DOES EMOTION PROCESSING ABILITY MEDIATE THE RELATIONSHIP BETWEEN PSYCHOPATHY AND GROUP PSYCHOTHERAPY ENGAGEMENT?

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ABSTRACT
Does emotion processing ability mediate the relationship between psychopathy and group psychotherapy engagement?

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Therapeutic engagement in psychopathy is an important area of study due to reports of poor engagement leading to poor treatment outcome for this group. One factor that may influence effective engagement is the ability to process emotional information, which has been shown to be impaired in psychopathy.

The study investigated the association between engagement in group therapy and level of psychopathy and assessed whether this relationship is mediated by emotion processing ability. It was hypothesised that higher levels of psychopathy would be associated with lower levels of therapy engagement; however, this relationship would be mediated by four emotion processing indicators believed to be important for good treatment outcome. Specifically, awareness and arousal of emotion, emotion regulation ability, interpretation bias and ability to transform emotion would:

i. jointly mediate the relationship between psychopathy and therapy engagement
ii. each uniquely mediate the relationship between psychopathy and therapy engagement.

Participants, violent offenders with varying levels of psychopathy, were interviewed in a cross-sectional design. Emotion processing ability was assessed using five computerised tasks each selected to best capture one of the cognitive mechanisms of emotion processing outlined above. Psychopathy was measured using the Psychopathy Check List-Revised. Therapy engagement was assessed by group therapists three months after interview using the Group Emotional Engagement Questionnaire (GEEQ). The GEEQ is a new measure designed, developed and tested as part of this study to measure its dependent variable accurately.

Psychometric evaluation of the GEEQ demonstrated high levels of reliability (internal, inter-rater) with between good and adequate validity (convergent, discriminant) and good predictive validity. Mediation analysis revealed high Factor 1 psychopathy (the affective component) was associated with poorer therapy engagement (lower GEEQ scores). Interpretation of emotion and transforming emotion acted as suppressors on this relationship. This may suggest that those with many Factor 1 traits used positive interpretation bias as a defence against experiencing distress (schema overcompensation). This response was resistant to change and gave high Factor 1 participants the appearance of being better engaged in therapy than they were. Reaction time data suggested this phenomenon occurred as an automatic response rather than a conscious effort to impression manage.

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CHAPTER 1:
INTRODUCTION TO THE THESIS

Chapter 1

1. INTRODUCTION TO THE THESIS

The research literature demonstrates that therapy engagement is necessary for good treatment outcome. In particular, ability to engage emotionally and cognitively is associated with therapeutic change (Burum & Goldfried, 2007; Ehrenreich, Fairholme, Buzzella, Ellard, & Barlow, 2007; Greenberg & Pascual-Leone, 2006; Rottendberg & Gross, 2007; Whelton, 2004). This association between therapy engagement and treatment outcome makes therapy engagement an important area of research. More specifically, the emotional and cognitive mechanisms involved warrant investigation, as knowledge of these will contribute to the evidence-base for effective therapy and may help practitioners develop specific strategies to enhance engagement (Howells & Day, 2007) and improve therapy outcome.

This exploration is particularly necessary in the case of psychopathy which is associated with emotional and cognitive deficits (Blair, Finger, & Marsh, 2009), poor therapy engagement (Howells & Tennant, 2007), therapy disruption (Wong & Hare, 2005) and poor treatment outcome (Harris & Rice, 2007). To date, the relationship between emotional and cognitive deficits and therapy engagement in psychopathy has not been explored.

This introductory chapter will begin by outlining current debates surrounding the conceptualisation of psychopathy. An examination of the measurement, aetiology and treatment responsivity of psychopathy will then follow. Next

therapy engagement will be defined and approaches to its measurement will be examined. In addition, the relationship between engagement and treatment outcome will be set out. The chapter will conclude with a review of emotion processing in psychopathy and psychotherapy and will then briefly summarise the organisation of the rest of the thesis.

1.1. Psychopathy

1.1.1. Defining Psychopathy

A review of the literature reveals three main discussions concerning the definition of psychopathy. First is the distinction made between primary and secondary psychopathy (Blackburn, 1998; Karpman, 1961; Lykken, 1995; Porter, 1996). Second is whether criminality, especially violent crime, should be included as one of psychopathy's defining features (Cleckley, 1982). Third is the contest between personality trait versus behavioural trait conceptualisations of the disorder (Cleckley, 1982; Hare, 1996a; Lilienfield, 1994; Patrick, Fowles, & Krueger, 2009; Salekin, 2002).

1.1.1.1. Primary and Secondary Psychopathy

Traditionally psychopathy has been defined by two subtypes: primary and secondary psychopathy (Poythress & Skeem, 2007). Primary psychopaths are characterised by affective deficits thought to be rooted in their temperament (Blair, Mitchell, & Blair, 2005; Karpman, 1961). In addition, this subtype is associated with extraversion, confidence and dominance (Blackburn, 1998) along with an inability to experience sophisticated emotions such as guilt, remorse or love (Karpman, 1948). Finally, primary psychopaths

are typified by instrumental behaviour directed toward maximising personal gain or excitement (Karpman, 1948).

In contrast, secondary psychopaths display affective disturbances believed to originate in aversive psychosocial learning (Blair, 2005; Karpman, 1941). In addition, this subtype is related to anxiety, avoidance and submission (Blackburn, 1998) as well as occasional displays of empathy and a desire for social acceptance (Poythress & Skeem, 2007). Finally, the secondary psychopath is characterised by reactive aggression driven by revenge or hatred (Karpman, 1948). These differences in origin, affective deficits and interpersonal styles are thought to result in different treatment outcomes. Whereas secondary psychopaths are believed to be open to treatment, primary psychopaths are not (Karpman, 1948).

1.1.1.2. Criminality

Anti-social behaviour, including criminality, features in most definitions of psychopathy (Blackburn, 1998; Hare, 1991; Lykken, 1995; Porter, 1996). Moreover, psychopaths are said to demonstrate a pattern of criminality distinct from other criminals (Hare, 1999a). Specifically, the criminal career of the psychopath is characterised by longevity, with earlier onset and later desistance (cessation of offending) than other criminals (Farrington, 2007; Moffitt, 1993). In addition, psychopaths commit a disproportionate amount of serious crime with greater levels of community and institutional violence (Harris & Rice 2007; Hare, 1999a; Rice, Harris, & Cormier, 1992; Seto & Barbaree, 1999; Skeem, Monahan, & Mulvey, 2002; Widiger, 2007). Furthermore, psychopaths show a pattern of violence dissimilar to other

violent criminals; their victims are usually strangers, the violence is often driven by greed or revenge and tends to be instrumental, predatory and detached. Finally, use of violence in psychopathy does not decrease with age as it does with other violent criminals (Hare, 1999a).

Conversely, some authors suggest criminal behaviour is an epiphenomenon which is not diagnostic of psychopathy, so should not be included as one of its core components (Cleckley, 1982; Cooke & Michie, 2001; Cooke, Michie, Hart, & Clark 2004; Skeem & Cooke, 2010a, 2010b). Skeem and Cooke (2010a) argue the inclusion of criminal behaviour as a diagnostic criterion is the consequence of a socio-political enterprise to identify dangerous criminals within the prison system and to predict their future risk of violence on release. Moreover, Cleckley (1982) observed that although some psychopaths commit violent and brutal crimes this was not a prerequisite for diagnosis and should not be included in diagnostic criteria. Furthermore, he viewed violent criminal behaviour as an exception and a trait independent of the other symptoms of psychopathy. Cleckley did acknowledge that when psychopaths commit violent crime they tend to ignore the consequences and often engage in repeat offending despite knowing that they will be caught and punished. For Cleckley it was the apparent senseless nature of the crimes that illustrated psychopathy rather than criminality per se.

The main criticism when including criminal behaviour as a defining feature of psychopathy is that doing so then excludes those psychopaths who do not commit crime. In *The Mask of Sanity* Cleckley included a number of psychopaths who had not encountered the law, including a fellow psychiatrist

(Cleckley, 1982). Lykken (2007) notes successful psychopaths (or those high in psychopathic traits) from history may include Winston Churchill, Lyndon Johnson and Oskar Schindler, who for reasons of intellect, upbringing and conditions of time and place did not direct their psychopathic tendencies toward crime. Similarly, Hare warns of the successful psychopaths among us who can be found in business, academia, the military, the news media, the entertainment business and the arts (Hare, 1999b).

1.1.1.3. Personality versus Behavioural Traits Approach

1.1.1.3.1. Personality traits approach

Cleckley typifies the personality trait approach outlining 16 diagnostic criteria including: superficial charm, lack of anxiety, lack of guilt, dishonesty, failure to form lasting intimate relationships, failure to learn from punishment, poverty of emotions, lack of insight into the impact of ones behaviour on others, and failure to plan ahead (Cleckley, 1982). Essential to this approach is the inclusion of interpersonal and affective deficits (Blair et al., 2005).

The personality traits approach is based on what Lilienfield terms ‘open’ concepts (Lilienfield, 1994). The rater is given detailed descriptions of each diagnostic criterion against which all available evidence is considered to decide if criteria have been met. As such, raters accumulate data to arrive at a global rating; for example, to establish whether an individual presents as superficially charming during interview and in his routine interactions with others. However, objections to this approach have been raised because of its reliance on inferences made by the rater that risks low inter-rater reliability (Lilienfield, 1994; Salekin, 2002).

1.1.1.3.2. Behavioural traits approach

Whilst Cleckley's personality based conceptualisation of psychopathy informed the DSM-II, more recent versions of DSM have relied primarily on behavioural based definitions, for example Antisocial Personality Disorder (ASPD) (in adults), conduct disorder (CD) and oppositional defiant disorder (ODD) (in children). This change in direction from personality to behavioural based classification occurred in an attempt to improve reliability (Lilienfield, 1994). Assessments based on behavioural evidence were thought to be more reliable than those based on personality traits because they are less prone to subjective judgement. Specifically, behaviourally based indicators, such as truancy and habitual unemployment were thought to be easier to validly measure than personality traits, such as callousness (Salekin, 2002).

Lilienfield (1994) notes the behavioural approach is based on 'closed' concepts. Only a few indicators are used for each criterion and raters are not allowed to look beyond these indicators when reaching a diagnosis. This approach may yield better reliability but it is seen to be at the expense of construct validity (Hare, 1996b).

ASPD criteria do not consider the affective and interpersonal components of psychopathy mentioned by Cleckley and others. Consequently, ASPD criteria fail to differentiate between the grandiose, callous psychopath and the antisocial habitual criminal. As a result, many clinicians and researchers have drawn a distinction between the DSM-IV classifications (ASPD, CD, ODD) and psychopathy (Salekin, 2002).

Finally, the behavioural traits approach has been criticised for being both over- and under-inclusive (Lilienfield, 1994). The problem of over-inclusion involves including individuals who are not primary psychopaths. Conversely, under-inclusion arises because primary psychopaths who have not had extensive involvement with the legal system are overlooked. Thus too much emphasis is placed on unsuccessful psychopaths at the expense of identifying high-functioning psychopaths.

1.1.1.3.3. Combining Personality and Behavioural Traits

A review of the current literature shows that in research and clinical practice, reference to Hare's (1991, 2003) two-factor model of psychopathy predominates (Willmott, Casey, Rogers, & Yiend, 2009). This model combines interpersonal and affective characteristics (Factor 1) with antisocial acts and unstable / deviant lifestyle (Factor 2). Factor 1 corresponds to primary psychopathy and Factor 2 relates to secondary psychopathy.

Whilst Hare's two-factor model of psychopathy remains the chief reference point amongst practitioners, it is presently undergoing revision. Applying confirmatory factor analysis to Hare's model, Cooke and Michie (2001) developed a three-factor model. Hare's original Factor 1 is replaced by two new factors: arrogant, deceitful interpersonal style (Factor 1) and deficient affective experience (Factor 2). A third factor consists of Hare's remaining traits which are specific to impulsive and irresponsible behaviour but omits antisocial behaviours. Cooke, Michie and Hart (2007) argue that the excluded anti-social behaviours are the overt manifestations of the remaining core traits of psychopathy. By excluding the behavioural items of psychopathy as consequences rather than traits of psychopathy, Cooke, Michie, Hart and

Clark (2005) further distance psychopaths from the generic antisocial population and add greater emphasis to deficient affective processing, represented in four of their 13 core traits.

Hare responded to the above by taking the three factors identified and applying confirmatory factor analysis, but including the previously excluded antisocial behaviours. As a result, the four-facet model of psychopathy emerged, identifying the following four facets: interpersonal, affective, lifestyle and antisocial behaviour (Hare, 2003; Hare & Neumann, 2005, 2007). In this model, anti-social behaviour is considered critical to psychopathy because of its discriminant power, effectively differentiating psychopathy from other psychiatric disorders (Hare & Neumann, 2005). Notably both the three and four-factor solutions subdivide the original affective and interpersonal dysfunctions into two subcategories.

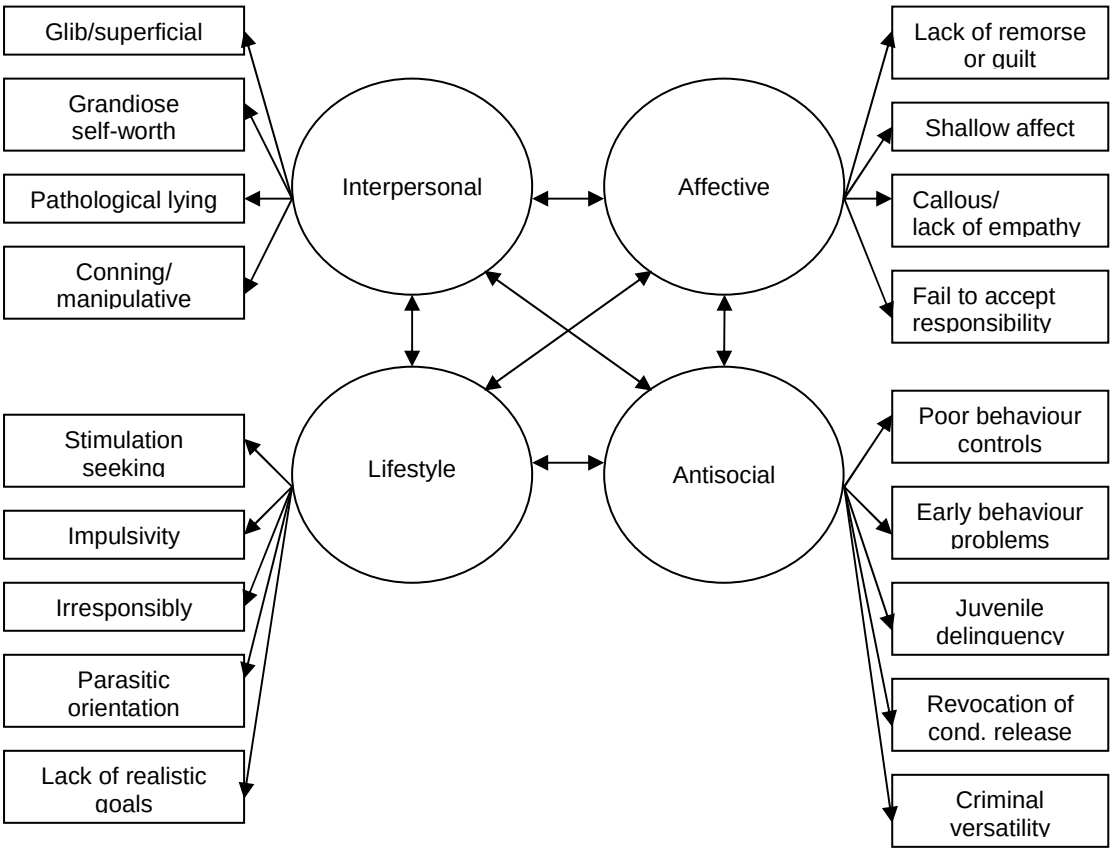
Finally, one further conceptualisation of psychopathy that combines personality and behavioural traits is worth mentioning. Patrick et al. (2009) draw on the works of Cleckley (1982), Hare (1991, 2003) and Lykken (1995) to identify disinhibition, boldness and meanness as the key components of a triarchic model of psychopathy. Disinhibition describes impulsivity manifest in irresponsible behaviour, distrust, angry-reactive aggression, untrustworthiness and norm violation. This reflects Karpman's secondary psychopathy (Karpman, 1941) and PCL-R Factor 2 (antisocial traits). Boldness relates to social dominance, thrill seeking and a resilience to threat and danger. These traits are evidenced in assertiveness and persuasiveness, bravery and venturesome behaviour which echo Clecklian concepts of psychopathy

(Cleckley, 1982) as well as aspects of the successful psychopath outlined by Lilienfield (1994) and Lykken (2007). Meanness speaks to a lack of empathy, poor attachments with others, rebelliousness and self aggrandisement through cruelty. Related behaviours include arrogance, lack of emotional intimacy with others, predatory aggression, cruelty (including to animals), aggressive competitiveness and exploitation of others. Meanness is reflected in the PCL-R Factor 1 items that describe callous unemotional traits. These three components are described as phenotypes that arise from a complex relationship between genes and environment. The authors view all three as continuous interrelated variables that vary in severity and configuration depending on the developmental experiences of the individual (Patrick et al., 2009).

To summarise, definitions of psychopathy focus on aspects of behaviour and / or personality and their relationship to criminality. Early on Karpman described two distinct subtypes of psychopath (primary and secondary) each distinguishable on personality traits (affective paucity versus labile affect) and behaviour (instrumental versus reactive aggression). This same distinction was later reflected in Hare's two-factor model of psychopathy with Factor 1 and Factor 2 related to primary and secondary psychopathy respectively. Karpman believed secondary psychopathy was amenable to treatment but primary was not. Hare makes no such distinction, however, as will be made clear later, research findings suggest the two factors differ in their associations to treatment outcome (Hare, 2002) and emotion processing ability (Kosson, Lorenz, & Newman, 2006). For the present study, it was important to consider these two different aspects of psychopathy to see

whether they related differently to emotion processing and therapy engagement. To do this it was crucial to use a reliable method of assessing both behavioural and personality traits of psychopathy. As the next section illustrates these discussions concerning the definition of psychopathy have informed approaches to its assessment.

Figure 1 Hare's four-factor model of psychopathy



1.1.2. Measuring Psychopathy

Assessment of psychopathy for research and clinical purposes is usually made with reference to the DSM-IV criteria for ASPD or Hare's Psychopathy Check List-Revised (PCL-R; Hare, 2003). The different conceptualisations of psychopathy described earlier are reflected in these measures. In particular, DSM-IV criteria for ASPD consist of behavioural traits whereas the PCL-R

assesses a combination of behavioural and personality traits. Occasionally psychopathy is assessed with self-report measures that refer to definitions developed by Cleckley or Karpman (Lilienfield & Fowler, 2007).

1.1.2.1. DSM-IV Antisocial Personality Disorder

ASPD is assessed by interview and collateral file search. Assessors establish whether an individual demonstrates a 'pervasive pattern of disregard for and violation of the rights of others since age 15 years' by meeting at least three out of a possible seven criteria (see Table 1). Individuals must be 18 years or over at the time of assessment and scores are determined on a yes / no basis.

Table 1 Criteria for DSM-IV antisocial personality disorder

Item	ASPD Criteria
1	Failure to confirm to social norms with respect to lawful behaviours as indicated by repeatedly performing acts that are grounds for arrest
2	Deceitfulness, as indicated by repeated lying, use of aliases, or conning others for personal profit or pleasure
3	Impulsivity or failure to plan ahead
4	Irritability and aggressiveness, as indicated by repeated physical fights or assaults
5	Reckless disregard for safety of self or others
6	Consistent irresponsibility, as indicated by repeated failure to sustain consistent work behaviour or honour financial obligations
7	Lack or remorse, as indicated by being indifferent to or rationalising having hurt, mistreated, or stolen from another

In addition, there must have been onset of Conduct Disorder (CD) prior to age 15 years indicated by 'A repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules were violated'. Fifteen criteria are set out under the three subheadings of aggression to people and animals, destruction of property and serious violation of rules (see Table 2). A history of at least three out of the 15 criteria, which include physical fights, fire setting and truancy, must be demonstrated. Additionally the problematic behaviour identified must have significantly

disturbed the individual's social, academic and occupational functioning. Again scoring is on a yes / no basis.

