Was an 'a priori' design provided? The research question and inclusion criteria should be established before the conduct of the review.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
2. Was there duplicate study selection and data extraction? There should be at least two independent data extractors and a consensus procedure for disagreements should be in place.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable

3. Was a comprehensive literature search performed? At least two electronic sources should be searched. The report must include years and databases used (e.g. Central, EMBASE, and MEDLINE). Key words and/or MESH terms must be stated and where feasible the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialized registers, or experts in the particular field of study, and by reviewing the references in the studies found.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
4. Was the status of publication (i.e. grey literature) used as an inclusion criterion? The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language etc.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable

5. Was a list of studies (included and excluded) provided? A list of included and excluded studies should be provided.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
6. Were the characteristics of the included studies provided? In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions and outcomes. The ranges of characteristics in all the studies analyzed e.g. age, race, sex, relevant socioeconomic data, disease status, duration, severity, or other diseases should be reported.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable

7. Was the scientific quality of the included studies assessed and documented? 'A priori' methods of assessment should be provided (e.g., for effectiveness studies if the author(s) chose to include only randomized, double-blind, placebo controlled studies, or allocation concealment as inclusion criteria); for other types of studies alternative items will be relevant.	□ Yes □ No □ Can't answer □ Not applicable
8. Was the scientific quality of the included studies used appropriately in formulating conclusions? The results of the methodological rigor and scientific quality should be considered in the analysis and the conclusions of the review, and explicitly stated in formulating recommendations.	□ Yes □ No □ Can't answer □ Not applicable

9. Were the methods used to combine the findings of studies appropriate? For the pooled results, a test should be done to ensure the studies were combinable, to assess their homogeneity (i.e. Chi-squared test for homogeneity, I^2). If heterogeneity exists a random effects model should be used and/or the clinical appropriateness of combining should be taken into consideration (i.e. is it sensible to combine?).	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
10. Was the likelihood of publication bias assessed? An assessment of publication bias should include a combination of graphical aids (e.g., funnel plot, other available tests) and/or statistical tests (e.g., Egger regression test).	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable
11. Was the conflict of interest stated? Potential sources of support should be clearly acknowledged in both the systematic review and the included studies.	☐ Yes ☐ No ☐ Can't answer ☐ Not applicable

Appendix E: Self-Report Psychopathy Scale III

Please rate the degree to which you agree with the following statements about you. You can be honest because your name will be detached from the answers as soon as they are submitted.

1	2	3	4	5
Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly

1. I'm a rebellious person.
2. I'm more tough-minded than other people.
3. I think I could fool a lie detector.
4. I have taken illegal drugs (e.g., marijuana, ecstasy).
5. I have never been involved in delinquent gang activity.
6. I have never stolen a truck, car or motorcycle.
7. Most people are wimps.
8. I purposely flatter people to get them on my side.
9. I've often done something dangerous just for the thrill of it.
10. I have tricked someone into giving me money.

11. It tortures me to see an injured animal.

12. I have assaulted a law enforcement official or social worker.

13. I have pretended to be someone else in order to get something.

14. I always plan out my weekly activities.

15. I like to see fist-fights.

16. I'm not tricky or sly.

17. I'd be good at a dangerous job because I make fast decisions.

18. I have never tried to force someone to have sex.

19. My friends would say that I am a warm person.

20. I would get a kick out of 'scamming' someone.

21. I have never attacked someone with the idea of injuring them.

22. I never miss appointments.

23. I avoid horror movies.

24. I trust other people to be honest.

25. I hate high speed driving.

26. I feel so sorry when I see a homeless person.

27. It's fun to see how far you can push people before they get upset.

28. I enjoy doing wild things.

29. I have broken into a building or vehicle in order to steal something or vandalize.

30. I don't bother to keep in touch with my family any more.

31. I find it difficult to manipulate people.

32. I rarely follow the rules.

33. I never cry at movies.

34. I have never been arrested.

35. You should take advantage of other people before they do it to you.

36. I don't enjoy gambling for real money.

37. People sometimes say that I'm cold-hearted.

38. People can usually tell if I am lying.

39. I like to have sex with people I barely know.

40. I love violent sports and movies.

41. Sometimes you have to pretend you like people to get something out of them.

42. I am an impulsive person.

43. I have taken hard drugs (e.g., heroin, cocaine).

44. I'm a soft-hearted person.

45. I can talk people into anything.

46. I never shoplifted from a store.

47. I don't enjoy taking risks.

48. People are too sensitive when I tell them the truth about themselves.

49. I was convicted of a serious crime.

50. Most people tell lies everyday.

51. I keep getting in trouble for the same things over and over.

52. Every now and then I carry a weapon (knife or gun) for protection.

53. People cry way too much at funerals.

54. You can get what you want by telling people what they want to hear.

55. I easily get bored.

56. I never feel guilty over hurting others.

57. I have threatened people into giving me money, clothes, or makeup.

58. A lot of people are “suckers” and can easily be fooled.

59. I admit that I often “mouth off” without thinking.

60. I sometimes dump friends that I don’t need any more.

61. I would never step on others to get what I want.

62. I have close friends who served time in prison.

63. I purposely tried to hit someone with the vehicle I was driving.

64. I have violated my prison parole (or other sentencing agreement)

Appendix F: Toronto Empathy Questionnaire

Toronto Empathy Questionnaire instructions

Below is a list of statements. Please read each statement *carefully* and rate how frequently you feel or act in the manner described. Circle your answer on the response form. There are no right or wrong answers or trick questions. Please answer each question as honestly as you can.