Table 2 Criteria for DSM-IV conduct disorder

Item	CD Criteria
Aggression to people and animals	
1	Often bullied, threatened, or intimidated others
2	Often initiated physical fights
3	Used a weapon that can cause serious physical harm to others (e.g., a bat, brick, broken bottle, knife, gun)
4	Was physically cruel to people
5	Was physically cruel to animals
6	Stole while confronting a victim (e.g., mugging, purse-snatching, extortion, armed robbery)
7	Forced someone into sexual activity
Destruction of property	
8	Deliberately engaged in fire setting with the intention of causing serious damage
9	Deliberately destroyed others' property (other than by fire setting)
10	Broke into someone else's house, building, or car
11	Often lied to obtain goods or favours or to avoid obligations (i.e., "conned" others)
12	Stole items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering; forgery)
Serious violations of rules	
13	Often stayed out at night despite parental prohibitions, beginning before age 13 years
14	Ran away from home overnight at least twice while living in parental or parental surrogate home (or once without returning for a lengthy period)
15	Was often truant from school, beginning before age 13 years

A number of studies have demonstrated good inter-rater reliability (Poythress et al., 2010) and good construct validity for ASPD (Kosson et al., 2006). For example, ASPD has been found to correlate with abuse of controlled substances (Derefinko & Widiger, 2008), as well as psychophysiological and neuropsychological deficits (Kosson et al., 2006). In addition, ASPD predicts treatment outcome (Kranzler, Del Boca, & Rounsaville, 1996) and recidivism (Harris, Rice, & Cormier, 1991) and has indicated comorbidity with depression, anxiety (Goodwin & Hamilton, 2003; NICE, 2009) borderline, narcissistic and paranoid personality disorders (Coid, 2003).

The prevalence of ASPD amongst the general population in Great Britain is estimated to be 1% in men and 0.2% in women (slightly higher in urban areas) (NICE, 2009). By contrast, ASPD in the prison population of England and Wales is found in 63% of male remand prisoners (NICE, 2009), 49% of

male sentenced prisoners and 31% of female sentenced prisoners (NICE, 2009). Similarly, an international systematic review of 62 surveys involving 23,000 prisoners revealed 65% met criteria for a diagnosis of personality disorder including 47% with ASPD (Fazel & Danesh, 2002). In addition a number of studies have found between 40% and 70% of individuals diagnosed with CD will go on to develop ASPD (NICE, 2009). However, diagnosis of ASPD requires only three of seven ASPD criteria plus any three of 15 CD criteria resulting in inclusion of a heterogeneous group of individuals with varying profiles (Minzenberg & Siever, 2007).

1.1.2.2. Psychopathy Check List-Revised

The Psychopathy Check List (PCL; Hare 1980) consisted of 22 items taken from a pool of items by choosing those that best differentiated high and low scores on the Cleckley global rating system (a scale based on Cleckley's prototypical psychopath). The 22 items fitted into two clusters. The first cluster, usually referred to as Factor 1, consisted of core interpersonal and affective characteristics. The second cluster, Factor 2, contained items indicative of an antisocial and peripatetic lifestyle. The PCL was revised as the PCL-R when two items ('previous diagnosis as a psychopath or similar' and 'antisocial behaviour not due to alcohol intoxication') were found to be difficult to score and demonstrated low correlations with the total score (Hare, 1991). The PCL-R retains the two-factor structure of the earlier measure.

The PCL-R combines a semi-structured interview with a comprehensive file search from which expert ratings are derived. There are 20 items, each of

which is scored on a 3 point scale (0 = item does not apply, 1 = item applies to a certain extent, 2 = the item applies) (see Table 3).

Table 3 Psychopathy Check List-Revised

Factor 1	Factor 2	Items which do not load onto either factor
Interpersonal / affect	**Antisocial**	
Glibness / superficial charm	Need for stimulation	Promiscuous sexual behaviour
Grandiose sense of self worth	Parasitic lifestyle	Many short-term marital affairs
Pathological lying	Poor behavioural controls	
Conning / manipulative	Early behavioural problems	
Lack of remorse or guilt	Lack of realistic long-term plans	
Shallow affect	Impulsivity	
Callous / lack of empathy	Irresponsibility	
Failure to accept responsibility for own actions	Juvenile delinquency	
	Revocation of conditional release	
	Criminal versatility	

Total scores range from 0 to 40 depending on the degree to which an individual meets the description of the prototypical psychopath. Hare suggests a cut-off score of 30 for a diagnosis of psychopathy (Hare, 1991, 2003). However diagnostic cut-offs vary depending on setting with suggested cut-offs of 30 (North America) (Hare, Clark, Grann, & Thornton, 2000), 26 (Scandinavia) (Grann, Langstrom, Tengstrom, & Stalenheim, 1998; Rasmussen, Storsaeter, & Levander, 1999) and 25 (UK) (Semple & Smyth, 2009). Moreover, a score of 30 or more (in the absence of any other personality disorder) is one of the criteria used to assess whether an offender requires treatment at one of the Dangerous and Severe Personality Disorder (DSPD) Units in the UK (DSPD Programme, 2008). The picture is further complicated by suggestions that a cut-off of 25 is acceptable in research studies irrespective of setting (Rice et al., 1992).

Tests of the PCL-R's psychometric properties demonstrate good to fair reliability (inter-rater and test re-test) for PCL-R total scores and Factor 2

scores, however, results are generally less favourable for Factor 1 (Rutherford, Cacciola, Alterman, McKay, & Cook,1999; Tyrer et al., 2005, 2007). In addition, some studies found the measure to have good predictive validity for treatment outcome and violent recidivism (Hare, 1991, 2002; Quinsey, Harris, Rice, & Cormier, 1998; Serin, 1996; Seto & Barbaree, 1999). Notably, Serin found that Factor 1 predicted violent recidivism whilst Factor 2 predicted general recidivism (Serin, 1996). Conversely, in a meta analysis of 28 studies comparing 9 risk assessment tools, Yang, Wong and Coid (2010) found PCL-R total score predicted violent recidivism moderately well. However separate examination of Factors 1 and 2 revealed Factor 2 was a stronger predictor of violence than total score whilst Factor 1 predicted violence at levels no greater than chance. Further, in a systematic review and meta analysis involving 68 studies with 25,980 participants (88 independent samples), Singh, Grann and Fazel (2010) found the PCL-R produced the lowest predictive validity when compared to 8 other risk assessment tools. However, as the authors note this should not be surprising as the PCL-R was not developed as a risk assessment tool. Finally, a number of studies have established cross-cultural generalizability for the PCL-R (Cooke, 1998; Sullivan, Abromowitz, Lopez, & Kosson, 2006).

Diagnosis of psychopathy using the PCL-R is associated with narcissistic, histrionic and antisocial personality disorders as well as substance misuse. Specifically, Factor 1 is associated with narcissistic and histrionic personality disorders whereas Factor 2 is related to antisocial personality disorder and substance misuse (Derenfinko & Widiger, 2008; Widiger, 2007). Occurrence is estimated as 1% in the general population (Hare, 1999b) and 15 to 20% in

the UK prison population (score ≥ 30) (Hare 2003). However, a cross-sectional survey of prisoners in England and Wales using a cut-off score of 30 found the rate of prevalence to be 8%, somewhat lower than Hare's estimate (Coid et al., 2009). Finally, the mean score for noncriminals is found to be 5 compared to 22 amongst prisoners (Hare, 1996a).

1.1.2.3. Comparing DSM-IV ASPD with PCL-R Psychopathy

A comparison of psychopathy assessed using the PCL-R with ASPD indicates some differences. This is because the measures have been developed with reference to different conceptualisations of psychopathy. As stated above ASPD is rooted in a behavioural traits approach whereas the PCL-R draws on Kaplan and Cleckley and combines assessment of behavioural traits with personality traits. ASPD criteria do not consider the affective and interpersonal components of psychopathy mentioned by Cleckley and others whereas the PCL-R does. As such, individuals diagnosed using ASPD criteria display noticeable differences to psychopaths identified with the PCL-R. ASPD criteria emphasise anti-social behaviour without considering its aetiology. In comparison, the PCL-R includes aspects of affective dysfunction believed to cause the development of anti-social behaviour and so makes it a more useful measure (Blair et al., 2009).

Most individuals who meet PCL-R criteria also meet criteria for ASPD, however, the reverse is not true. Only 20 to 30% of individuals with a diagnosis of ASPD also score 30 or above on the PCL-R (Serin, 1996). In addition, experimental studies comparing ASPD with PCL-R psychopathy have demonstrated differences in cognitive and emotion processing ability.

Compared to controls PCL-R scores were associated with impairments in processing semantic meanings of language and attenuated psychophysiological responses to emotional stimuli whilst ASPD was not (Hare, 1996a). In addition, Kosson et al. (2006) found PCL-R score but not ASPD was related to insensitivity to emotional cues during a lexical decision task, particularly when left hemisphere resources were demanded. In the same study PCL-R score was associated with higher levels of criminality. These findings led the authors to conclude that DSM-IV ASPD and the PCL-R characterise distinct syndromes rather than different aspects of the same condition.

1.1.2.4. Self-Report Measures of Psychopathy

Self-report measures of psychopathy are problematic for a number of reasons. First one of the criteria for psychopathy is prolific lying. Second, psychopaths lack introspection, suffer from chronic cognitive distortions, are thought to be unable to verbalise their emotional state and are believed to have little insight into the severity of their own psychopathology (Lilienfield, 1994). Arguably, each of these traits renders self-assessment difficult. However, two self-report measures, the Psychopathic Personality Inventory (PPI; Lilienfield & Andrews, 1996) and the Levenson Primary and Secondary Psychopathy Scales (LSP; Levenson, Kiehl, & Fitzpatrick, 1995), have been developed to assess psychopathy in noncriminal populations.

The PPI draws on Cleckley's conceptualisation of psychopathy and consists of 187 items arranged under eight factors and scored on a 4-point Likert scale (1 = false, 2 = mostly false, 3 = mostly true, 4 = true) (see Table 4). The PPI

and its subscales exhibited excellent internal consistency and the questionnaire demonstrated good test-retest reliability (Lilienfield & Andrews, 1996). When tested against the PCL-R with 50 male inmates, PPI scores were related to PCL-R total, Factor 1 and Factor 2 scores but associations were strongest with Factor 1 (Poythress, Edens, & Lilienfield, 1998). The Machiavellian Egocentricity subscale was the best correlate for the PCL-R total score.

Table 4 Psychopathic Personality Inventory

Factor	Item example
1. Machiavellian Egocentricity	I sometimes try to get others to bend the rules for me if I can't change them any other way
2. Social Potency	Even when others are upset with me, I can usually win them over with my charm
3. Fearlessness	Making a parachute jump would really frighten me (reverse scored)
4. Cold-heartedness	I have 'crushes' on people that were so intense that they were painful (reverse scored)
5. Impulsive Nonconformity	I sometimes question authority figures 'just for the hell of it'
6. Blame Externalization	When I'm in a group of people who do something wrong, somehow it seems like I'm usually the one who ends up getting the blame
7. Carefree Nonplanfulness	I weigh the pros and cons of major decisions carefully before making them (reverse scored)
8. Stress Immunity	I can remain calm in situations that would make many other people panic

The LPSP consists of 26 items which are scored on a 4-point Likert scale (1 = disagree strongly, 4 = agree strongly). The items are constructed under two subscales which reflect Karpman's primary and secondary psychopathy (16 and 10 items respectively).

Table 5 Levenson Primary and Secondary Psychopathy Scales

Subscale	Item example
1. Primary Psychopathy Scale	Looking out for myself is my top priority
2. Secondary Psychopathy Scale	I am often bored

The LPSP primary scale exhibited adequate internal consistency, however the secondary scale was only marginally consistent. In addition, the scales were moderately correlated suggesting poor discriminant validity (Levenson et al.,

1995). This finding is supported by a number of further studies which report a lack of discriminant validity for the primary scale. Specifically, the primary scale was related to indicators of an antisocial lifestyle rather than the core interpersonal and affective features associated with primary psychopathy (Lilienfield & Fowler, 2007). For example, both scales correlated positively with antisocial behaviour, alcohol use, drug use, antisocial behaviour (Lynam, Whiteside, & Jones, 1999) and trait anxiety (Levenson et al., 1995). According to Karpman's description of psychopathy the primary scale should have predicted low trait anxiety.

Conversely, some studies have demonstrated discriminant validity for both scales compliant with Karpman's model. In a comparison of the LPSP with the Big Five Inventory the primary scale was associated with lower agreeableness and lower neuroticism whereas the secondary scale was related to lower conscientiousness and higher neuroticism (Lynam et al., 1999). In addition, Brinkley, Schmitt, Smith and Newman (2001) found the secondary but not the primary scale was related to alcohol abuse in a prison sample. The authors also found the primary scale was more strongly related to Factor 1 than Factor 2 PCL-R scores.

To summarise, the different conceptualisations of psychopathy described at the beginning of the chapter are reflected in approaches to its measurement. The DSM-IV assessment for ASPD (behavioural traits approach), the PCL-R (combined behavioural and personality traits approach) and the IPP (personality traits approach) all demonstrated good reliability. However only DSM-IV ASPD and the PCL-R showed good predictive validity for violent re-

offending and only the PCL-R confirmed good predictive validity for treatment outcome. In addition comparisons of ASPD with PCL-R psychopathy consistently demonstrate emotion processing deficits for PCL-R but not ASPD. This suggests the PCL-R may best capture the features of psychopathy related to treatment outcome, and by extension therapy engagement, as well as emotion processing ability. As the current study is concerned with whether emotion processing ability mediates the relationship between psychopathy and treatment engagement the PCL-R may be the most effective measure to use.

1.1.3. Aetiology of Psychopathy

Under the different traditions of psychology there are a number of causal models of psychopathy. These models posit inadequate socialisation and / or innate biological factors as the causes of psychopathy. However, emerging from the theoretical and empirical literature is the overriding finding that psychopathy is a disorder resulting from a complex interaction between social and biological factors (Rutter, 1997). Blackburn (2007a, 2007b, 2007c) goes further arguing that psychopaths do not represent a homogenous group and socialisation or biology alone is insufficient for a complete causal model of psychopathy.

1.1.3.1. Dual Process Models of Psychopathy

Dual process models of psychopathy consider the two factors of psychopathy separately and posit different causes for each. Frick's (1998) examination of callous unemotional (CU) traits in children and Fowles and Dindo's (2007) dual deficit model exemplify this approach. Frick, O'Brien, Wootton and

McBurnett (1994) assessed children with conduct problems for psychopathy and found two dissociable groups, one associated with callous unemotional (CU) traits (interpersonal and motivational difficulties) and another related to traditional measures of conduct disorder (CD) (impulsivity and conduct problems). These are differentially associated with Factor 1 and Factor 2 psychopathy respectively (Frick, 1998) and are thought to be genetically driven with two different aetiological pathways to anti-social behaviour (Frick & Marsee, 2007). Children with CU traits are characterised by fearlessness and lack of guilt and empathy. These are demonstrated in impaired sensitivity to punishment cues, a predilection for sensation seeking and reduced responsiveness to emotional material (including distress in others). This temperament leads to severe socialisation problems and predisposes such children to development of adult psychopathy.

Similarly, the dual deficit model (Fowles & Dindo, 2007) identifies two distinct deficits of low fear and impulsivity / disinhibition, linked to Factor 1 and Factor 2 psychopathy respectively. The low fear deficit proposes that psychopaths high in Factor 1 traits fail to process threat and punishment cues. The impulsivity / disinhibition deficit is linked to the poor emotion regulation associated with Factor 2 psychopathy. Fearlessness and / or weak inhibitory control combined with inadequate parenting and an adverse social environment lead to psychopathy (Fowles & Dindo, 2007; Patrick 2007; Patrick & Bernat, 2010).

Fowles and Dindo draw on Gray's (1970, 1987) model of the nervous system which describes motivational behaviour in terms of the behavioural activation

system (BAS) and the behavioural inhibition system (BIS). The BAS is stimulated by reward cues and initiates behavioural approach while the BIS is stimulated by punishment cues and initiates passive avoidance. Activation of one system obviates initiation of the other (Newman, MacCoon, Vaughn, & Sadeh, 2005). The amygdala and septohippocamppal circuit are believed to be the key structures for BIS activation (Gray & McNaughton, 2000). Factor 1 psychopaths are thought to have a weak BIS but normal BAS whereas the opposite is true for Factor 2 psychopaths. As such, Factor 1 predicts fearlessness and poor passive avoidance but normal levels of negative emotionality. In contrast, Factor 2 predicts high impulsivity and sensation seeking but normal fearlessness and passive avoidance (Fowles & Dindo, 2007).

Two sources of evidence support dual process models. First, twin studies suggest substantial heritability for CU traits (>60% variance explained) (Larsson, Viding, & Plomin, 2008; Viding, Blair, Moffitt, & Plomin, 2005; Viding, Jones, Frick, Moffitt, & Plomin, 2008) and stronger heritability for anti-social behaviour in children with CU traits (71-81% variance explained) than in those without (30-53% variance explained) (Viding et al., 2005; Viding et al., 2008). However, the differences in heritability for CU and CD traits overlap (e.g. Viding, et al. (2005) found variances of 81% and 30% respectively) suggesting some shared genetic influence.

Second, a number of studies examining emotion processing styles in children with conduct problems have demonstrated differences dependent on level of CU traits consistent with Frick's suggestion. Those higher in CU traits

demonstrated significantly slower response rates to emotional (negative) words in a lexical decision task (Loney, Frick, Clements, Ellis, & Kerlin, 2003), attenuated autonomic reactivity to empathy inducing images (Kimonis, Frick, Munoz, & Aucoin, 2008) and film clips (de Wied, van Boxtel, Matthys, & Meeus, 2011), and deficits in punishment response during a card playing task (Fisher & Blair, 1998). Similar findings have been replicated in studies with adult psychopaths (Kosson et al., 2006; Levenston, Patrick, Bradley, & Lang, 2000; Newman, Patterson, & Kosson, 1987; Williamson, Harpur, & Hare, 1991). In addition, Factor 1 psychopaths demonstrated impaired amygdala responsivity to fearful stimuli (Birbaumer et al., 2005). These support the hypotheses that fearlessness is particular to Factor 1 psychopathy (Fowles & Dindo, 2007). Finally, antisocial behaviour (more closely linked to Factor 2) was associated with poor performance on executive functioning tasks involving decision-making and impulse control (Morgan & Lilienfield, 2000). This is believed to support the impulsivity / disinhibition process in the model (Skeem, Devon, Polaschek, Patrick and Lilienfield, 2011).

1.1.3.2. Neuropsychological Models of Psychopathy

Damasio's (1994) somatic marker model, Blair's (2005) integrated emotion system (IES) and Kiehl's (2006) paralimbic hypothesis typify neuropsychological models of psychopathy. The somatic marker model describes a mechanism by which emotional processes influence decision-making. In the model, somatic markers refer to affective states that have come to be associated with certain stimuli and responses. These occur at the neurological level when specific classes of stimuli are connected with specific classes of somatic condition to inform decision-making and to regulate

behaviour. They are thought to bias cognitive processing by allowing decisions involving reward and punishment to be labelled good or bad in a preset manner. The amygdala and orbitofrontal cortex (OFC) are necessary components of the model. Specifically, the amygdala is crucial for formation of somatic markers and the OFC is critical for their later use in decision-making. Damasio suggests psychopaths fail to use the affective associations laid down by somatic markers. As such, deficits are thought to originate in the OFC, which fails to use information forwarded from the amygdala. This is displayed in impaired emotion-based learning, particularly a failure to avoid punishment (Damasio, 1994).

Supporting evidence for the somatic marker model of psychopathy is found in comparisons of psychopaths and patients with OFC lesions. For example, during the Iowa Gambling Task (IGT; Bechara, Damasio, A. R., Damasio, H., & Anderson, 1994) both groups displayed impaired passive avoidance learning (Bechara et al., 1994; Bechara, Damasio, H., Damasio, A. R., & Lee, 1999; Bechara, Tranel, & Damasio, 2000). In addition, Damasio, Tranel and Damasio (1990) reported both groups demonstrated attenuated autonomic response during passive viewing of social stimuli. However, the literature demonstrates a wide range of differences between these groups. For example, patients with OFC injuries typically exhibit lack of motivation and hoarding behaviour but psychopaths do not. In addition, such patients seldom demonstrate the instrumental and gaol-directed aggression or callousness characteristic of psychopathy (Kiehl, 2006). Finally, psychopaths demonstrate deficits in aversive conditioning associated with amygdala rather than OFC dysfunction (Blair et al., 2009). This implies their symptomatology originates

earlier in the process and is characterised by a failure in the *formation* of somatic markers rather than a failure to *use* them (i.e. impaired learning from reinforcement information rather than impaired use of it).

In contrast to Damasio, Blair's IES views impairments in the amygdala as a central aspect of psychopathy. In particular, when processing emotional stimuli the amygdala fails to provide forward reinforcement information to the OFC resulting in impaired decision-making especially for approach / avoidance behaviour. Any deficits observed in the OFC are thought to originate in amygdala hypoactivity (Blair, 2005, 2008). Blair speculates that impairments in the amygdala are influenced by genes. Emotion deficits are thought to disrupt socialisation and facilitate the development of psychopathy. As such, they are its core characteristic.

Evidence to support the IES is provided by fMRI studies of emotional memory (Keihl et al., 2001), aversive conditioning (Birbhaumer et al., 2005) and co-operative decision making (Rilling et al., 2007) that found attenuated activity in both the amygdala and OFC for psychopaths compared to controls. In addition, Blair draws on findings that suggest psychopaths are impaired in recognition of fearful (Blair, Colledge, Murray, & Mitchell, 2001; Blair et al., 2004) and sad (Blair et al., 2001; Stevens, Charman, & Blair, 2001) facial expressions in others. Fearful and sad facial expressions are said to act as aversive unconditioned stimuli. Fearful expressions warn others that a novel stimulus should be avoided while sad expressions dissuade continuation of behaviours that triggered the expression (Blair, 2007). In healthy populations these processes are shown to be reliant on activation of the amygdala (Blair,

Morris, Frith, Perrett, & Dolan, 1999; Murphy, Nimmo-Smith, & Lawrence, 2006). Inability to respond to sad and fearful expressions during the socialization process means that empathy fails to develop. This is thought to facilitate much of the interpersonal violence seen in psychopathy (Blair, 2005, 2007).

The role of the amygdala in psychopathy appears more complex than Blair's model suggests. Two studies report involvement of the amygdala for recognition of emotional expressions not compromised in psychopathy (Fitzgerald, Angstadt, Jelsone, Nathan, & Phan, 2006; Winston, O'Doherty, & Dolan, 2003). In addition, Kiehl (2006) suggests impairments in the wider paralimbic system better explain the aetiology of psychopathy and Blair et al. (2009) accept that structures beyond the amygdala and OFC are probably compromised in this group.

Kiehl defines the paralimbic system as the OFC, insula, anterior and posteria cingulate, amygdala, parahippocampal gyrus and anterior superior temporal gyrus. It is argued psychopathy is caused by dysfunction in each of these structures (Kiehl, 2006). Two main sources of evidence support Kiehl's position. First, neurocognitive studies of language (Isenberg et al., 1999; Maddock & Buonocore, 1997; Kiehl et al., 2004), affect (Kiehl et al., 2001; Muller et al., 2003; Kosson, Suchy, Mayer, & Libby, 2002; Philips et al., 1997) and attention (Johnson, 1993; Khiel et al., 2006; Kheil, Hare, McDonald, & Liddle, 1999; Kheil, Smith, Hare, & Liddle, 2000; Veit et al., 2002; Yamaguchi & Knight 1993) in psychopathy demonstrate abnormalities in the paralimbic system as Kiehl defines it. Second, neural impairments in psychopathy are

inferred from studies of brain-injured patients displaying psychopathic type symptoms. For example, psychopaths and patients with damage to the OFC both demonstrate impaired decision making (Bechara et al., 2000; Mitchell, Colledge, Leonard, & Blair, 2002), facial and vocal expression identification (Blair et al., 2001; Blair et al., 2004; Hornak, Rolls, & Wade, 1996; Stevens et al., 2001) and response reversal (Blair & Cipolotti, 2000; Mitchell et al., 2002). Damage to the anterior cingulate results in deficits in affective facial and vocal identification (Hornak et al., 2003), and response inhibition (Tekin & Cummings, 2002), impairments also found in psychopathy (Blair et al., 2001; Blair et al., 2004; Kiehl, Smith, Hare, & Liddle, 2000; Stevens et al., 2001). Finally, insults to the amygdala are associated with impaired recognition of angry and fearful vocal tone and faces (Scott et al., 1997), aversive conditioning (Bechara et al., 1995) and decision-making (Bechara et al., 1999) as well as antisocial behaviour (Adolphs & Tranel, 2000), characteristics typical in psychopathy (Blair, 1995; Hare, 2003).

The paralimbic hypothesis has a number of methodological weaknesses. Much of the evidence is drawn from studies using event related potential (ERP) techniques which are temporally accurate but do not localise activity to specific brain regions in the way fMRI does. In addition, the model describes the possible structures impaired in psychopathy but does not consider their interconnectivity or functional role within one or more systems. Structures may be compromised within one functional system but not in another. For example, functions reliant on the amygdala such as making mental state judgements from eye gaze are intact in psychopathy but others are not (Blair

et al., 2009). Finally, Kiehl emphasises similarities between psychopathy and brain injured patients but does not consider their differences.

1.1.3.3. Cognitive Models of Psychopathy

The main cognitive model of psychopathy is Newman's response modulation hypothesis (RMH) (Newman, 1998). The RMH describes response modulation as a quick, involuntary shift of attention from goal directed behaviour to its evaluation. The shift is non-effortful but assists in monitoring information peripheral to the purposeful focus of attention. This peripheral information may be used depending on whether it is appraised as relevant. Applied to psychopaths, the RMH explains impulsivity, poor passive avoidance and emotion processing deficits, as failures to process information peripheral to their deliberate response set (Newman, 1998; Patterson & Newman, 1993).

The RMH predicts that psychopaths will only notice those punishment cues which are part of their focus of attentional set for reward. It is further predicted that psychopaths will demonstrate poor performance on affective tasks, or parts of affective tasks, where the affective information to be processed is incongruent or secondary to their deliberate focus of attention (Glass & Newman, 2006). The model is said to explain psychopaths' ability to read others' affect in order to manipulate, deceive and con (Book, Quinsey, & Langford, 2007) but without a corresponding emotional reaction (Newman & Lorenz, 2002).

Evidence to support the RMH is found in several psychophysiological studies of emotion processing in psychopathy. Psychopaths demonstrated attenuated

physiological responses but intact appraisal ability when viewing aversive stimuli (Blair & Cipilotti, 2000; Patrick, Bradley, & Lang, 1993; Patrick, Cuthbert, & Lang, 1994) suggesting ability to judge the emotional content but without corresponding physiological responses. In addition, impaired fear responsivity occurred mainly when experimental conditions included concurrent distraction (Baskin-Sommers, Wallace, MacCoon, Curtin, & Newman, 2010; Newman, Curtin, Bertsch, & Baskin-Sommers, 2010), implying attention was directed towards the distracter thereby reducing reactivity to the fear stimuli. Further, psychopaths displayed deficits in passive avoidance learning mainly when tasks involve competing reward / punishment contingencies (Newman & Kosson, 1986) suggesting reward bias rather than general impaired punishment-based learning. Finally, in a review of the facial affect recognition literature, Willmott et al. (2009) found some evidence to suggest reduced attention to fear might contribute to impaired fear recognition abilities.

The RMH predicts that psychopaths will demonstrate impairments under a wide range of conditions reliant on attention. However, the model is not supported by evidence that suggests psychopaths do as well as controls on tasks involving attentional shift between semantic categories and between spatial locations (Blair et al., 2009). In addition, the model cannot account for deficits in psychopathy that do not involve attentional shifts, for example, impaired classical conditioning to aversive stimuli (Flor, Birbaumer, Hermann, Ziegler, & Patrick, 2002).

1.1.3.4. Attachment Theories of Psychopathy

Attachment theories of psychopathy suggest the disorder may be caused by childhood neglect or abuse and related forms of insecure attachment. As such, the individual lacks appropriate attachment experiences and so fails to develop healthy mental representations of themselves and others that guide behaviour and affect in interpersonal interactions. In particular, development of emotion regulation and empathy are disrupted (Sarkar & Adshead, 2006). It has been suggested that brain mechanisms related to attachment may develop inappropriately if shared emotional-social interactions with a parent are absent (Folensbee, 2007; Sarkar & Adshead, 2006; Saradjian, Murphy, & McVey, 2010; Seigel, 2001). Applied to psychopathy maltreatment in childhood promotes abnormal neural development which is then manifest in impaired emotion processing, cognition and behaviour.

Attachment theories of psychopathy predict its association with maltreatment in childhood and related neural abnormalities. Supporting evidence comes from a number of studies that demonstrate a relationship between psychopathy (and conduct disorder) and family characteristics such as punitive and inconsistent parenting styles (Farrington, 2007), emotional abuse (Krischer & Sevecke, 2008), parental psychopathology and familial violence and aggression (Krischer & Sevecke, 2008; Webster-Stratton, 1990).

In addition, both psychopathy and childhood maltreatment are associated with reduced volume of the hippocampus, amygdala and medial prefrontal cortex (Kiehl, 2006; McCrory, DeBrito, & Viding, 2010; Raine, Lencz, Bihrle, LaCasse, & Colletti, 2000; Raine et al., 2004; Teicher, Anderson, & Polceri, 2012; Tiihonen et al., 2000). Functions related to these structures are

implicated in psychopathy. The hippocampus is concerned with contextual fear conditioning (LeDoux, 2000) and aggression regulation (Gregg & Seigel, 2001), while the amygdala is involved in processing fear and anger including automatic attention to emotional stimuli (Anderson & Phelps, 2001; Lim, Padmala, & Pessoa, 2009; Vuilleumier & Driver, 2009), and the medial prefrontal cortex is implicated in decision-making (Euston, Gruber, & McNaughton, 2012). Finally, reduced volume of the left dorsolateral prefrontal cortex (DLPFC), concerned with processing pleasant stimuli for perceptual decision-making (Heekeren, Marrett, Ruff, Bandettini, & Urgeleider, 2006; Herrington et al., 2005) is associated with antisocial behaviour (Yang & Raine, 2009) and childhood maltreatment (McCrory et al, 2010).

Neural structural abnormalities in psychopathy and adults maltreated in childhood demonstrate some similarities; however, a number of structural and functional differences challenge poor attachment as a cause of psychopathy. McCrory et al. (2010) report amygdala *hyperactivity* during fear conditioning for those maltreated in childhood rather than the *hypoactivity* seen in psychopathy. In addition, Factor 1 psychopathy is related to greater volume of the corpus callosum (Raine et al., 2003) rather than reduced volume which is associated with childhood maltreatment (McCrory et al., 2010). Moreover, increased volume was associated with amplified hemispheric connectivity even when childhood adversity was accounted for (Raine et al., 2003). Finally, Raine et al. (2004) found trauma exposure did not mediate the relationship between level of psychopathy and hippocampal abnormalities.

1.1.3.5. Evaluation of the Reviewed Aetiologies

The foregoing review suggests the causes of psychopathy have yet to be established with certainty and that it likely arises from a complex combination of biological and social factors. The aetiological models outlined each have a number of strengths but also some weaknesses. One strength of the dual process models is that unlike other theories described they treat the two PCL-R factors separately and account explicitly for their different aetiological pathways. This approach is in keeping with evidence from genetic studies of CU traits in children and psychobiological studies of emotion processing that suggests characteristics associated with Factor 1 and Factor 2 psychopathy may have different causes. However, one weakness of the models is their failure to account for the shared genetic influence between CU and anti-social traits suggested by the overlap in variance found for each by Viding et al. (2005). A second strength of Fowles and Dindo's model in particular is that it identifies attenuated amygdala activity as the neural mechanism behind the fearlessness typical of Factor 1 psychopathy. This position is shared by the IES and to some extent the paralimbic hypothesis, and is based on a consistent finding in the literature that implicates deficits in the amygdala for psychopathy. A disadvantage of the model is that the neural structures involved in weak inhibitory control (linked to Factor 2) are less well delineated than those of the fearlessness process (linked to Factor 1). Finally, identifying neural substrates related to psychopathy is not the same as finding its cause. For example, function of the amygdala may be impaired but the reasons for this remain unclear.

One strength of the somatic marker model and IES is their emphasis on the role neural structures play within broader systems. This reflects approaches in wider neuropsychiatry that explain disorders with reference to neural systems not just regions (Cowen, Harrison, & Burns 2012; Waxman, 2003) and is an advantage over the paralimbic hypothesis which maps possible structures without considering their interconnectivity. The paralimbic hypothesis may lack accuracy by attributing causality to structures which are not damaged themselves but fail because of their functional relationship to an impaired region. Knowledge of which structures are impaired and the impact of this within wider systems would appear important for a comprehensive understanding of the causes of psychopathy and for development of effective psycho-pharmacotherapy.

The somatic marker model correctly identifies the importance of the somatic marker system for psychopathy but symptomatology may be better explained by dysfunction that originates in the amygdala rather than OFC. Specifically, poor aversive conditioning is characterised by impaired *learning* from reinforcement information, reliant on the amygdala as the IES posits, rather than deficits in *use* of reinforcement, dependent on the OFC as suggested by the somatic marker model. The above demonstrates the IES has some advantages over the paralimbic and somatic marker models but it also has limits which may be better addressed by the RMH. For example, the IES but not the RMH struggles to account for evidence that suggests impaired punishment-based learning may be due to reduced *attention* to fear and reward bias. This is not to say that the IES is inaccurate in all respects, rather

aspects of amygdala hyporeactivity may be associated with failure to orient to stimuli instead of more general malfunction.

Finally, compared to the models evaluated so far, attachment theories offer a better account of the possible environmental causes of psychopathy including their impact on neural impairment. However, findings associating maltreatment with amygdala hyperactivity rather than hypoactivity, typically found in psychopathy, are difficult to reconcile and highlight a major weakness of claiming insecure attachment as a cause of psychopathy. Nevertheless, this does not necessarily mean childhood maltreatment should be discounted as a causal factor. The nature of the interaction between environmental factors and genes is poorly understood in psychopathy, for example, their influence on psychophysiology, or whether environmental influences moderate gene expression. It could be argued that genetic predisposition to psychopathy combined with childhood maltreatment results in the complex array of interpersonal and behavioural symptoms seen in the disorder. Study designs that examine genes at the molecular rather than behavioural level (e.g. linkage or candidate gene studies) and allow manipulation of environmental factors may identify specific genes and the nature of gene / environment interactions that cause psychopathy. Environmental manipulation could be achieved by using measures such as the Childhood Experiences of Care and Abuse (CECA; Bifulco, Brown, & Harris, 1994) which assess type, frequency, duration, age at onset, and severity of maltreatment as well as number of abusers and their relationship to the child. This would improve on extant study designs that use less sophisticated trauma measures.

1.1.4. Treatment of Psychopathy

Psychopaths exhibit interpersonal and affective impairments alongside deficits in learning. It is these impairments and the belief that they are innate and fixed which leads many to conclude that psychopaths are untreatable (Skeem et al., 2002). Features of psychopathy such as manipulation, lying, denying responsibility whilst blaming others, callousness and shallow affect all run counter to the characteristics required for effective psychotherapy. In addition, Cleckley (1982) believed psychopaths were impervious to treatment because they lacked the necessary ability to bond emotionally to their therapist. In addition, most therapies rely on the individual's motivation to change, compliance to observe programme rules and willingness to complete in-session and / or homework tasks. Conversely, psychopaths tend to view their attitudes and behaviour as unproblematic (Hare, 1999b) and are prone to disrupt therapy sessions making them less likely to benefit from session participation (Howells & Tennant, 2007; Seto, & Quinsey, 2006; Wong & Hare 2005). Finally, deficits in learning are thought to disrupt the psychopath's ability to gain knowledge during therapy and then apply it to everyday settings (Newman, 1998).

Despite the popular and professional assumption that psychopathy is untreatable the treatment outcome literature is inconclusive and offers conflicting results. D'Silva, Duggan and McCarthy (2004) aimed to review this literature but were unable to do so because the extant studies did not meet recognised standards for systematic reviews. The authors concluded that evidence had not been established for the commonly held belief that treatment makes psychopaths worse.

1.1.4.1. Treatment Exacerbates Psychopathy

Rice et al. (1992) conducted a retrospective evaluation of a maximum security therapeutic community for mentally disordered offenders including psychopaths. The study compared treated with non-treated offenders matched on age, criminal history and index offence. The sample consisted of 176 patients who had been committed to the programme for a minimum of two years between January 1968 and February 1978. The PCL-R (file information only) was used to assess psychopathy and the outcome measures were criminal and violent reoffending during a 10-year follow-up period. Results showed psychopaths (PCL-R ≥ 25) had worse treatment outcomes than non-psychopaths particularly for violent recidivism. In addition, an interaction effect of treatment with psychopathy upon recidivism was found. Treatment was related to lower violent recidivism for non-psychopaths but higher violent recidivism for psychopaths suggesting therapies that prove effective for non-psychopaths may render psychopaths more dangerous.

The treatment programme and study have a number of weaknesses that make it difficult to draw definitive conclusions about treatment efficacy for psychopathy. In an attempt to encourage emotional intimacy, treatment involved nude encounter sessions for durations of up to 2 weeks at a time, as well as administration of LSD and alcohol. This approach is controversial and would not be advised today. In addition, psychopathic patients received larger dosages of LSD and alcohol than non-psychopaths because their lack of emotional intimacy was greater. Psychopaths also experienced higher frequencies of programme sanctions. The greatest limitation was that the groups were not randomised. The study did not consider these differences

which may have significantly impacted treatment outcome. Finally, the study was retrospective so relied on the accuracy of written records completed by multiple programme staff over a reasonably long period. This may have introduced bias due to poor consistency between recorders and / or changes in recording policy or practice over time.

1.1.4.2. Treatment Exacerbates Factor 1 Psychopathy

Hare et al. (2000) examined the reconviction rates of 278 male offenders who had undergone anger management and social skills programmes in seven English prisons. The findings showed that total PCL-R score did not moderate the effect of treatment on rates of recidivism but Factor 1 scores did. Specifically, amongst high Factor 1 prisoners 86% who had received treatment were reconvicted compared to 59% of untreated controls. Comparable results were established for prisoners involved in educational and vocational programmes. The results suggest those high in Factor 1 traits are made worse by treatment.

The study had a reasonably sized sample therefore non-significant results for Factor 2 and total PCL-R score are unlikely due to poor power. A further advantage was the inclusion of an untreated control group which allowed assessment of the extent of treatment effects. However, one limitation of the study was that the groups were not randomised. Perhaps, it should not be too surprising that Factor 1 psychopaths did not benefit from the programmes examined. The programmes lack the intensity associated with successful reduction of criminal behaviour in high-risk offenders (Skeem et al., 2011) and are not aimed at changing core personality features characteristic of Factor 1

psychopathy. In contrast, anger management is more likely to address Factor 2 traits characterised by poor affect regulation.