1. When someone else is feeling excited, I tend to get excited too

2. Other people's misfortunes do not disturb me a great deal

3. It upsets me to see someone being treated disrespectfully

4. I remain unaffected when someone close to me is happy

5. I enjoy making other people feel better

6. I have tender, concerned feelings for people less fortunate than me

7. When a friend starts to talk about his\her problems, I try to steer the conversation towards something else

8. I can tell when others are sad even when they do not say anything

9. I find that I am "in tune" with other people's moods

10. I do not feel sympathy for people who cause their own serious illnesses

11. I become irritated when someone cries

12. I am not really interested in how other people feel

13. I get a strong urge to help when I see someone who is upset

14. When I see someone being treated unfairly, I do not feel very much pity for them

15. I find it silly for people to cry out of happiness

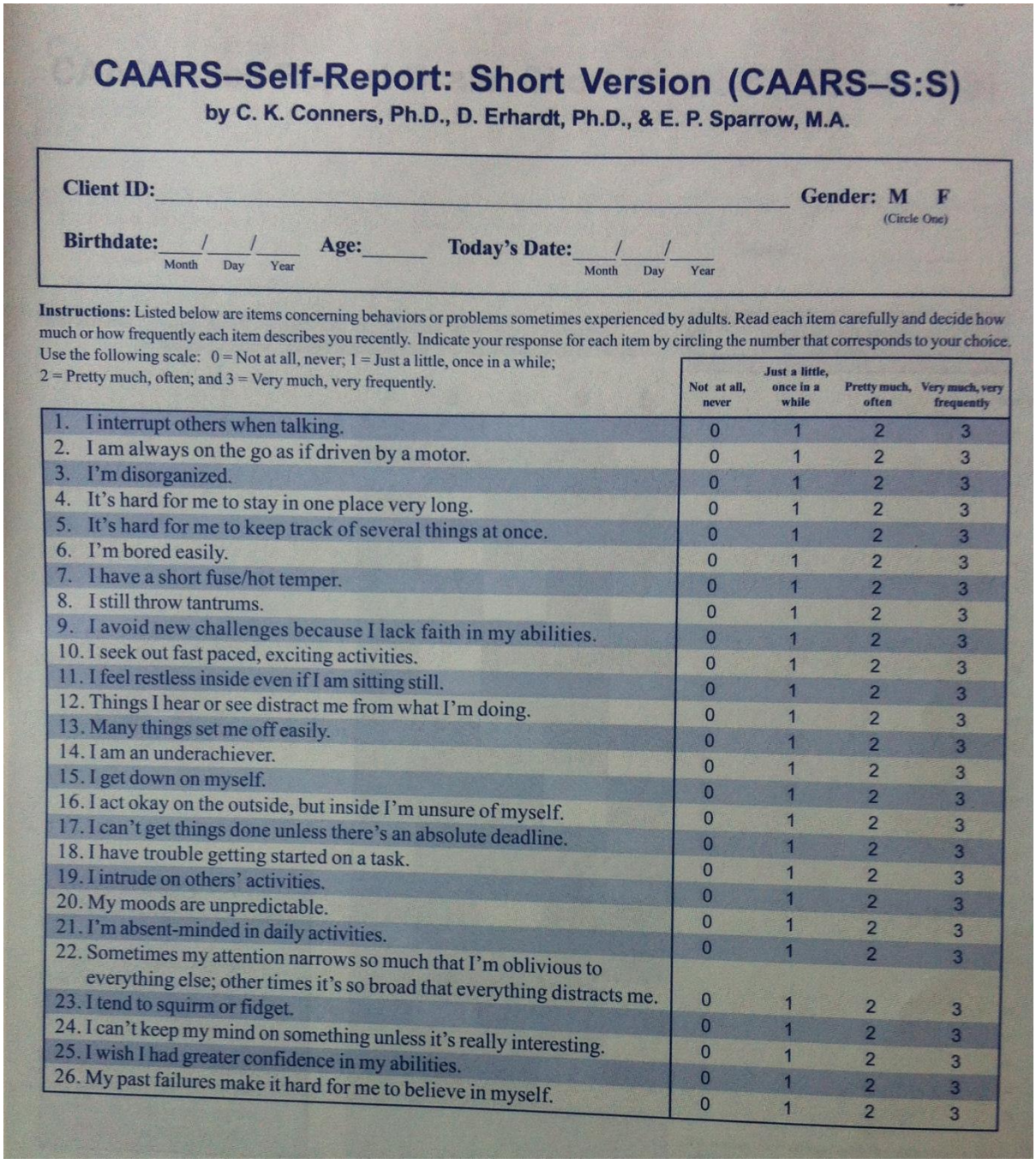
16. When I see someone being taken advantage of, I feel kind of protective towards him \her

Scoring Item responses are scored according to the following scale for positively worded items 1, 3, 5, 6, 8, 9, 13, 16. Never = 0; Rarely = 1; Sometimes = 2; Often = 3; Always = 4. The following negatively worded items are reverse scored: 2, 4, 7, 10, 11, 12, 14, and 15. Scores are summed to derive total for the Toronto Empathy Questionnaire.

Appendix G: Reading the Mind in the Eyes Test

For each set of eyes, choose and circle which word best describes what the person in the picture is thinking or feeling. You may feel that more than one word is applicable but please choose just one word, the word which you consider to be most suitable. Before making your choice, make sure that you have read all 4 words. You should try to do the task as quickly as possible but you will not be timed. If you really don't know what a word means you can look it up in the definition hand-out.

Appendix H: Conners Adults ADHD Rating Scale short version (CAAR-S:S)



CAARS–Self-Report: Short Version (CAARS–S:S)

by C. K. Conners, Ph.D., D. Erhardt, Ph.D., & E. P. Sparrow, M.A.

Client ID: _____ **Gender:** M F (Circle One)

Birthdate: ___/___/___ (Month Day Year) **Age:** _____ **Today's Date:** ___/___/___ (Month Day Year)

Instructions: Listed below are items concerning behaviors or problems sometimes experienced by adults. Read each item carefully and decide how much or how frequently each item describes you recently. Indicate your response for each item by circling the number that corresponds to your choice. Use the following scale: 0 = Not at all, never; 1 = Just a little, once in a while; 2 = Pretty much, often; and 3 = Very much, very frequently.