1.1.4.3. Psychopaths do Less Well than Non-Psychopaths in Therapy

In a series of studies a cognitive behavioural therapy (CBT) programme for sex offenders was evaluated (Barbaree, 2005; Barbaree, Langton, & Peacock, 2006; Langton, Barbaree, Harkins, & Peacock, 2006; Seto & Barbaree, 1999). The programme targeted diverse criminogenic needs including deviant sexual preferences and antisocial attitudes. The sample in the first two studies consisted of 283 sex offenders and a median split PCL-R score of 15 was used to determine high versus low psychopathy (Barbaree, 2005; Seto & Barbaree, 1999). The third study (Barbaree et al., 2006) consisted of 61 offenders with PCL-R scores ≥ 25 and participants were compared to normative data for the Rapid Risk Assessment for Sexual Offence Recidivism (RRASOR; Hanson, 1997). The fourth study (Langton et al., 2006) examined 418 sex offenders released to the community, 202 of these were included in the studies conducted by Seto and Barbaree (1999) and Barbaree (2005). Follow-up periods were at 32, 62 and 66 and 71 months respectively, and outcome was serious re-offending. Studies 1 and 2 found high psychopathy offenders were more likely to re-offend than other participants. In addition, the first but not second study found higher rates of recidivism for this group even though staff rated them as better than peers on conduct during treatment, quality of homework, motivation and change. Conversely, the third study found no significant difference between rates of recidivism for psychopaths compared to the RRASOR expected rates.

Similarly study 4 found no significant difference between rates of re-offending between psychopaths and non-psychopaths. In addition study 4 found participants with PCL-R scores ≥ 25 that were judged to be unresponsive to treatment went on to sexually re-offend more quickly than those high scorers rated as doing well in treatment.

Findings of the first two studies suggest treatment was ineffective for psychopathy with some evidence that psychopaths behaved pro-socially during treatment which masked the extent of their risk. The third study appears to contradict the earlier findings however as discussed below the small sample size means that statistical tests may have been underpowered to detect smaller effects. The first three studies have methodological weaknesses that obscure definite conclusions about treatability. First, the group comparison cut-off score (PCL-R = 15) used in studies 1 and 2 was considerably lower than the cut-off of 30 recommended by Hare (2003) or that of 25 sometimes used in research (Rice et al., 1992), suggesting many of those in the high group did not meet criteria for psychopathy. Second, the sample size for study 3 was small so power may have been too low for statistical tests to detect significance. As such it is not possible to draw meaningful conclusions from the study without replication with a larger sample. Finally, the studies did not include an untreated control group therefore it is not possible to assess the extent of treatment effects. Treated psychopaths may have made less gain than treated nonpsychopaths but greater improvement than those untreated.

In contrast study 4 addresses many of the limitations of the other studies. It used a large sample, including participants from the first study, with a longer community follow-up period and a more appropriate PCL-R cut off score of 25. In addition Harkins, Beech and Thornton (2012) note that Cox regression survival analysis was conducted, a superior approach than the chi-square analysis used in the original study by Seto and Barbaree (1999). As this study reanalyses the original sample with a better design and more robust analysis its findings can be said to negate those of Seto and Barbaree (1999) and Barbaree (2005).

1.1.4.4. Psychopaths Improve Dependent on Treatment Type and Dosage

Salekin (2002) applied meta-analysis to 42 published studies of treatment for psychopathy. The study involved 44 samples and 43 effect sizes on treatment outcome. Treatment outcome measures included recidivism, changes in psychopathic traits and quality of relationships with others. Psychopathy was conceptualised from a number of perspectives: Cleckley (52%), Hare (9%), other personality trait approaches (13%), not specified or the only study using that conceptualisation (26%). A variety of treatment approaches were employed including psychodrama (2%), psycho-pharmacotherapy (4%), electroconvulsive therapy (4%), CBT (11%), and therapeutic community (19%) although the most common approach was psychoanalytical (40%). Psychotherapy was delivered on an individual and group basis with some studies including a combination of the two.

Findings for type of therapeutic approach showed psychoanalysis produced improvement in 59% of patients (17 studies involving 88 patients). Cognitive

behavioural therapies yielded improvements in 62% of cases (five studies involving 246 patients) whilst eclectic approaches, which combined psychoanalysis with CBT were effective for 86% of patients (two studies involving 62 individuals). Although only a relatively small number of patients were involved in the eclectic approach studies the results tentatively indicate that combining CBT with insight based therapies may yield the best effects for psychopathy (Salekin, 2002). In addition, when a combination of individual and group therapy was used a high proportion of patients improved (81%).

Therapeutic communities were the least successful as only 25% of patients improved (eight studies involving 372 patients) which was only marginally better than the control group where 20% of patients improved without any treatment (eight studies involving 287 patients).

Results showed that treatment dosage was related to therapy outcome. Treatment that ran for fewer than six months was less effective than treatment that lasted longer. Moreover, 91% of patients who received concentrated individual therapy, delivered at least four times per week, demonstrated improvement. The mean rate of successful treatment across all studies was .62, $p < .01$. These findings suggest psychopaths may respond to a combination of CBT and psychodynamic therapy delivered in group and individual formats at high dosage.

Meta-analysis is seen as the best approach for assessing the effectiveness of healthcare interventions (Crombie & Davies, 2009). However, this study has been criticised on a number of methodological grounds that limit its utility (Harris & Rice, 2007). First, the included studies employed various

conceptualisations of psychopathy and only four used the PCL-R. Second, only eight studies used a control group. Third, there was no consistency in outcome measure. For example, over 70% of the studies used therapist impressions as the outcome measure and less than 20% used criminal behaviour.

1.1.4.5. Psychopaths do as Well as Non-Psychopaths Given Enough Treatment

Skeem et al. (2002) examined the relationship between psychopathy, involvement in outpatient treatment and subsequent violence in a sample of 871 civil psychiatric patients. Psychopathy was assessed using the Psychopathy Check List-Revised Screening Version (PCL-SV; Hart, Cox, & Hare, 1995) and involvement in violence was measured by combining self-report with collateral informant report and official records. The cut-off for psychopathy was a PCL-SV score ≥ 18 as recommended by Hart et al. (1995). The study found that total psychopathy score did not moderate the relationship between treatment involvement and subsequent violence. Similar results were found for Factor 1 traits. In addition, psychopaths who received seven or more treatment sessions in a 10-week period were three times less likely to be involved in a violent incident during the subsequent 10 weeks, than psychopaths who received six or fewer sessions. Moreover, those psychopaths with greater therapy involvement demonstrated a reduction in violence similar to nonpsychopaths. The findings suggest treatment is effective for psychopaths providing they receive sufficient amounts.

Unlike much of the research in this review, the study benefits from a large sample size with a range of therapy attendance that allows assessment of

dosage effects. However, those patients with better attendance may have had greater motivation to change and the results may have reflected this rather than treatment effects per se.

1.1.4.6. Psychopaths do as Well as Non-Psychopaths Given the Correct Treatment

Olver and Wong (2009) examined the relationship between psychopathy, treatment dropout, therapeutic change and recidivism in 156 sex offenders undergoing a high-intensity two-year inpatient offence reduction programme. The programme addressed key components (risk, need and responsivity) associated with effective treatment for high-risk offenders. Psychopathy was determined as a PCL-R score ≥ 25, therapeutic change was assessed using the Violent Risk Scale-Sex Offenders version (VRS-SO; Wong, Olver, Nicholaichuk, & Gordon, 2003) and follow-up was at 10 years post-release. Psychopathy predicted higher levels of treatment dropout although the majority (75%) completed treatment. Psychopaths who dropped out were more likely to reoffend violently but not sexually during the 10-year follow up period than those who completed. Positive therapeutic change (reduction in VRS-SO risk) predicted lower recidivism rates regardless of psychopathy level.

The findings suggest psychopaths do as well as non-psychopaths when treatment is intensive, addresses risk associated empirically with recidivism and actively maximises engagement. However, in common with all but one of the studies reviewed, this study lacked a control group. The dropout group allows some comparison of treated with untreated psychopaths but it was three times smaller than the psychopathic completers group, moreover, any

differences found may reflect contrasts in motivation or treatment readiness rather than its efficacy.

1.1.4.7. Evaluation of the Reviewed Treatment Approaches

The foregoing review suggests findings for the effective treatment of psychopathy are inconclusive. This is perhaps in part because of differences in treatment outcomes, definitions of psychopathy, study designs (especially absence of control groups), and types of treatments assessed. Despite the methodological limitations outlined above and the contradictions in results, there are a number of potentially meaningful findings. Extant evidence does not support the belief that psychopathy is untreatable or made worse by treatment. Rather it may suggest that psychopaths do not improve with short-term mainstream prison programmes but may respond to treatment that addresses interpersonal and behavioural factors associated with psychopathy and risk of offending. The review also suggests that treatment is most effective when delivered in high dosage by therapists able to maximise engagement. The studies conducted by Skeem et al. (2002), and Olver and Wong (2009) suggest that motivation to engage may be important for treatment efficacy.

Finally, in a review of treatment for ASPD, Duggan (2008) notes an absence of evidence for effective treatment in the mental health literature. It is argued that this is due largely to a lack of consensus in forensic mental health about the primary outcome for treatment. Conversely, the correction literature is thought to offer better evidence if consensus is reached that reduction in offending is the primary outcome. Similar arguments could be made for

assessing treatment efficacy for psychopathy. A future high quality meta-analysis using studies that employ the PCL-R to assess psychopathy, and risk reduction as the primary outcome may help to develop an evidence base for effective treatments.

1.2. Treatment Engagement

1.2.1. Defining Treatment Engagement

Psychotherapy involves identifying problematic patterns of feeling, thinking, and interacting so that they can be transformed to promote successful functioning (Folensbee, 2007). Evidence suggests active engagement in this process is crucial for good treatment outcome (Greenberg & Pascual-Leone, 2006; Whelton, 2004). However, MacGowan (2006) observes that the concept of engagement is ill-defined despite its wide use in the literature.

Nevertheless, it is possible to identify four features of therapy engagement believed to be important for research and practice. First, is emotional engagement generally defined as awareness, arousal and transformation of emotion (Greenberg & Pascual-Leone, 2006). Second, is cognitive engagement, usually defined as making sense of events and experiences, including emotions (DeRubeis, 2000). Third, is the ability to combine emotional and cognitive engagement (Whelton, 2004). Fourth, is the therapeutic alliance, described as the quality of relationship between therapist and patient (Bordin, 1979). In group therapy the therapeutic alliance extends to the quality of relationships shared amongst group members (Yalom & Leszcz, 2005). Each of these features is now discussed.

1.2.1.1. Emotional Engagement

Early psychodynamic and humanistic approaches believed engagement consisting of intense emotional arousal and expression was sufficient to promote therapeutic growth. Specifically, catharsis, the expression of repressed emotion, was seen as a curative factor in and of itself (Yalom, 1970). This stance is now regarded as inaccurate and has been superseded by a more sophisticated definition of therapy engagement where arousal is regarded as just one of several components all of which are required for therapeutic change (Greenberg & Pascual-Leone, 2006; Whelton, 2004).

1.2.1.2. Cognitive Engagement

Traditionally CBT has perceived emotion (particularly negative emotion) in psychotherapy as problematic (Whelton, 2004). In the 1960s CBT developed in opposition to the psychodynamic emphasis on catharsis as cure (Beck, 1963, 1964). Drawing on findings from experimental psychology, Beck emphasised the importance of correcting thought patterns which supported problematic emotions and behaviour. Early CBT therapists were instructed to dissuade patients from indulging their feelings and to concentrate on promoting a questioning approach to their problems in order to uncover solutions (DeReubeis, 2000). Cognitive rather than emotional engagement was thought to have curative properties. However, in an important paper, Samoilov and Goldfreid (2000) argued that CBT approaches could be made more effective in the long-term by incorporating engagement at an emotional level. The authors argued that emotions were an important form of information processing and as such could be used to help restructure cognitions. As a result more recent CBT approaches have acknowledged the importance of

combining emotional and cognitive engagement for long-term therapy outcome (Blackledge & Hayes, 2001; Teasdale et al., 2002).

1.2.1.3. Emotional and Cognitive engagement

Emergent definitions of therapy engagement emphasise the importance of not only experiencing emotion but making sense of it too (Greenberg & Pascual-Leon, 2006; Whelton, 2004). Whelton (2004) argues emotion is a crucial element of therapy regardless of therapeutic approach and that acceptance rather than avoidance of emotion, including negative emotion, is generally beneficial. Moreover, therapy engagement which involves actively processing emotional information including cognitive appraisal, predicts positive treatment outcomes.

Research findings support the belief that active emotional and cognitive engagement in therapy promotes good treatment outcome. Whilst studies which examined catharsis and therapy outcome found only a weak positive correlation; those which considered emotion and mediating cognitive processes discovered a much stronger relationship. This finding was consistent across therapeutic approaches including: humanistic, cognitive, behavioural and psychodynamic, regardless of diagnoses or whether therapy was delivered in an individual or group setting (Goldman, Greenberg, & Pos 2005; Greenberg & Pascual-Leone, 2006; Littrell, 1998; Pos, Greenberg, Goldman, & Korman, 2003; Whelton, 2004).

1.2.1.4. The Therapeutic Alliance

Bordin (1979) identified three components important for a good therapeutic alliance. First, agreement on the goals to be worked upon, second,

collaboration on tasks directed toward goal achievement, third, development of an overall bond to facilitate collaboration between the therapist and patient. Research shows that good therapeutic alliance is related to positive treatment outcome and it is often conceptualised as part of the engagement process (Hovarth, 2005). As Yalom and Lesczc (2005) observe, within group therapy the therapeutic alliance plays a facilitatory role so that patients can experience greater authenticity in their interactions with the group.

Therapeutic alliance is often measured to assess levels of therapy engagement, however, it may be more accurately thought of as a conduit through which engagement is facilitated (Beutler, Clarkin, & Bongar, 2000). For example, Iwakabe, Rogan, & Stalikas (2000) demonstrated high emotional arousal was related to good session outcome but that this relationship was mediated by the therapeutic alliance. A number of theorists argue that one of the roles of the therapeutic alliance is to regulate engagement by down-regulating and up-regulating emotional arousal as required (Fosha, 2000; Greenberg 2002, 2008; Linehan, 1993). For example, if a patient is overwhelmed by emotion the therapeutic relationship acts to sooth and lower arousal. Conversely, if the patient is avoidant of affect the relationship can be used to evoke greater emotion (Greenberg, 2002, 2008). This view suggests the therapeutic alliance may be best seen as a proximal indicator of engagement rather than one of its constituent components.

1.2.2. Measurement of Treatment Engagement

Treatment engagement figures strongly in the research literature, however, there are few tools dedicated exclusively to its measurement (MacGowan &

Levenson, 2003). A number of studies measure engagement one dimensionally as attendance in sessions (Tyron, 1985, 2002) length of time in therapy, completion of homework, compliance with medication (Lacro, Dunn, Dolder, Leckband, & Jeste, 2002), or completion of treatment (Tarrier et al., 1998). Unfortunately, these measures provide superficial information about the patient's commitment to treatment but do not assess the degree of their in-session engagement in the emotional and cognitive processes believed to be important for positive treatment outcome.

Alternatively proximal measures of engagement are employed such as the therapeutic alliance (Startup, Wilding, & Startup, 2006), or in group settings by considering the patient's satisfaction with group processes (Yalom, 1983). However, these aspects of therapy involvement are not direct measures of engagement and tell us little about the specific mechanisms involved in engagement or where particular deficits may lie.

Three engagement measures which are used to measure engagement directly will be considered in more detail because of their relevance to the current work. These are the Group Engagement Measure (GEM; MacGowan, 1997), the Engagement Measure (EM; Hall, Meaden, Smith, & Jones, 2001) and the Experiencing Scale (EXP; Klein, Mathieu, Gendlin, & Keiser, 1969).

1.2.2.1. The Group Engagement Measure

The GEM is an observer-rated measure which assesses engagement in group therapy. It consists of 37 items arranged under seven subscales and is scored on a 5-point Likert scale (1 = rarely or none of the time, 5 = most or all

of the time) (see Table 6). The measure was originally developed for use with offenders undergoing offence reduction group programmes in the community.

In a number of studies which tested the psychometric properties of the GEM excellent internal consistency was established, with good to moderate levels of construct validity and good levels of predictive validity. In addition, good levels of test-retest reliability were found (MacGowan, 1997, 2006; MacGowan & Levenson, 2003).

Table 6 showing the seven dimensions of the GEM

Dimension	Description
1. Attendance	Member is present in session and remains until the end
2. Contribution	Member participates verbally and/or in activities of the group
3. Relating to facilitator	Member supports the work of the facilitator
4. Relating to members	Member interacts with other members, helps others maintain good relations with one another
5.Contracting	Member supports the norms and activities of the group and the direction in which the group is moving
6. Working on own problems	Member acknowledges problems, makes effort to address problems, makes personal disclosures
7. Working on other's problems	Member encourages other members to find solutions to problems and helps others attain group goals

1.2.2.2. The Engagement Measure

EM is an observer-rated measure of engagement with mental health services consisting of 11 items arranged under 6 subscales and scored on a 5-point Likert scale (1 = always e.g. always keeps appointments, 5 = never e.g. never keeps appointments) (see Table 7). The EM was developed for use with patients suffering from serious mental illness. It has demonstrated good reliability (test-retest, inter-rater, internal) and feedback provided by participants (mental health professionals) indicated good face validity. In addition the measure showed capacity to discriminate well-engaged from poorly-engaged patients as judged by the patient's key clinician independently

of the measure (Hall et al., 2001). However the EM was not used in the current study because it measures engagement with health service provision (e.g. keeping appointments and complying with medication) rather than with the psychotherapeutic process.

Table 7 showing the six subscales of the EM

Subscale	Description
1. Appointment keeping	With/Without support
2. Client-therapist interaction	Extent to which the client relates well to therapist giving rise to a positive atmosphere during sessions
3. Communication/Openness	Extent to which client volunteers relevant personal material, is open in discussing feelings, problems and current situation
4. Clients perceived usefulness of treatment	
5. Collaboration with treatment	Extent to which client agrees to proposed intervention, as stated in their care plan, and is involved in carrying it out i.e. keeping diaries, practicing relapse drills etc.
6. Compliance with medication	Extent to which client agrees to take medication and will take it freely

1.2.2.3. The Experiencing Scale

The EXP is used in individual and group contexts to assess a patient's in-session experiencing. The instrument is an observer-rated measure which allows for seven levels of experiencing. Level 1 indicates that a patient offers emotionless, impersonal accounts of their experience. Level 4 corresponds to a patient's ability to be internally focused, and to process feelings and the meanings of significant personal events. Level 7 indicates the patient has readily accessible feelings and is able to synthesise them to form new meaning and solve problems (Klein et al., 1969) (see Table 8). Ratings are usually made with reference to a tape recorded session and patients are given a mode rating (overall session presentation) as well as a peak rating (highest level demonstrated within session). The EXP has demonstrated moderate to good inter-rater reliability and good test-retest reliability. In

addition, the measure has shown good construct and predictive validities (Klein et al., 1969; Klein, Mathieu-Coughlan, & Keisler, 1989).

Table 8 showing the seven levels of the EXP

Level	Description
1	The patient seems distant or remote from his feelings. His reported experiences have an impersonal quality. Feelings are avoided and personal involvement is absent from communication.
2	The patient does not refer to his feelings directly, but the personal perspective emerges somewhat. Although feelings and personal reactions are characterized as remote external events or are referred to only indirectly or abstractly, there are self-references that indicate an intellectual interest or general but superficial involvement.
3	The patient's feelings come into clear but limited perspective. The patient refers to feelings and owns them, but bypasses personal aspects or deeper ramifications. Feelings are expressed as thought rooted in external circumstances or are described only in very limited terms, often with reluctance.
4	The patient shifts from looking at outside events or from stewing about things, to quietly holding still and letting the bodily sense of things come through, and developing the felt meaning, that is the words that come from this feeling.
5	The inner referent is the subject of elaboration and exploration. The patient now can focus on the vague, implicitly meaningful aspects of his experiencing and struggle to see his experiencing more clearly or work to elaborate it.
6	The patient is able to resolve the exploration undertaken at stage 5. At this point the feelings themselves change or shift. Previously unclear or fragmented sets of experiences are now reconstituted or restructured to so that their experiential effect or impact becomes clear and their meaning is made explicit
7	The patient extends the growth in self-awareness and the experiential resolution begun at stage 6. The experiential perspective is now a trusted and reliable source of self-awareness, and is steadily carried forward and employed as the primary referent for thought and action. Thus self-experiencing is comprehensive, integrated, and cohesive; yet is flexible and open to change.

Compared to the GEM and EM, the structure of the EXP most closely reflects the emotional and cognitive aspects of engagement believed to be necessary for successful treatment. Unfortunately assessment using the EXP can be time consuming and use of in-session tape recordings may be disruptive to the therapeutic process, especially amongst patients suffering from paranoia or preoccupied with impression management. Currently we do not have a simple tool capable of assessing in-session emotional and cognitive engagement.

1.2.3. Therapy Engagement and Treatment Outcome

Two recent reviews of the therapy outcome literature have established that high levels of in-session emotional and cognitive engagement are associated

with successful treatment (Greenberg & Pascual-Leone, 2006; Whelton, 2004). This finding was true regardless of therapeutic approach (Greenberg & Pascual-Leone, 2006; Whelton, 2004). For example, Castonguay, Pincus, Agras, and Hines (1998) demonstrated that level of engagement in cognitive therapy predicted treatment outcome for depressed patients. Similarly, Silberchatz, Fretter and Curtis (1986) found higher levels of engagement to be associated with better treatment outcome in psychodynamic therapy. In addition, Goldman (1997) found shifts in depth of engagement over time during long-term experiential therapy predicted treatment outcome more accurately than the therapeutic alliance. As the following section demonstrates, effective treatment involves intense emotional engagement with material in-session combined with an ability to regulate the emotion so that it does not become overwhelming. It would appear this process is not static but develops throughout the course of therapy. As such, the relationship between emotion processing ability and engagement is most probably cyclical so that emotion processing would be required for engagement but engagement in turn is likely to improve the quality of emotion processing.

1.2.3.1. Experiential Psychotherapy

A counselling analogue study examined whether cathartic release of anger resulted in anger reduction and found that it actually produced an increase in aggression (Bohart, 1977). The same study found that cognitive reflection on a provocative situation without the contemporaneous experience of anger failed to resolve anger management difficulties. The most effective method for anger resolution was to experience the anger whilst simultaneously exploring its significance. Similarly, Bohart (1980) found that beating a pillow whilst

expressing anger did not reduce anger as successfully as role playing which involved expression of anger and exploration of its meaning. As a result of these studies Bohart proposed a cognitive theory of catharsis suggesting emotional expression combined with rational examination of its meaning resulted in greater ability to deal with provocation and alteration in self-perception (Bohart, 1980). Engaging emotionally and cognitively within therapy sessions resulted in better anger management.

Warwar (2003) found that during experiential therapy for depression, patients with better treatment outcomes demonstrated greater emotional arousal alongside reflection of its significance. In addition, Pos et al. (2003) found greater levels of emotional and cognitive engagement at the beginning of therapy predicted better treatment outcome, however increases in engagement between early and mid therapy as well as early and late therapy were better predictors of positive treatment outcome. This finding suggests the ability to develop or build on emotion processing skills during therapy is more important for outcome than initial emotion processing ability (Greenberg & Pascual-Leon, 2006).

1.2.3.2. Behavioural Therapy

In several studies of exposure therapy emotional engagement was shown to be crucial for therapeutic change (Foa, Riggs, Massie, & Yarczower, 1995; Jaycox, Foa, & Morral, 1998; Kozak, Foa, & Steketee, 1988). For example in a study of exposure therapy for obsessive compulsive disorder, the extent to which fear was activated predicted treatment outcome as did habituation during and across sessions (Kozak et al., 1988). Similarly, a number of

studies of exposure therapy for post traumatic stress disorder (PTSD) have shown successful restructuring of fear responses are dependent on in-session activation of fear and habituation over time in therapy. High distress in session one combined with gradual tapering off throughout therapy were associated with better recovery (Foa et al., 1995; Jaycox et al., 1998). Effective treatment involved intense emotional engagement with material in-session combined with an ability to regulate the emotion so that it did not become overwhelming.

1.2.3.3. Psychodynamic Psychotherapy

Mackay, Barkham and Sites (1998) studied a patient's expression of anger during psychodynamic interpersonal therapy. The patient was instructed by the therapist to engage with the feeling of anger while cognitively restructuring the associated schemata. By tolerating the anger and experiencing it fully the patient was able to experience the anger as adaptive and move beyond his sense of depression and hopelessness.

In a study of short-term psychodynamic therapy, Anderson, Bein, Pinnell and Strupp (1999) used lexical software to compare therapist's use of language in good and bad treatment outcome cases. The third session was examined for 32 patients. In poor outcome cases therapists used more cognitive verbs during segments of the sessions involving high affect and so appeared to divert attention away from the emotion being experienced by the patient. In a similar study Mergenthaler (1996) found that beneficial change in therapy was dependent on frequent coincidence of emotional arousal (indicated by high emotional vocal tone) with reflection on the emotion's meaning (indicated by high abstraction).

1.3. Emotion Processing

The current study is interested in emotion processing in psychopathy and its relationship to therapy engagement. Therefore, at this stage it is important to outline research findings for emotion processing in psychopathy and to describe the importance of emotion processing ability for good therapy engagement.

1.3.1. Emotion Processing in Psychopathy

One of the most consistent findings from studies of incarcerated psychopaths is that they fail to experience or appreciate the emotional significance of stimuli in the way that non psychopaths do (Blair et al., 2004; Christianson et al., 1996; Day & Wong, 1996; Kiehl, Hare, MacDonald, & Brink, 1999; Levenston et al., 2000; Louth, Williamson, Alpert, Pouget, & Hare, 1998; Patrick et al., 1993; Patrick et al., 1994; Verona, Patrick, Curtin, Bradley, & Lang, 2004; Williamson et al., 1991; Willmott et al., 2009). Three areas of emotion processing in psychopathy are of particular interest: deficits in processing facial expressions of affect in others, attenuated psychophysiological responses to affective stimuli, and differences in implicit and explicit memory.

1.3.1.1. Processing Facial Affect

Two recent reviews of the literature found deficits in facial affect recognition in psychopathy but the findings were not consistent (Marsh & Blair, 2008; Willmott et al., 2009). For example, Hastings, Tangney and Stuewig (2008) found a significant overall correlation between impaired facial affect recognition and increased psychopathy scores, supporting the view that

psychopaths are characterised by a general paucity of affect (not uniquely linked to Factor 1 or 2 psychopathy). Conversely, Book et al. (2007) found psychopaths were significantly more accurate than controls when rating emotion intensity across all emotions. They explain this finding by stating psychopaths need to be able to judge the vulnerability of others in order to con and manipulate. The inconsistencies are likely due to disparate task designs.

Table 9 A review of facial affect recognition in psychopathy

Study	**Categorisation**						**Significant deficit**
	Happy	Sad	Anger	Disgust	Fear	Surprise	
Blair & Cipolotti (2000)	√	√	√	√	√	√	None
Kosson et al. (2002)	√	√	√	√	√	√	Disgust
Blair et al. (2004)	√	√	√	√	√	√	Fear
Dolan & Fullam (2006)	√	√	√	√	√	√	Sad
Mitchell et al. (2006)	√	√	√	√	√	√	Fear
Glass & Newman (2006)	√	√	√		√		None
Munro et al (2007)			√		√		Fear
Book, Quinsey & Langford (2007)	√	√	√	√	√		None
Hastings et al. (2008)	√	√	√		√		General, Sad, Happy
Iria & Barbosa (2008)	√				√		Fear

Out of ten studies reviewed, three found no significant deficit in facial affect recognition for psychopathy, one found deficits in recognition of disgust, one demonstrated deficits for happy and two showed deficits for sad (see Table 9). Fear recognition was the most common significant deficit found despite there being little similarity across the four experimental designs that found this effect. These results tentatively lend support to Blair's (2005) IES model, particularly when viewed with the additional finding that two studies demonstrated a significant deficit in the recognition of sadness. As discussed earlier, Blair asserts impaired amygdala and poor socialization result in disruption to cognitive processes, specifically fearful and sad expression

recognition in others. In addition there was limited evidence to suggest that idiosyncrasies in selective attention to emotion occur in psychopathy. These suggest reduced attention to fear might contribute to impaired fear recognition abilities.

1.3.1.2. Autonomic Responses to Emotional Stimuli

Lack of empathy towards victims is a longstanding criterion for psychopathy. A number of studies have used direct autonomic response to the distress of others to measure psychopaths' ability to empathise (Blair et al., 2005). In two studies skin conductance response (SCR) was recorded whilst participants were led to believe that confederates were being administered electric shock (Anskiewicz, 1979; House & Milligan, 1976). In two other studies, SCR was measured whilst participants viewed pictures of others in distress (Blair, 1999; Blair, Jones, Clark, & Smith, 1997). All four studies reported attenuated autonomic responsiveness to the distress of others for psychopaths compared to controls.

Two studies compared offenders demonstrating high and low psychopathy for differences in autonomic response and self-report ratings of pleasant and unpleasant pictures (Patrick et al., 1993; Levenston et al., 2000). Autonomic response included heart rate, SCR and startle reflex. Unlike controls, psychopaths showed attenuated heart rate for affective pictures compared to neutral, and reduced SCR to thrill pictures specifically (Levenston et al., 2000). In addition, nonnpsychopaths demonstrated blink reflex potentiation for unpleasant pictures whereas psychopaths showed blink reflex inhibition for pleasant and unpleasant pictures compared to neutral (Patrick et al., 1993;

Levenston et al., 2000). There were no significant group differences for picture ratings; both psychopaths and nonpsychopaths rated affective pictures as more arousing and more interesting than neutral pictures (Patrick et al., 1993).

Munro et al. (2007) used an affective flanker test to examine error monitoring in a psychopathic and a nonpsychopathic group to determine whether psychopaths would show diminished error-related negativity (ERN). Diminished ERN is associated with impaired anterior-cingulate cortex (ACC) function (Munro et al., 2007) and the ACC is believed to be essential for assimilation of attentional, affective and visceral information (Munro et al., 2007). Psychopaths demonstrated noticeably reduced ERN during errors on the task compared to controls. This attenuation was closely linked to level of psychopathy within the group such that higher psychopathy scores were associated with greater reduction in ERN. However, the group differences reported disappeared when participants were allowed to respond at their own pace. Psychopaths only demonstrated deficits when they were required to respond at speed. Munro et al. (2007) suggest that psychopaths use slower top-down processes for evaluating emotional expressions rather than visceral linked ACC mechanisms and that this was particularly true for fear. This explanation is supported by the anecdotal observation that the psychopaths responded with frustration when they made errors but showed no corresponding substantive ERN.

1.3.1.3. Implicit and Explicit Memory in Psychopathy

Burns et al. (2011a) assessed implicit and explicit recall for four types of word stimuli (physical threat, social threat, neutral and positive) in prisoners demonstrating high and low levels of psychopathy. Participants undertook an encoding phase during which they were instructed to imagine themselves in a scene that involved themselves and the word to be encoded. Implicit recall was tested using a stem completion task, half of the letter stems were from the encoding phase the remaining half were from unseen words. Explicit recall was tested by presenting a list of words half of which appeared in the encoding phase. Participants were asked to indicate whether they had seen the words in the earlier task.

Results showed significantly poorer explicit memory for positive and social threat words but there was no relationship between level of psychopathy and explicit memory. However, for implicit memory high psychopathy was significantly related to greater implicit memory for social threat words suggesting psychopathic patients might not have normal access to their personal emotional past. Moreover, patients with high psychopathy may react spontaneously to negative social experiences but be unable to deliberatively retrieve or process them.

1.3.2. Emotion Processing in Psychotherapy

Considering emotion processing in psychotherapy Whelton (2004) refers to the constructs of ‘experiencing’ and ‘emotion processing’ from the humanistic tradition and behavioural tradition respectively. Research from both of these traditions emphasizes emotional events as processes through which change

is produced. Specifically, when emotions are suitably regulated so that they can be processed, the amalgamation of their arousal with cognitive reflection on their meaning produces therapeutic change. Put simply, therapy engagement which involves actively processing emotional information promotes successful treatment outcomes.

In an extensive review of the literature (described in chapter 2), Greenberg and Pascual-Leone (2006) set out four empirically based principles for processing emotion in psychotherapy. First, awareness and arousal of emotion, which is seen as an initial and general goal. Second, enhancing emotion regulation, this is described as gaining psychological distance from overwhelming feelings. Third, reflecting on emotion, this is explained as making meaning of emotion. Fourth, transformation of emotion, this is clarified as changing emotion with emotion.

Greenberg (2008) distinguishes between primary and secondary emotions. Primary emotions are valued because they are an adaptive information source and promote action. Conversely, secondary emotions are believed to be maladaptive and require transformation. Transformation occurs when secondary emotions are exposed to new experiences and given new meaning.

1.3.2.1. Awareness and Arousal of Emotion

Promoting in-session emotional awareness is an initial and general goal of working with emotion in therapy. In particular, patients are encouraged to become aware of their primary adaptive emotions. In the preliminary stages of

awareness work, acceptance of emotion is promoted over its avoidance. This work often begins with labelling emotions.

Greenberg (2008) acknowledges that humans are predisposed to avoid painful emotion. In order to overcome the tendency to avoid negative emotion patients are encouraged to attend to their emotional experience while simultaneously altering thought patterns related to emotion avoidance. Consistent with exposure therapy, this process is followed by periods of promoting increased tolerance of emotion (Foa et al., 1995).

In addition emotional arousal is encouraged which in therapy involves fully experiencing and expressing previously avoided emotions. Patients are encouraged to view emotions as sources of information indicating the necessity for action toward specific goals, desires or concerns (Greenberg, 2008; Greenberg & Pascual-Leone, 2006).

Whelton (2004) notes patients who suffer from over-regulation of emotion may benefit from its cathartic expression, however, for those who present with dysregulated emotion the ability to contain emotion may prove more valuable. For this group emotional arousal and expression may need to be accompanied or preceded with training in emotion regulation skills (Greenberg, 2008).

1.3.2.2. Emotion Regulation

Central to the task of emotion regulation is determining which emotions are the dysregulated secondary and maladaptive emotions so that they can become the focus. Greenberg (2008) suggests the first step involves

establishing a safe therapeutic environment where emotion regulation skills can be developed. Patients are encouraged to cultivate the capacity to distance themselves from overwhelming affect such as shame, despair and hopelessness and to develop the ability to self sooth. Self soothing techniques support the ability to regulate heart rate and breathing, and promote relaxation. In time patients are encouraged to develop the capacity to tolerate emotion and self sooth spontaneously.

1.3.2.3. Reflecting on Emotion

Therapeutic change during exposure therapy is said to be due to the activation of maladaptive fears, memories and beliefs while simultaneously offering new information. As such emotion processing in exposure therapy involves arousal, habituation and promotion of new perspectives. In experiential therapy a further stage is proposed which involves integration of affect and cognition. Emotion is perceived as a form of information which necessitates processing. Emotional arousal is achieved and attended to, next the experienced emotion is explored, reflected on and made sense of, other emotional resources are then recruited to facilitate transformation of a maladaptive state (Greenberg & Pascual-Leon, 2006).

By reflecting and making sense of emotion in this way patients are able to bring new meaning and understanding to situations. Creating new narratives to explain experiences, especially traumatic experiences, is an important part of the reflecting stage. When problematic emotions are placed within a new narrative they can be reassessed and the process can be experienced as therapeutic. For example, a patient may reflect on how in interactions with

their partner they express anger when they feel abandoned and that this is related to childhood experiences of abandonment and not the behaviour of the partner (Greenberg, 2008).

1.3.2.4. Transforming Emotion

Greenberg (2002) describes transforming emotion as 'changing emotion with emotion' and concerns those primary maladaptive emotions which are particularly resistant to change. A new feeling is used to undo the problematic one, for example, maladaptive fear is aroused in-session and transformed by evoking disgust or forgiveness (Greenberg, 2008). The original state is undone and replaced by a new state once a different emotion has been accessed. Greenberg outlines nine potential avenues for accessing new emotions in therapy (see Table 10).

Table 10 Nine ways to access new feelings in therapy

Access to new emotions	Description
1. The therapeutic alliance	Provides ongoing source of new emotions through empathic environment that soothes and calms
2. Shifting attention	Shifting patient's focus to pay attention to background emotions
3. Accessing needs/goals	Raising an unmet need to help evoke new feelings such as anger or sadness
4. Positive imagery	Generate positive emotions through imagery and use as antidotes to negative emotions
5. Expressive enactment of the emotion	Have patient enact a feeling that is not currently being experienced e.g. through psychodrama
6. Remembering another emotion	Remembering past emotional scenes produces emotion which can be restructured in the present
7. Cognitive change	Therapist helps patient to access new emotion by talking to them about that emotion
8. Expressing the emotion for the patient	Therapist expresses outrage or sadness for patient giving patient permission to begin experiencing the emotion
9. Using the therapy relationship to generate new emotion	New emotion can be evoked in response to new interaction with therapist e.g. comforting therapist evokes soft feelings; confrontive therapist evokes anger

To summarise; the research literature demonstrates that effective therapy engagement requires emotional and cognitive processing ability (Greenberg & Pascual-Leone, 2006; Whelton, 2004). In particular, four aspects of emotion processing ability may be crucial for effective therapy engagement and good

treatment outcome: awareness and arousal of emotion, emotion regulation, making sense of emotion and transforming emotion. It may be because of emotion processing deficits in one or more of these areas that psychopaths find it particularly difficult to engage meaningfully with the therapeutic process.

1.4. Thesis Outline

The remainder of the thesis will be organised into eight chapters. Chapter 2 outlines the current study including its design, aims and hypotheses. Chapters 3 and 4 describe the development and psychometric properties of the Group Emotional Engagement Questionnaire (GEEQ). The GEEQ is a new measure of engagement in group therapy specifically designed for use as one of the dependent variables in the current study. Chapter 5 describes the study methods including the materials used to measure the variables of interest and the procedures followed to recruit and interview participants.

The study results are spread over three chapters and include analysis of all computerised tasks and related questionnaire data. Chapter 6 presents the sample characteristics as well as the task-by-task group comparison results. Chapter 7 sets out the task-by-task regression results. Chapter 8 presents the multiple mediation analysis beginning with a discussion about the benefits of using bias corrected bootstrapping over path analysis to establish mediation. The thesis concludes with a discussion of the results beginning with a summary and interpretation of the main findings. The implications of these for the theories outlined in the introduction will be discussed with particular reference to emotion processing in psychopathy as well as Greenberg and

Pascual Leone's principles for working with emotions in therapy. Finally, the clinical implications of the study will be considered focussing on treatment engagement and efficacy in psychopathy.

CHAPTER 2:
THE CURRENT STUDY

Chapter 2

2. THE CURRENT STUDY

> We urge our basic science colleagues to bring their ideas into the clinic and our therapist colleagues to invite them in and apply those ideas to the complex dynamic of psychological intervention. Only by such bilateral efforts can we finally derive satisfactory answers to the single question that is most pressing from a public health standpoint: How does psychotherapy work to help people experience healthy emotions (Strauman, Eddington, & McCullough, 2007 p. 299).