	Not at all, never	Just a little, once in a while	Pretty much, often	Very much, very frequently
1. I interrupt others when talking.	0	1	2	3
2. I am always on the go as if driven by a motor.	0	1	2	3
3. I'm disorganized.	0	1	2	3
4. It's hard for me to stay in one place very long.	0	1	2	3
5. It's hard for me to keep track of several things at once.	0	1	2	3
6. I'm bored easily.	0	1	2	3
7. I have a short fuse/hot temper.	0	1	2	3
8. I still throw tantrums.	0	1	2	3
9. I avoid new challenges because I lack faith in my abilities.	0	1	2	3
10. I seek out fast paced, exciting activities.	0	1	2	3
11. I feel restless inside even if I am sitting still.	0	1	2	3
12. Things I hear or see distract me from what I'm doing.	0	1	2	3
13. Many things set me off easily.	0	1	2	3
14. I am an underachiever.	0	1	2	3
15. I get down on myself.	0	1	2	3
16. I act okay on the outside, but inside I'm unsure of myself.	0	1	2	3
17. I can't get things done unless there's an absolute deadline.	0	1	2	3
18. I have trouble getting started on a task.	0	1	2	3
19. I intrude on others' activities.	0	1	2	3
20. My moods are unpredictable.	0	1	2	3
21. I'm absent-minded in daily activities.	0	1	2	3
22. Sometimes my attention narrows so much that I'm oblivious to everything else; other times it's so broad that everything distracts me.	0	1	2	3
23. I tend to squirm or fidget.	0	1	2	3
24. I can't keep my mind on something unless it's really interesting.	0	1	2	3
25. I wish I had greater confidence in my abilities.	0	1	2	3
26. My past failures make it hard for me to believe in myself.	0	1	2	3

Appendix I: Certificate of Ethical Approval

Certificate of Ethical Approval

Applicant:

Gary Burgess

Project Title:

What is psychopathy and how is it measured? An exploration of correlations in performance on measures of psychopathy, empathy and behavioural self-regulation.

This is to certify that the above named applicant has completed the Coventry University Ethical Approval process and their project has been confirmed and approved as Medium Risk

Date of approval:

14 December 2015

Project Reference Number:

P35768

Appendix J: Participant Information Sheet

Coventry University and the University of Warwick- Doctorate in Clinical Psychology

Personality, Empathy and ToM

We would like to invite you to participate in this research study regarding how certain personality styles are related to different psychological characteristics such as empathy. Please take the time to read the following information and decide whether you would like to take part.

Thank you for considering this research.

Purpose of the study and why have I been chosen?

The purpose of the study is to investigate whether certain personality styles are related to certain psychological abilities. While these associations have been researched before, this has almost exclusively been within forensic populations. This research will look at a group of adults from the general population to further understand these variables. It is hoped that the results will be useful for clinical work.

Do I have to take part?

Taking part in this study is voluntary and it is your choice whether to take part. We will ask you to indicate your consent before proceeding. You are also able to withdraw from the study at any time until the assessment is complete. If you

decide not to take part in the research or do not wish to complete the survey, your studies/grades will not be affected in any way.

What will the research involve?

If you agree to take part in the research, you will be asked to do the following:

- Indicate your consent by checking all boxes on the next page
- Complete a background information form indicating your age, gender, current University status and previous or current prosecution information.
- Complete three questionnaires and one task. You do not have to complete all the forms in one go, but please complete the form you are working on before taking a break.

What are the advantages and disadvantages to taking part?

It is not anticipated that there are any risks or disadvantages to taking part in the study. It is hoped that it will be an interesting and enjoyable experience.

Confidentiality and Withdrawal

If you would like to take part in the study, you will be asked to indicate your consent. No names or identifiable features will be included in the research which means that once completed, there will be no way of withdrawing your responses. Anonymised data will be password protected and stored on a computer for five years, after which time it will be destroyed.

What happens after the study?