The current study applied Strauman et al's approach to a group psychotherapy setting. The study assessed whether emotion processing ability mediates the relationship between psychopathy and group therapy engagement, and adopted methods developed in the field of experimental psychology to explore possible psychotherapeutic processes.

This chapter begins with an overview of the study design followed by its theoretical framework including a description of Greenberg and Pascual-Leone's review of emotion processing in psychotherapy. The study measures are outlined and a rationale for their inclusion is offered. The chapter continues with an account of the Dangerous and Severe Personality Disorder (DSPD) programme as well as the environment and treatment offered on the Fens Unit at HMP Whitemoor. Finally, the study's aims and hypotheses are set out.

2.1. Overview of Design

2.1.1. Main Study

The study examined the association between engagement in group therapy and level of psychopathy to assess whether this relationship is mediated by emotion processing ability. Participants were interviewed in a cross-sectional design and recruitment was carried out over a 14-month period between June 2009 and July 2010 (Appendices A and B show participation information sheet and consent form). Interviews took place in a designated room on a quiet part of the prison wing and took an average of 5 hours to complete. Emotion processing ability was assessed using computerised tasks each designed to measure one of the cognitive mechanisms of emotion processing outlined in chapter 1 (awareness and arousal of emotion, emotion regulation, emotion interpretation, emotion transformation) (Greenberg & Pascual-Leone, 2006). Following completion of the tasks participants undertook four self-report questionnaires measuring emotional awareness (Level of Emotional Awareness Scale [LEAS; Lane, Quinlan, Schwartz, Walker, & Zeilin, 1990]), everyday emotion regulation (Emotion Regulation Questionnaire [ERQ; Gross & John, 2003], Negative Mood Regulation Scale [NMRS; Cantanzaro & Mearns, 1990]), extroversion, neuroticism and psychoticism (Eysenck Personality Questionnaire [EPQ; Eysenck & Eysenck, 1975]) (see Appendices C to F). Psychopathy was measured using the Psychopathy Check List-Revised (PCL-R; Hare 2003). The sample was male-only therefore any findings may not be generalized to a female psychopathic population.

Two months after interview, a measure of emotional engagement in psychotherapy was obtained by asking group therapists to complete three observer-rated measures (Group Engagement Measure [GEM; MacGowan, 1997], Experiencing Scale [EXP; Klein, Mathieu, Gendlin, & Keiser, 1969], Group Emotional Engagement Questionnaire [GEEQ; developed as part of the current study]) for each participant (see Appendices G to I).

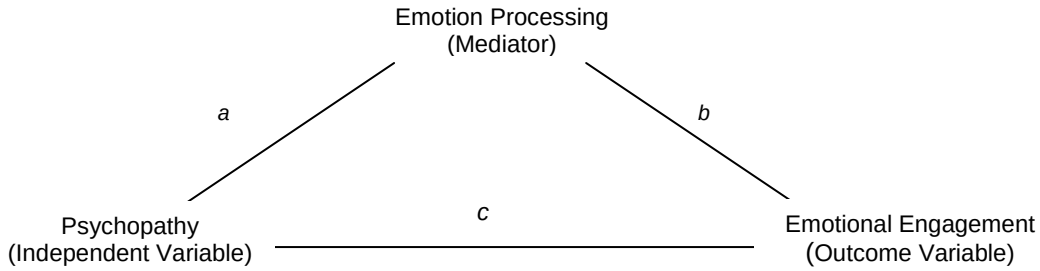
I conducted all of the interviews with prisoners administering each of the emotion processing measures and the EPQ (five computerised tasks and four questionnaires). I also administered all therapy engagement measures to group therapists (three questionnaires) and extracted sample characteristic data from prisoners' files (socio-demographic information, psychiatric and offending history, clinical characteristics [including the PCL-R]). See chapter 5 for a description of the measures used and chapter 6 for a breakdown of the sample characteristics extracted. The PCL-R was administered by trained and experienced clinical and forensic psychologists at the time each prisoner was assessed for treatment suitability on the unit. The clinicians conduct inter-rater reliability checks as part of their routine duties.

In addition I conducted three Delphi workshops with group therapy facilitators on the Fens Unit so that initial items for the GEEQ could be generated. I also facilitated two item rating rounds that followed the workshops (see chapter 3). Finally as part of the psychometric evaluation of the GEEQ I administered an initial version to all group facilitators on the Fens Unit and within the main psychology department at HMP Whitemoor. I also co-ordinated distribution of

the same version of the GEEQ to group facilitators at the Westgate Unit, HMP Frankland (see chapter 4).

The statistical approach taken to implement the investigation followed a mediator model. Baron and Kenny state 'the central idea in the [mediator] model is that the effects of the stimuli on behaviour are mediated by various transformation processes internal to the organism' (Baron & Kenny, 1986, p. 1176). Applied to the current study Baron and Kenny's observation would look like this:

Figure 1 Path diagram of the mediator model applied to the current study



The diagram shows a three variable model with two paths to the outcome variable (emotional engagement). The first is the direct influence of psychopathy (independent variable) (path *c*). The second is the influence of emotion processing ability (mediator). In addition there is the path from psychopathy to emotion processing ability (path *a*). To confirm the mediation model, variations in psychopathy should significantly correlate with variations in emotion processing ability (path *a*). Variations in emotion processing ability should also significantly correlate with variations in emotional engagement (path *b*). Finally, variations in psychopathy should significantly correlate with

variations in emotional engagement (path *c*) but this should be significantly reduced when paths *a* and *b* are controlled.

To test the proposed mediation model three regression equations are applied. In the current case it would be:

i. emotion processing ability regressed on psychopathy (2)
ii. emotional engagement regressed on psychopathy
iii. emotional engagement regressed on both psychopathy and emotion processing.

The separate coefficients for each equation are then tested. To establish mediation there would be the following expectations:

i. psychopathy to affect emotion processing
ii. psychopathy to affect emotional engagement
iii. emotion processing to affect emotional engagement
iv. the affect of psychopathy on emotional engagement to be less in the third regression equation than in the second.

This method of examining mediation is known as the casual steps approach. However as described in chapter 8 this may not be the most appropriate way to interrogate mediation in small samples (N = 20 to 80) (MacKinnon, 2008; Preacher & Hayes, 2008). This may be particularly true for multiple mediator models where bootstrapping is thought to be a more effective statistical approach (Preacher & Hayes, 2008). For bootstrapping the basic idea of the mediation model remains the same as that described by Baron and Kenny but the method for examining it differs (the methods are described in chapter 8).

Emotional engagement in group psychotherapy was examined using three observer rated measures, the EXP, GEM and GEEQ. Emotion processing ability was measured using four computerised tasks examining:

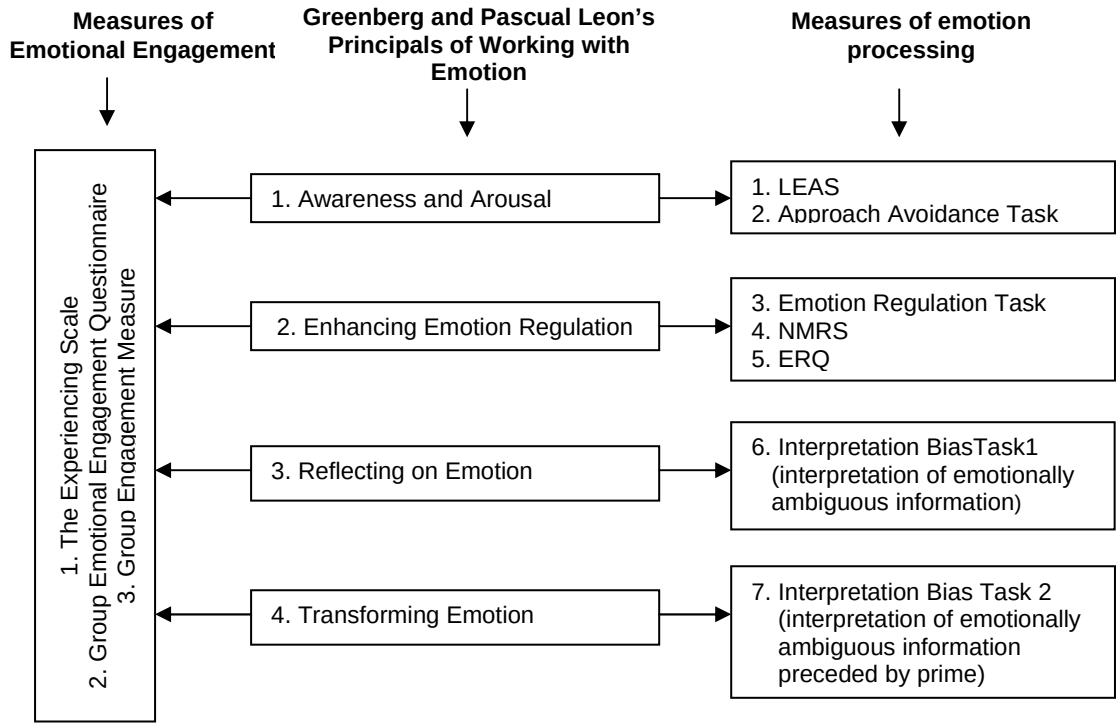
i. approach / avoidance behaviour to groups of affective faces (negative, positive and neutral)
ii. emotion regulation ability whilst viewing affective pictures (positive, negative) under 3 conditions (look, increase, decrease)
iii. interpretation bias for emotionally ambiguous written materials (social threat, physical threat, schema)
iv. interpretation bias for emotionally ambiguous written materials following a word prime (congruent or incongruent to a negative interpretation).

As described earlier, Greenberg and Pascual-Leone suggest four empirically based principles of working with emotion in therapy. These principles are:

i. awareness and arousal of emotion, seen as an initial and general goal
ii. enhancing emotion regulation, described as gaining psychological distance from overwhelming feelings
iii. reflecting on emotion, explained as making meaning of emotion
iv. transformation of emotion, clarified as changing emotion with emotion.

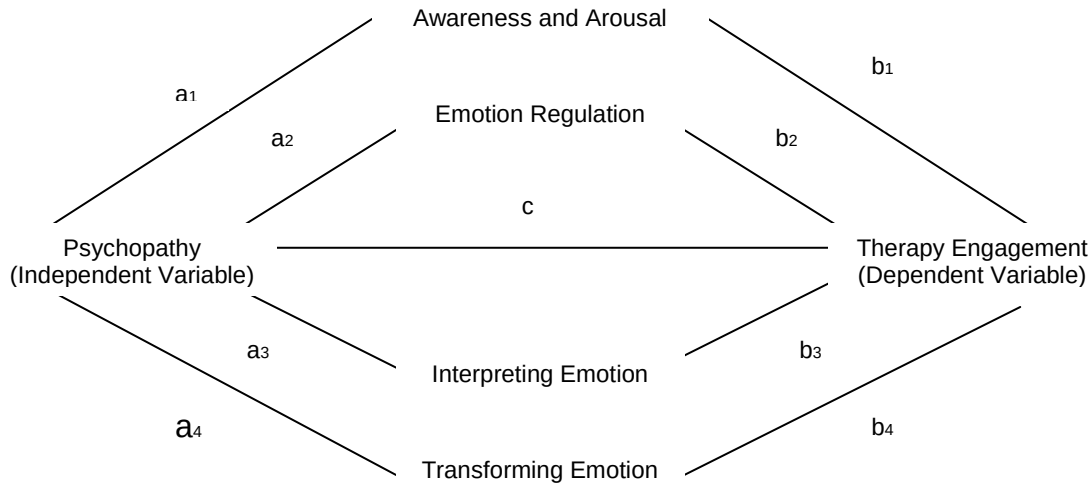
These four principles were used to map the emotional engagement measures onto the emotion processing measures as shown below (see Figure 2).

Figure 2 Study's measures mapped through Greenberg and Pascual-Leone's principles of working with emotion in therapy



The intention was to test whether overall emotion processing ability was a mediator in the relationship between psychopathy and emotional engagement (the sum of the four emotion processing mechanisms). In addition I examined each of the four emotion processing mechanisms (awareness and arousal of emotion, emotion regulation, interpreting emotion and transforming emotion) to determine the extent to which each mechanism mediated the relationship (see Figure 3). As described in chapter 8, the model was tested using the bias corrected bootstrap method proposed by Preacher and Hayes (2008). Research findings suggest that this is the most effective method for testing multiple mediator models with small to moderate samples (*N* = 20 to 80). Consequently, I used the SPSS version of Preacher and Hayes' Indirect macro for bias corrected bootstrapping (Preacher & Hayes, 2008).

Figure 3 A single-step multiple mediator model for the current study



Change over time is inherent so that time in therapy may affect emotion processing and treatment engagement. Although it was not possible to examine the causal direction of these relationships within the current design, it is proposed that, consistent with other domains of emotion processing research in psychopathology (Gross, 2002; Neisser, 1967), it would be cyclical in nature. Emotion processing would be required for emotional engagement but engagement in turn is likely to improve the quality of emotion processing. To provide a sensitive test of associations between variables it is important to sample the full range of variance within each. Therefore, a wide range of therapy exposure was needed to give a range of emotion processing ability and engagement. To this end, the sample included a treatment exposure range of 16 weeks to 7 years. Change in therapy engagement over time was examined so that it could be factored into the mediation analysis if it was found to be significant.

2.2. Theoretical Framework of the Study

The importance of using theory to inform research is well documented. The theoretical framework for the present research was Greenberg and Pascual-Leone's four empirically based principles of working with emotion in therapy (Greenberg & Pascual-Leone, 2006). As described in chapter 1, these principles outline the emotion processing abilities associated with therapeutic progress. The principles consist of:

i. awareness and arousal of emotion, seen as an initial and general goal
ii. enhancing emotion regulation, described as gaining psychological distance from overwhelming feelings
iii. reflecting on emotion, explained as making meaning of emotion
iv. transforming emotion, clarified as changing emotion with emotion.

The following section describes Greenberg and Pascual-Leone's review of the psychotherapy literature that forms the basis of their theory.

2.2.1. Greenberg and Pascual-Leone's Review of Emotion in Psychotherapy

The model is based on an extensive review of the psychotherapy process and outcome literature (Greenberg & Pascual-Leone, 2006). A comprehensive table of this literature, detailing authors, participants, therapeutic approach, studies and main findings, is presented in Appendix J. The review refined Whelton's earlier examination of emotion processing in therapy that included 108 studies (Whelton, 2004). Seventy-eight studies published between 1986 and 2004 were examined. The studies covered 16 therapy approaches including for groups, couples and individuals with eight types of diagnosis.

2.2.1.1. Therapy Approaches and Diagnoses Included in the Review

Table 1 shows that 40% of studies included more than one therapeutic approach. Studies examined emotion focused and psychodynamic therapies most often with slightly more than a fifth for each (21%). Just under a fifth of studies included cognitive therapies (16%). Over a sixth of studies included experiential therapy (14%) while a little less investigated behavioural therapy (12%). Client-centred therapy featured in 9% of studies. Finally, mindfulness was examined in 5% of studies as was eye movement desensitization and reprocessing therapy.

Table 1 Therapy approaches and diagnoses included in Greenberg and Pascual-Leon's review

Therapy approach (*N* = 78)	**Number of studies***	***%***
Cognitive therapy	6	7.7
Cognitive behavioural therapy	6	7.7
Client-centred therapy	7	9
Emotion focused therapy	16	20.5
Experiential therapy	11	14.1
Behavioural therapy	9	11.5
Eye movement desensitization and reprocessing therapy	4	5.1
Mindfulness	4	5.1
Psychodynamic therapy	16	20.5
Psychopharmacology	4	5.1
Psychotherapy (not specified)	6	7.7
Other**	7	9
Studies that used more than one of the above approaches	25	32.1
Studies that used more than 1 approach (not specified)	6	7.7
Diagnosis (*N* = 78)		
Anxiety	7	9
Childhood related trauma	6	7.7
Depression	22	28.2
Personality disorder	6	7.7
Post traumatic stress disorder	12	15.4
Student	6	7.7
Other***	12	15.4
Studies that used more than one diagnosis (not specified)	12	15.4

*Some studies included more than one approach / diagnosis
**Other therapeutic approaches included 1dialectical behaviour therapy, 1 hypnotherapy, 1 interpersonal therapy, 2 psycho-education, 1 not specified
***Other diagnoses include 1 chronic pain, 3 couples with interpersonal / marital type difficulties, 2 obsessive compulsive disorder, unspecified diagnosis

Over one third of studies included participants with trauma related diagnoses or anxiety (32%) and slightly less included depression (28%). Personality

disorder featured in a smaller proportion of studies (8%). Students participated in 8% of studies and these were all experimental designs from experimental, social or neuropsychology. Fifteen per cent of studies used more than one unspecified diagnosis.

2.2.1.2. Study Designs in Greenberg and Pascual-Leone's Review

The review presents evidence to support each of the model's four principles. Table 2 shows over one third of the studies related to emotional awareness and arousal (40%) with considerably fewer associated with regulation (9%), reflection (13%) and transformation (9%) of emotion. Slightly less than one third of studies were concerned with more than one principle (30%).

The studies can be arranged into three further categories. Almost one fifth were outcome studies (19%), slightly more than a quarter were process studies (26%) and over half combined outcome with process (55%). Across studies most used a repeat measures design (59%). Of these, nearly one fifth (17%) were randomized control trials (RCT) and slightly over a quarter (26%) included follow-up periods of between 3 and 60 months. In addition, slightly more than a quarter (26%) were meta-analyses (8%) or reviews (18%). Finally, a small proportion used cross-sectional designs (8%) and the same amount used experimental designs.

The majority of studies used mixed methods (72%). These included observer-ratings of patients' in-session affect, observer-rated and self-report measures of symptoms and daily functioning, as well as therapist and patient assessments of the therapeutic relationship. Measures shown to be valid and

reliable were used throughout (see Appendix J for a comprehensive list of all measures).

Table 2 shows self-report measures of symptoms and daily functioning were used most frequently (73%) and almost a quarter of studies used observer-rated measures of the same (23%). These were used to assess whether participants met inclusion criteria for studies and as outcome measures. For example, the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), Inventory of Interpersonal Problems (Horowitz, Alden, Wiggins, & Pincus, 2000), State-Trait Anxiety Inventory (Spielberger, 1983), Structural Clinical Interview for Diagnostic Statistical Manual IV (First, Spitzer, Gibbon, & Williams, 2002) and Symptom Checklist 90 Revised (Derogatis, 1983).

Observer-ratings of patient's in-session affect were used in over half of the studies (63%). This included analysis of videotaped empty chair exercises, and exposure and habituation techniques, as well as audiotaped in-session dialogue. These analyses employed valid and reliable measures such as the EXP (Klein, Mathieu, Gendlin, & Keiser, 1969; Klein, Mathieu-Coughlan, & Kiesler, 1986), the Computer-Assisted Language Analysis System (Rush et al., 1974) and the Specific Affect Coding System (Krokoff, Gottman, & Hass, 1989).

Almost one fifth of studies examined the therapeutic relationship (17%). Most often this was achieved using the Working Alliance Inventory (Horvarth & Greenberg, 1989) or Barret-Lennard Relationship Inventory (Barret-Lennard, 1962). Finally, the same number of studies were taken from experimental and

social psychology (17%) and used experimental tasks with psychophysiological, behavioural, observer-rated and self-report measures to assess emotion processing in psychiatric and non-psychiatric samples. These were valid and reliable measures of emotion processing, for example, cardiovascular activity, skin conductance response (SCR), reaction times, content analysis of written materials, the Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988) and the Trait Meta-Mood Scale (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995).