The findings from the study will be written up and will form part of a thesis written for the Doctorate course in Clinical Psychology. It is intended that the results will also be published in a journal. You will be given the option to provide your email address if you would like a summary of the study once it is completed. Although providing your email address will compromise your anonymity, all email addresses will be collated thus, your individual results will not be associated with your email address.

Who is the organising the research?

This study is being jointly organised by Gary Burgess (Trainee Clinical Psychologist, Coventry University and the University of Warwick), Dr Ian Hume (Senior Lecturer in Psychology, Coventry University) and Dr Laura Taylor (Associate Head of Psychology Department, Coventry University).

Who has reviewed this study?

All research is reviewed by a Research Ethics Committee to protect your safety, rights, well-being and dignity. This study has been reviewed by the Coventry University Research Ethics Committee.

What if things go wrong, who do I complain to?

If you are unhappy with any aspect of participating in the study, then please contact Professor Ian Marshall, Deputy Vice-Chancellor, Coventry University.
Email: i.marshall@coventry.ac.uk

Who can I contact for further information?

Thank you for taking the time to read this information sheet. I hope it has been helpful for you in deciding whether you wish to participate. If you have any queries or would like to discuss the study further, please contact the principal researcher, Gary Burgess or Dr Ian Hume, Senior Lecturer

Gary Burgess: burges33@uni.coventry.ac.uk

G.D.H.Burgess@warwick.ac.uk

Ian Hume: hsx264@coventry.ac.uk

Thank you for thinking about taking part in this study

Gary Burgess, Trainee Clinical Psychologist

Appendix K: Consent Form.

To be administered online.

Please read the following carefully:

1. I confirm that I have read and understand the participant information sheet for the above study. I have had the opportunity to consider the information and make an informed choice.
2. I understand that my participation is voluntary but I will be unable to withdraw my results following completion of the survey
3. I understand that my studies will not be affected by my participation
4. I can change my mind and withdraw at any point until after the completion of the survey
5. I understand that my answers will only be used for this research
6. I understand that if I provide my email address to receive the results of the research, my individual results from the study will not be linked with my email address
7. I am aware that all data from the study will be anonymised, password protected and destroyed after five years.
8. I am aware that results from this study may be disseminated and published in a peer reviewed journal.
9. I agree to take part in the above study

Appendix L: Background Information Sheet

Please indicate the following:

Age:

Gender:

To what level are you currently studying at your University?

- Undergraduate
- Postgraduate
- Other, please state
- I prefer not to answer

Appendix M: Debrief Form

Debrief Form

Thank you for taking the time to take part in this research!

What is this study about?

This study is an investigation in to the possible relationships between certain personality styles, ToM and empathy and their difference in males and females.

- There are certain personality styles that indicate the tendency towards antisocial behaviour, they are thought to be associated with different forms of empathy and so there may be difference in the way emotions are experienced.
- ToM is a measure of an individual's ability to speculate on the thoughts and emotions of others, and to be able to see things from other people's points of view.
- Empathy refers to mental perspective taking and the vicarious sharing of emotion.

Previous research has often not managed to find consistent relationships between these personality styles and other psychological abilities. Many of the associations are subtle and this study aimed to use more appropriate and sophisticated tests to measure the relationships and identify whether any differences occur between males and females.

If participation in the study has made you feel uncomfortable in any way and you would like further advice and support, you can contact your GP or any of the following organisations:

Coventry University Student Welfare:

Student Welfare, The Hub, 34-35 Jordan Well, Coventry CV1 5RW. 024 7765 8029.

Warwick University Counselling Service:

Samantha Tarren, University Counselling Services, Westwood House, Westwood Campus, University of Warwick, Coventry, CV4 8EE. 02476523761

As previously indicated, all data is collected without any personally identifiable information. Thus, it is no longer possible to withdraw your responses from this study.

If you would like more details about the study please contact Gary Burgess (burges33@uni.coventry.ac.uk or G.D.H.Burgess@warwick.ac.uk)

Once again, thank you for your participation.

Regards,

Gary Burgess,

Trainee Clinical Psychologist