Table 2 Study designs in Greenberg and Pascual-Leone's review

Studies by emotion processing principle (*N* = 78)	**Number**	**%**
Awareness and arousal	31	39.7
Emotion regulation	7	9
Reflecting on emotion	10	12.8
Transforming emotion	7	9
More than one principle examined	23	29.5
Study design (*N* = 78)		
Outcome	15	19.2
Process	20	25.6
Outcome / process combined	43	55.1
Cross-sectional	6	7.7
Experimental	6	7.7
Longitudinal:		
RCT:		
repeat measures pre, post-treatment	3	3.8
repeat measures pre, post-treatment and follow-up	10	12.8
total all RCTs	13	16.7
Repeat measures (not RCT):		
each session of treatment	5	6.4
repeat measures pre, post-treatment	18	23
repeat measures pre, post-treatment and follow-up	10	12.8
total all repeat measure designs	33	42.3
Meta-analysis	6	7.7
Review	14	17.9
Methods (*N* = 78)		
Observer-rated in-session affect (e.g. empty chair exercise, exposure techniques):	49	62.8
Observer-rated symptoms (e.g. diagnosis, daily functioning questionnaires)	18	23
Self-report symptoms (e.g. diagnosis, daily functioning questionnaires)	57	73
Therapist / patient ratings of therapeutic relationship	13	16.7
Mixed methods (combination of two or more of the above)	56	71.8
Experimental task (measures: psychophysiology, behavioural, observer-rated, self-report)	13	16.7
Other*	17	19.5

* Other methods include 1 employment data, 6 self-report in-session affect, 1 in-session psychophysiology, 3 case studies, 2 neuroimaging, 2 self-report in-session gains, 2 observer-rated in-session gains

2.2.1.3. Summary of Review Findings

As the above demonstrates, Greenberg and Pascual-Leone's review of the psychotherapy process and outcome literature covers a wide range of therapies, diagnoses and methods. A summary of the findings is now presented for each of their four principles for working with emotion in therapy. (see Appendix J for a comprehensive account of all findings).

2.2.1.3.1. The importance of awareness and arousal of emotion for therapy outcome (emotion arousal)

A number of findings in the review suggest arousal of emotion is related to good treatment outcome. For depression, in-session arousal was related to development of agency, self-efficacy and self-assertion (Beutler et al., 1991), improved interpersonal relationships, greater treatment satisfaction and reduced symptoms (Pilerio, 2004). For anxiety high arousal in-session was associated with reduced anxiety and improvements in interpersonal problems that continued after treatment (Pilerio, 2004). For patients with childhood related trauma high arousal during imagined confrontations with significant others facilitated resolution of historic interpersonal issues. This was associated with reduced trauma related symptoms (Greenberg & Foerster, 1996; Paivio & Greenberg, 1995) and improved interpersonal functioning (Greenberg & Foerster, 1996). For couples with marital type difficulties high arousal during imagined contact with each other predicted greater forgiveness and improved global symptoms (Greenberg & Malcolm, 2002; Greenberg, Warwar, & Malcolm, 2003; Johnson, Hunsley, Greenberg, & Schindler, 1999). Finally, effectiveness of arousal depended on the emotion, how it was expressed, under what conditions this occurred, and whether it was followed by reflection or other experiences of emotion (Whelton, 2004).

The review cites a number of studies that used exposure techniques with post traumatic stress disorder (PTSD). Activating the fear structure was essential for emotion processing to occur (Foa, Riggs, Massie, & Yarczower, 1995). Specifically, greater aroused expression of fear in early therapy, plus habituation across sessions was related to post-treatment reductions of PTSD symptoms (Foa et al., 1995; Jaycox, Foa, & Moral, 1998), decreases in scores on depression and anxiety scales to normal levels (Jaycox et al., 1998) and reduced fear and avoidance (Kozak, Foa, & Steketee, 1988). Early engagement with traumatic material predicted trauma resolution and higher dosage was associated with reduced interpersonal problems, global and trauma-related symptomatology (Paivio, Hall, Holowaty, Jellis, & Tran, 2001). Long-term recovery was hampered when engagement with traumatic material was delayed (Gilbao-Schechtman & Foa, 2001). In addition, for obsessive compulsive disorder (OCD) poor treatment outcomes were related to therapist failure to activate the fear structure effectively (Foa & Franklin, 2000).

2.2.1.3.2. The importance of awareness and arousal of emotion for therapy outcome (emotion awareness)

The review draws on evidence from studies within psychotherapy and psychology more generally that suggest awareness of arousal is important for wellbeing. In a study of cognitive behavioural therapy for depression and anxiety, awareness and acceptance of affect led to reduced guilt and rumination, a less simplistic view of emotional experiences and a sense of greater emotion control (Leahy, 2002). During psychodynamic therapy that focused on raising awareness of avoided emotion patients showed significant improvements in awareness. At the end of treatment 75% of those who had met criteria for Axis I and II diagnoses no longer did so. This effect was

evident at 60-month follow-up (Monsen, Odland, Faugli, Daae, & Eilersten, 1995). In addition, two studies of non-psychiatric samples demonstrated the importance of emotion awareness for effective emotion processing. Hunt (1996) found that maintaining attention to negative emotion during an aversive mood induction task facilitated faster mood recovery than problem solving or avoidance techniques. Finally greater awareness of emotion predicted faster recovery of positive mood after viewing distressing film clips of traffic accidents (Salovey et al., 1995).

2.2.1.3.3. The importance of emotion regulation for therapy outcome

A number of studies of mindfulness examined the effectiveness of meditation techniques for regulating overwhelming affect. The studies found meditation was associated with large and significant overall changes in psychological and physical functioning (Kabat-Zinn, Lipworth, Burney, & Sellers, 1986), reduced anxiety, depression and panic symptoms (Miller, Fletcher, & Kabat-Zinn, 1992), as well as increased access to meta-cognitive awareness which predicted less depressive relapse (Teasdale et al., 2002). These changes were evident post-treatment and at follow-up periods of between 3 and 48 months.

2.2.1.3.4. The importance of reflecting on emotion for therapy outcome

The review found emotion awareness (Guidano, 1995) and its verbal expression (Rime, Finkenauer, Luminet, Zech, & Philippot, 1998) facilitated reflection on feelings, creation of new meanings and evaluation of emotional experience (Guidano, 1995; Rime,et al., 1998; Pennebaker, 1990, 1995). This was related to improved immune function with long-term physical health

benefits (Pennebaker, 1990, 1995), reduced anxiety and depression (Coombs, Coleman, & Jones, 2002; Watson, 1996), and therapeutic change (Greenberg, 2002; Greenberg & Angus, 2004; Samoilov & Goldfried, 2000) that persevered 18 month after treatment (Greenberg, 2002).

Warwar (2003) found arousal of emotion and reflection on aroused emotion predicted symptom reduction in depression better than either index alone. Similarly, frequent co-occurrence of emotional arousal and reflection during key moments in therapy were associated with substantial therapeutic shifts (Mergenthaler, 1996). A number of studies found greater arousal and reflection predicted better overall improvements of symptoms (Greenberg, 2002; Greenberg & Angus, 2004; Orlinsky & Howard, 1986; Samoilov & Goldfried, 2000; Silberschatz, Fretter, & Curtis, 1986; Stalikas & Fitzpatrick, 1995; Warwar, 2003; Warwar & Greenberg, 2000; Watson, 1996). In addition, these processes were associated with reduced depression (Castonguay, Goldfried, Wiser, Raue, & Hayes, 1996; Goldman, Greenberg, & Pos, 2005), increased self-esteem (Goldman et al`., 2005), development of agency, self-efficacy and self-assertion, as well as higher levels of return to work and reduced PTSD symptoms (Van Velsor & Cox, 2001).

2.2.1.3.5. The importance of transforming emotion for therapy outcome

The review included a number of studies from experimental, social and neuropsychology that suggest positive emotions can be used to ‘undo’ negative ones (Davidson, 2000; Frederickson, 2001; Frederickson & Levenson, 1998; Tugade & Frederickson, 2000). The experience of amusement and contentment was found to produce faster cardiovascular

recovery from negative emotions than a neutral experience (Fredrickson & Levenson, 1998). In addition, psychologically resilient individuals coped by recruiting positive emotions to regulate negative emotional experiences and returned to cardiovascular baseline more quickly than less resilient controls (Tugade & Fredrickson, 2000). In a study that compared high and low vulnerability to depression the low but not high group recruited emotions such as pride and anger to combat negative cognitions related to criticism (Whelton & Greenberg, 2005). In depression patients who tolerated affect were more able to restructure core emotions (anger, hopelessness) transforming them into more adaptive ones (Greenberg & Pedersen, 2001; MacKay, Barkham, & Stiles, 1998). This was related to fewer depressive relapses at 18-month follow-up (Greenberg & Pedersen, 2001).

2.2.1.3.6. The importance of the therapeutic relationship

The review found the therapeutic relationship was important for arousal of emotion. It mediated the association between arousal and decreases in symptoms (Beutler, Clarkin, & Bongar, 2000; Iwakabe, Rogan, & Stalikis, 2000), anxiety and avoidance (Rothbaum & Schwartz, 2002). In addition, therapist interventions that heightened emotion arousal were linked to reduced symptoms post treatment (Adams & Greenberg, 1996) and failure to do so was related to poor outcomes (Foa & Franklin, 2000; Shapiro, 2002). The effective characteristics of the relationship appear to be high levels of therapist empathy (Iwakabe et al., 2000) alongside provision of a safe and supportive environment (Rothbaum & Schwartz, 2002).

In addition, the therapeutic relationship appeared to regulate in-session emotion and provide a model for adaptive behaviour. For borderline

personality disorder patient ability to model therapist validation and affective soothing was associated with reduced symptoms and programme retention (Linehan et al., 2002). Similarly, in effective therapy sessions the therapist soothed, validated and regulated in-session emotion when the patient felt overwhelmed but empathically generated emotion if it was unproductively low (Paivio & Laurent, 2001).

2.2.2. Limitations of the Model

The model has a number of limitations. First, it does not take into account important aspects of therapy engagement found to be related to therapy outcome. For example, readiness for treatment (Casey, Day, Howells, & Ward, 2007; Serin & Kennedy, 1997) motivation to change (Miller, 1985; Miller & Rollnick, 1991) or the stages of change (Prochaska, DiClemente, & Norcross, 1992) are not considered. Second, Greenberg and Pascual-Leone only allow for the therapeutic relationship in terms of how it relates to their model. Other aspects of the therapeutic alliance are not considered, for example its role in motivation or retention. Third, the four components of the model may be closely associated with one another. This was addressed by examining all interrelationships between component measures (see chapter 8). Finally, only 8% of studies included in Greenberg and Pascual-Leone's review involved personality disorder. Other models were considered as the theoretical framework. The stages of change and readiness for treatment models are both used to conceptualise therapy in forensic settings. However, as will be discussed in chapter 3, neither considers in-session mechanisms of engagement. In addition, to my knowledge at the time of writing this was the

only comprehensive theory of working with emotion and cognition in therapy. Moreover, as these are aspects of functioning found to be impaired in psychopathy (Blair, Finger, & Marsh, 2009) and thought to be related to their poor treatment outcomes (Skeem, Monahan, & Mulvey, 2002) the model offered a relevant framework for the study.

2.3. Study Tasks: Rationale for Task and Measure Inclusion

As Figure 2 above shows, each study task maps onto one of Greenberg and Pascual-Leone's principles for working with emotion in therapy. Tasks had to meet two inclusion criteria. First, they had to correspond to one of Greenberg and Pascual-Leone's four principles. Second, they had to include measures that were difficult to manipulate. The following section sets out the task-by-task rationale for selection. In particular, how they met the definition of each principle, their use in other studies and the reasons for including them over similar measures. Before discussing the tasks individually, the importance of using measures that were difficult to manipulate will be discussed. A full description of each task is provided in chapter 5.

2.3.1. Weaknesses of Self-Report for Psychopathic Participants

A number of emotion processing studies have found poor reliability for self-report related to social desirability effects (Paulhus & Reid, 1991; Welte & Russell, 1993) or alexythemia (Lane, Ahern, Schwartz, & Kaszniak, 1997). These findings are pertinent to the current study as psychopathy is characterised by impression management, lack of self- and emotional awareness. For example, a number of emotion processing studies in

psychopathy have found a consistent pattern of impaired psychophysiological response but no corresponding effects in self-report (Patrick, Bradley, & Lang, 1993; Patrick, Cuthbert, & Lang, 1994; Verona, Patrick, Curtin, Bradley, & Lang, 2004). For these reasons, it was important to include methods that were difficult to manipulate for particiants and did not rely solely on self-report. Therefore, tasks incorporated instructions that masked their true intent whilst measures included reaction time (RT) and psychophysiology alongside self-report.

Finally, Murphy and McVey (2010) suggest personality disorder (including psychopathy) is characterised by a distorted internal logic which is thought to be driven by experiences of severe childhood trauma. For example, responding to smiles with suspicion because they are associated with malicious intent rather than friendliness. For this reason, they argue stimuli developed for non-psychopathic samples may fail to elicit predicted responses in psychopaths. This was taken into account when selecting stimuli for the present study. For example, the emotion regulation task involved images that had been rated on valence and arousal by this sample in a previous study (Burns et al., 2011a). In addition, schema related materials were developed for the interpretation bias tasks because they were believed to be particularly sensitive to detecting cognitive distortions in this group (Young, Klosko, & Weishaar, 2003) (see Appendix K).

2.3.2. Rationale for Selecting the Approach / Avoidance Task

The Approach / Avoidance Task (AAT; Rinck & Becker, 2007) was used to measure Greenberg and Pascual Leone's first principle, working with

awareness and arousal of emotion. As described in chapter 1, this is defined as promoting arousal, awareness and acceptance of emotion over its avoidance. To ensure the task corresponded to this definition it was required to test levels of emotional awareness and arousal, as well as tendency to avoid arousal, within a therapeutic context.

The AAT was chosen for four main reasons. First, the AAT is a behavioural measure of approach / avoidance in relation to affective stimuli. Specifically, it tests levels of emotional awareness and arousal as well as tendency to avoid arousal. Since approach / avoidance behaviour is widely regarded as an index of emotional awareness and arousal (Mauss & Robinson, 2009) the task can be said to measure this phenomena as described by Greenberg and Pascual-Leone. Second, as discussed above, when investigating emotion processing in psychopathy it is important to include measures that are difficult to manipulate and do not rely entirely on self-report. The AAT meets this requirement in two important respects. The task gives an implicit (RT) measure of awareness and arousal of emotion in self and others. RTs are measured in milliseconds and participants are instructed to respond as quickly as possible therefore deliberate response manipulation is difficult to achieve and easily detected. In addition, participants are directed to react to an irrelevant feature of the stimuli such as the colour shade of the image rather than its affective content. As the participant is unaware of the true purpose of the task they are unable to impression manage or manipulate performance. Third, the task has been successfully used to investigate awareness and arousal in other disorders (Lange, Keijsers, Becker, & Rinck, 2008; Rinck & Becker, 2007) and it is suggested the task may be employed to measure

treatment effects and outcomes (Lange et al., 2008). Finally, as described below, it was possible to adapt the task so that emotional stimuli reflected a group therapy context thereby enhancing ecological validity.

2.3.2.1. Adaptation of the AAT for use in the Current Study

The AAT usually runs in the following way. Participants respond to affective images presented on a screen and response is made using a joystick that allows participants to pull stimuli towards them or push them away according to instructions. Stimuli are colour shaded (e.g. red or green) and the true intent of the task is masked by instructing participants to respond to the colours rather than the images. For example, push for green and pull for red (counterbalanced across participants). Stimuli increase in size as the joystick is pulled and decreased as it is pushed intensifying the impression of movement towards and away from the stimuli. Speed of response gives a measure of approach / avoidance behaviour, with faster pull implying greater approach and faster push indicating greater avoidance. The task is usually followed by a rating task that presents stills of the stimuli and asks for ratings according to the feature of interest, for example, level of perceived friendliness or approval. This provides an explicit measure of awareness of emotions depicted in the task.

In order to make the AAT relevant to the current study and enhance ecological validity stimuli included arrays of affective faces designed to replicate emotional expressions experienced in a group therapy session. Participants attend therapy groups of up to 12 people including female facilitators. Therefore, crowds of 12 were made up of both genders. The task

ran as described above followed by a rating task which asked how (dis)approving the crowd seemed to be.

2.3.2.2. Other Measures of Awareness and Arousal Considered for the Current Study

The LEAS was used in addition to the computerised tasks. The LEAS was used because Greenberg and Pascual-Leone describe it as their definition of awareness operationalized (Greenberg & Pascual-Leone, 2006) and it has been used with a wide range of disorders (Baslet, Termini, & Herbener, 2009; Brejard, Bonnet, & Pedinielli, 2009; Donges et al., 2005; Frewen et al., 2008; Levine, Marziali, & Hood, 1997; Novick-Kline, Turk, Mennin, Hoyt, Gallagher, 2005) including psychopathy (Burns et al., 2011a) and in relation to clinical outcomes (Burns et al., 2011a; Donges et al., 2005). The LEAS is an observer-rated assessment of emotion awareness in self and others. Participants are presented with open-ended scenarios involving themselves and another person. The scenarios are designed to trigger an emotional response and participants are asked to state how they would feel and how the other person would feel for each scene (see chapter 5 for a comprehensive guide to scoring).

The Subjective Units of Distress (SUDS; Wolpe, 1969) and the Toronto Alexithymia Scale-20 (TAS-20; Bagby, Parker, & Taylor, 1994) were also considered but they do not correspond to Greenberg and Pascual-Leone's definition of awareness and arousal as competently as the AAT or LEAS. In addition, they are self-report therefore vulnerable to impression management. Further, unlike the AAT and LEAS, the SUDS and TAS-20 assume patients can accurately reflect on their emotional state. As discussed earlier, this is

problematic when assessing emotion processing in psychopathy which is characterised by impaired physiological response that is not reflected in self-report. Finally, the SUDS examines arousal of fear during individual exposure therapy. The study required a more general measure of emotion rather than fear specifically. Besides, it would have been difficult to administer in a group setting, particularly as participants did not attend groups involving exposure type techniques.

2.3.3. Rationale for Selecting the Emotion Regulation Task

A task following James Gross' emotion regulation paradigm (Gross, 1998, 2002) was used to measure Greenberg and Pascual-Leone's second principle, enhancement of emotion regulation. As described in chapter 1, in-session emotion regulation involves down-regulating emotion when the patient feels overwhelmed but up-regulating emotion if it is unproductively low. Down-regulation is defined as encouraging patients to distance themselves from overwhelming affect so that they can learn to self-sooth. This enhances heart rate and breathing regulation, and improves relaxation. Conversely, up-regulation is defined as generating affect, for example by focusing on emotional aspects of in-session narratives (Greenberg, 2008; Greenberg & Pascual-Leone, 2006). To meet this definition the Emotion Regulation Task (ERT) was required to test ability to down-regulate and up-regulate emotion in the manner described.

The ERT was chosen for five main reasons. First, it was based on Gross' comprehensive and widely accepted theory of emotion regulation (Gross, 1998; Gross, 2002) which corresponds to Greenberg and Pascual-Leone's

definition (Rottenberg & Gross, 2007). This allowed manipulation of the emotional states described by Greenberg and Pascual-Leone and set out above (up-regulation, down-regulation). Second, in an earlier study a version of this task detected differences in neurological response dependent on emotion regulation strategy used (Oschner et al., 2004). Specifically, up-regulation increased activation of the left amygdala whilst down-regulation decreased amygdala activation bilaterally. As discussed in chapter 1, deficits in amygdala activity are implicated for psychopathy (Blair R. J R., Mitchell, & Blair K. S., 2009), therefore it was reasonable to suppose the task may be sensitive to differences in emotion regulation ability according to level of psychopathy. Third, it permitted use of stimuli (positive, negative) from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 1999), which had normative valence and arousal ratings. In an earlier study, these stimuli had been rated by the current sample in a manner corresponding to the normative ratings (Burns et al., 2011a). This ensured the sample perceived the images in a similar way to the healthy population therefore any effects were unlikely due to anomalies in perception. Fourth, the IAPS offered a range of images that reflected emotional content likely to be discussed in therapy sessions (positive = sporting events, couples; negative = guns, attack scenes, physical injuries). This enhanced the ecological validity of the task. Finally, the ERT allowed examination of psychophysiological as well as self-report measures. This satisfied the requirement of including measures that were difficult to manipulate.

2.3.3.1. Adaptation of the ERT for use in the Current Study

Recent experimental studies of emotion regulation are informed by the work of James Gross and colleagues (Gross, 1998; Gross, 2002; Gross & John, 2003; Oschner & Gross, 2004). These typically involve tasks instructing participants to process stimuli under two or more conditions; naturally or using emotion regulation strategies prescribed by the experimenter (e.g. reappraisal or suppression). Performance between conditions is then compared. Stimuli usually consist of aversive images from the IAPS or film clips although others have used positive stimuli. Most studies have examined emotion down-regulation but some have observed up-regulation or both (for a review see Mauss & Robinson, 2009). Measures are typically self-report, psychophysiological, behavioural or fMRI. Tasks have been used to assess emotion regulation in a range of psychopathologies (e.g. anxiety, depression) as well as the healthy population. Findings consistently suggest reappraisal but not suppression is related to better health outcomes and social functioning (Mauss & Robinson, 2009).

An fMRI study by Ochsner et al. (2004) is typical of this approach and was adapted for use in the current study. Both the strength of subjective experience of, and cardiovascular responsivity to, emotional images were assessed. Participants were instructed to either up-regulate or down-regulate their response or to view images naturally (baseline). Images were positive (sporting events and relationship pictures) and negative (guns, scenes of attack and fire) reflecting material typically explored in therapy. Almost all pictures involved people.

Three factors guided inclusion of a psychophysiological measure. First, as discussed above and elsewhere findings of emotion processing in psychopathy suggest dissociation between self-report and physiological responses with normal self-report but impaired psychophysiological response (Patrick et al., 1993; Patrick et al., 1994; Verona et al., 2004). As self-report is unreliable in this group, and to assess possible discrepancies in the current sample, it was important to include both measures. Second, in the healthy population negative or unpleasant stimuli prompt heart rate deceleration, increased electromyographic (EMG) activity (such as frowning), increased SCR and potentiation of affective startle (see Kirsch and Becker, 2007 for a review). Conversely, positive emotional material is generally associated with the reverse pattern (with the exception of SCR). In contrast, reduced or deficient autonomic responsivity to emotional material is usually reported in psychopathic individuals (Arnett, 1997; Kirsch & Becker, 2007; Lorber, 2004). Finally, multiple measures of psychophysiological response are advised because each assesses different aspects of the autonomic system. For example, skin conductance (SCR) primarily reflects sympathetic activity while heart rate reflects parasympathetic as well as sympathetic activity (Mauss & Robinson, 2009). Feasibility of acquiring SCR alongside heart rate was explored but two main issues mitigated against this. The first was security restrictions surrounding on-site equipment meaning that kit needed for any other measures would have been difficult, perhaps impossible, to install on site. Second was the consideration of prisoner consent to participation; it was advised that considerable suspiciousness would surround the use of electrodes, possibly jeopardising the success of data collection, whereas

heart rate measurement was a more familiar and acceptable concept. Even with minimal heart rate equipment, several refusals resulted (see chapters 6 and 7).

2.3.3.2. Other Measures of Emotion Regulation Considered for the Current Study

Two tasks previously used to assess emotion regulation in psychopathy were considered for the current study. These were a biofeedback training task measuring SC response to affective imagery (Steinberg & Schwartz, 1976) and a task evaluating heart rate response under anger inducement (Lobbestael, Arntz, Cima, & Chakhssi, 2009). However, psychophysiological measures aside, neither task had the advantages outlined for the ERT above. In addition, the study required a more general measure of emotion rather than the anger specified for the inducement task.

2.3.4. Rationale for Selecting the Interpretation Bias Tasks

Two interpretation bias tasks (IBT1 and 2) were used to assess Greenberg and Pascual-Leone's third and fourth principles, making sense of and transforming emotion. Making sense of emotion is defined as bringing new meaning and understanding to situations. This involves creating new narratives to interpret experiences, especially traumatic experiences. When a problematic emotion is placed within a new narrative it can be reassessed and the process can be experienced as therapeutic. Crucial for this definition is the idea that emotions should be viewed as sources of information in need of interpretation (Greenberg & Pascual-Leone, 2006). Transforming emotion is closely related to this and is defined as 'changing emotion with emotion'. This

occurs when a new interpretation and narrative are formed around a problematic emotion. The original emotion is undone by accessing novel feelings associated with the new narrative (Greenberg & Pascual-Leone, 2006). To match these definitions effectively it was important to use tasks that first tested how meanings were attributed to emotional information and then assessed ability to change meanings and access new feelings.

The IBTs were chosen for a number of reasons. First, IBT1 assessed tendency to make positive or negative interpretations of ambiguous emotional information presented within a social context. While IBT2 examined ability to change bias when the ambiguity was reduced and the context was altered. This corresponds to the definitions of making sense of and transforming emotion described above. Second, they allowed use of stimuli that drew on Young's schema theory. Young's theory explains the manner in which personality disordered individuals (including psychopaths) develop cognitive distortions (see chapter 5 for a discussion of Young's schema theory). This enhanced the sensitivity of stimuli for psychopathy as advocated by Murphy and McVey (2010). Third, it was possible to design stimuli that reflected narratives likely to be the subject of therapy sessions thereby improving ecological validity. Fourth, in the case of IBT1 it permitted inclusion of RT response recorded at milliseconds while IBT2 instructions supported socially desirable responding. Thus, task designs met the requirement to include measures that were difficult to manipulate. Finally, the literature supports use of tasks such as the IBT1 and IBT2 to assess interpretation bias in clinical settings (Berna, Lang, Goodwin, & Holmes, 2011).

2.3.4.1. Adaptation of the IBTs for use in the Current Study

Ambiguous sentence tasks have been used widely to assess interpretation bias in emotion disorders (for reviews see Fox, 2008; Mathews & MacLeod, 2005). Findings consistently demonstrate an association with negative interpretation of ambiguous emotional material in anxiety and depression, which is thought to contribute to their cause and continuation (e.g. Berna et al., 2011; Wenzel & Lystad, 2004; Mogg, Bradbury, & Bradley, 2006). Characteristically, emotionally ambiguous scenarios are presented followed by a choice of possible interpretations (psychopathology related or benign) for rating or ranking on likelihood. Negative bias is usually indicated by ranking in the direction of the non-benign interpretation. To intensify impact, instructions encourage participants to imagine themselves in the depicted scene and scenarios are written in the second person. Multiple measures of interpretation bias are typically included to examine whether they provide converging evidence. In particular, behavioural measures are used alongside self-report to address experimenter effects and response bias. For example, inclusion of RT to complete word fragments related to the scenario, and congruent or incongruent to a negative interpretation.

To examine interpretation bias and its resolution the current study used two ambiguous sentence tasks similar to those described. In keeping with Greenberg and Pascual Leone's definitions of making sense of and transforming emotion, Task 1 measured interpretation bias and Task 2 measured ability to change interpretation bias. Both tasks ran as described above, however IBT1 included a word completion task, measured by RT to complete word, alongside scenario ranking and IBT2 preceded the scenarios

with a prime word that was congruent / incongruent to a negative interpretation. Participants were instructed to use the prime to make sense of the scenarios. The primes provided new contextual meaning, which transform emotion according to Greenberg and Pascual-Leone's model.

2.3.4.2. Other Measures of Interpretation Bias Considered for the Current study

Other types of interpretation bias task were considered for the current study. For example, homophones or homographs that can be resolved either negatively (psychopathology congruent) or positively. To some extent these tasks could have been adapted in the manner described for the IBT1 and IBT2 but they would have lacked the ecological validity achieved for the ambiguous sentence tasks. In addition, homophones and homographs would have assessed making sense of emotion but would not have measured emotion transformation. It was thought advantageous to have closely related tasks to assess interpretation and transformation of emotion so that comparisons in performance could be made easily. Therefore, two ambiguous sentence tasks using similar materials were chosen over other designs. Finally, the Young Schema Questionnaire (YSQ; Young & Brown, 2003) was considered, however, this is self-report and consultation with clinical staff on the unit suggested participants lacked the insight to complete it accurately and / or would provide socially desirable responses. This is supported to some extent by the findings of Chakhssi, Bernstein and de Ruiter (2012) which failed to demonstrate significant differences in YSQ scores corresponding to level of total PCL-R or Factor 1 psychopathy and found only limited differences for Factor 2. The authors subsequently called for studies that test

implicit cognitions using experimental designs to establish if these are better able to detect symptomatology missed by self-report.

It should be noted that the study might have been limited by using tasks that lacked normative data to compare to our findings. This observation applies to each of the tasks described. However, it would be unusual for experimental tasks to have normative data because the factors of interest to the investigation are usually inherent in the task design (e.g. response to emotional versus neutral information) and only of interest in relation to the comparator group. The approach is quite distinct from the more general tests of cognition (such as IQ or working memory performance) where one might usefully refer to percentile performance within the population at large.

2.4. The Current Sample: An Introduction to Dangerous Severe Personality Disorder (DSPD)

2.4.1. Background to the DSPD Service

The term ‘DSPD’ is an administrative construct rather than a medical diagnosis (Burns et al., 2011a). The DSPD programme aims to treat violent offenders whose personality disorders (including psychopathy) are thought to be functionally linked to their use of violence. As a joint venture between the Department of Health and Ministry of Justice, the programme attempts to balance detention and treatment of disordered individuals with public safety. Initially the programme consisted of four pilot units at HMP Whitemoor, HMP Frankland, Rampton and Broadmoor Special Hospitals. The units were allowed to develop their own treatment models, however criteria for admission was standardised across the four sites. To meet criteria a prisoner / patient must:

i. Be more likely than not to commit an offence that might be expected to lead to serious physical or psychological harm from which the victim would find it difficult or impossible to recover

ii. Have a severe personality disorder as determined by:

    a. PCL-R score of 30 or more; or

    b. PCL-R score of 25 or more plus at least one personality disorder (excluding antisocial) according to ICD-10 or DSMIV criteria; or

    c. Two or more personality disorders (one of which can be antisocial) according to ICD-10 or DSM-IV criteria

iii. Have a functional link between their personality disorder and / or psychopathy and offending.

Currently only the prison units are fully operational. The unit at Broadmoor closed in March 2012. The unit at Rampton is undergoing review for inclusion in a new personality disorder pathway service.

2.4.2. The Study Population and Setting

The Fens Unit is based at HMP Whitemoor, a high security dispersal prison that holds 448 prisoners. The prisoners are category A and B, serving sentences of 4 years or more. The unit is on one of the prison's four wings and accommodates 70 prisoners all of whom meet criteria for DSPD (see chapter 6 for the sample characteristics). Prisoners are evenly divided between three spurs (sub wings). Most referrals to the unit come from other prisons with some from the special hospitals (Burns et al., 2011a). The prisoners arrive on the unit for assessment in groups of eight and attend therapy in these groups throughout their stay on the unit.

The unit follows Livesley's cognitive interpersonal treatment model (Livesley, 2001, 2003) and includes a combination of group and individual psychotherapy. Pharmacological intervention is employed when necessary. The therapy is delivered by a multidisciplinary team consisting of psychiatrists, psychologists (forensic and clinical), psychotherapists, psychiatric nurses and prison officers. Throughout therapy, the following four domains are targeted as areas of functioning that require adaptation:

i. emotion dysregulation
ii. cognitive distortions
iii. impulsivity
iv. interpersonal relationships

The programme is divided into five stages with prisoners commencing treatment at stage one and progressing through to stage five over a period of between 5 and 7 years (see Table 3). The main aim of the treatment is to reduce offending behaviours whilst modifying personality disorder. As the unit reports a high incidence of childhood trauma amongst its prisoners (Saradjian, 2005) the treatment follows De Zulueta's claim that "Treatment of offending among those who have been traumatised requires that their own trauma is treated" (as cited in Saradjian, 2005 p. 12). Further, it is thought that treatment of childhood trauma impacts positively on the development of victim empathy (Van der Kolk, 1996 and Marshall, 1998 as cited in Saradjian, 2005). A further theoretical underpinning of the treatment model follows McRae and Costa's assertion that "Personality does not change in the absence of profound, emotional experience. Treatment attempting to change personality must

contain opportunities for new emotional experiences" (as cited in Saradjian, 2005 p. 10). Central to the unit's approach is:

i. treating childhood trauma in order to facilitate development of victim empathy and thereby reducing offending behaviours

ii. promoting new emotional experiences to alter presentation of a familiar, rigid interpersonal style thereby modifying personality disorder

Table 3 Five stages of the Fens Unit programme

Stage	Aims	Interventions
1. Emotional engagement	Build general therapeutic alliance between prisoner and wing staff Build emotionally meaningful relationships 1:1 interactions with therapist and personal officer Provide relationships which are stable, nurturing, consistent and able to tolerate prisoners anger without resorting to punitive responses Build collaborative case formulation	Individual therapy Cognitive Interpersonal Group
2. Problem recognition	Understand how personal problems affect all aspects of life Awareness Develop insight Build motivation for change	Individual therapy Cognitive Interpersonal Group Psycho-education Groups (PD Awareness Group, Human Relationships Group)
3. Exploration	Acquire psychological framework Recognise sequence of events that lead to problem behaviours Understand obstacles to exploration Identify alternative coping strategies	Individual therapy Cognitive Interpersonal Group Schema Therapy Group Affect Regulation Group
4. Acquisition of alternative behaviours	Acquire new skills Develop different coping strategies Inhibit old behaviours	Individual therapy Cognitive Interpersonal Group Schema Therapy Group Affect Regulation Group Offence Focused Group Substance Abuse Group Healthy Sexual Relationship
5. Consolidation	Apply new skills in everyday situations Recognise an array of emotions Identify when experiencing emotions Learn to tolerate emotion	Individual therapy Cognitive Interpersonal Group Endings group

The unit acknowledges that there is no definitive model for treating severe personality disorder and describes itself as experimental. As such it is expected the treatment will need to be adapted and modified as it progresses and is evaluated (Saradjian, 2005).

2.5. Aims and Hypotheses

2.5.1. Aims

The study aimed to examine the association between engagement in group therapy and level of psychopathy and to assess whether this relationship is mediated by emotion processing ability. First, to observe whether awareness and arousal of emotion, emotion regulation ability, interpretation bias and ability to transform emotion, together mediate the relationship between psychopathy and therapy engagement. Second, to assess whether these emotion processing mechanisms each uniquely mediate this relationship.

2.5.2. Hypotheses

Therapeutic engagement in psychopathy is an important area of study due to reports of poor engagement leading to poor treatment outcome for this group. One factor that may influence effective engagement is the ability to process emotional information, which has been shown to be impaired in psychopathy. If emotion processing deficits interrupt engagement, treatment will be compromised. This may explain in part why psychopaths have proved resistant to treatment.

As described in detail above the theoretical framework of the present study was Greenberg and Pascual Leone's four empirically based principles for working with emotion in therapy (Greenberg & Pascual-Leone, 2006). These principles outline the emotion processing abilities associated with therapeutic progress. The principles consist of:

i. awareness and arousal of emotion, seen as an initial and general goal

ii. enhancing emotion regulation, described as gaining psychological distance from overwhelming feelings
iii. reflecting on emotion, explained as making meaning of emotion
iv. transformation of emotion, clarified as changing emotion with emotion.

I investigated the association between engagement in group therapy and level of psychopathy and assessed whether this relationship is mediated by emotion processing ability. I hypothesised that higher levels of psychopathy would be associated with lower levels of therapy engagement; however, this relationship would be mediated by four emotion processing indicators. Specifically, awareness and arousal of emotion, emotion regulation ability, interpretation bias and ability to transform emotion would:

i. jointly mediate the relationship between psychopathy and therapy engagement
ii. each uniquely mediate the relationship between psychopathy and therapy engagement

This chapter outlined the current study including its theoretical framework, design, measures, aims and hypotheses. A brief description of the DSPD programme and the study setting were also given. The next two chapters describe the development and psychometric properties of the GEEQ. This is a new measure of group therapy engagement specifically developed for use in the current study as one of its dependent measures.

CHAPTER 3: DEVELOPMENT OF THE GROUP EMOTIONAL ENGAGEMENT QUESTIONNAIRE

Chapter 3

3. DEVELOPMENT OF THE GROUP EMOTIONAL ENGAGEMENT QUESTIONNAIRE (GEEQ)

3.1. Introduction

This chapter describes how a Delphi method was used to develop the Group Emotional Engagement Questionnaire (GEEQ), an observer-rated measure of engagement in group therapy. The reasons for developing a new measure of engagement will be outlined followed by an explanation of the Delphi method. The Delphi method used in the present study will then be described.

As discussed in chapters 1 and 2, active emotional and cognitive engagement in the therapeutic process leads to good therapy outcome (for reviews see Greenberg & Pascual-Leone, 2006; Whelton, 2004). Unfortunately, there is no simple measure of these aspects of engagement. Often, engagement is measured as attendance in sessions or length of time in therapy (Tyron, 1985, 2002), or indirectly by assessing the therapeutic alliance (Joe, Broome, Rowan-Szal, & Simpson, 2002). In addition, engagement-specific tools that do exist focus mainly on the cognitive aspects of engagement and include few emotional items (MacGowan, 1997).

Importantly for the current study, there is no measure of emotional and cognitive engagement specifically designed for use in a forensic setting. Measures of readiness for treatment in forensic settings have been developed, for example the Attitudes to Correctional Treatment Scale (Baxter, Marion, & Goguen, 1995), the Serin Treatment Readiness Interview (Serin &

Kennedy, 1997), the Personal Concerns Inventory (Sellen, McMurran, Cox, Theodosi, & Klinger, 2006) and the Corrections Victoria Readiness for Treatment Questionnaire (Casey, Day, Howells, & Ward, 2007). While these assess offenders' motivation to engage in treatment, they do not measure engagement per se. The Group Engagement Measure (GEM) was developed for use with a forensic population (MacGowan, 1997), but contains very few emotional items. In addition the GEM was developed with a community forensic sample (sex offenders undergoing outpatient group therapy) not a custodial sample.

Measures of engagement that only capture levels of attendance or lengths of time in therapy are inadequate for offender groups because they reveal little about the quality of engagement likely to change offending behaviour. Forensic custodial settings have specific characteristics that set them apart from other environments in important ways that may affect treatment engagement. In particular, treatment attendance may be compulsory so that individuals are required to attend a number of offence reduction programmes as part of their custodial sentence. In addition, early release may depend on whether an individual has engaged in these programmes. Therefore, treatment engagement under these conditions may be superficial (individuals attending because they have to but without engaging fully with the therapeutic process) compared to non-forensic settings where attendance is voluntary.

The above indicates the need for a simple measure that specifically assesses the emotional and cognitive aspects of in-session therapy engagement within a forensic setting. However, the most important reason for developing a new

measure of engagement during the current study was to ensure that the dependent variable (emotional and cognitive engagement in therapy) was measured accurately. An extensive literature search (using pubmed, MEDLINE [Ovid], PsychINFO and Google Scholar and the key words: 'group', 'psychotherapy', 'engagement', 'prison' and 'forensic') did not reveal a suitable measure. Therefore, having established the need for a new measure of therapy engagement, the GEEQ was designed with reference to Greenberg and Pascual-Leone's principles for working with emotion in therapy (awareness and arousal of emotion, emotion regulation ability, reflecting on emotion, transforming emotion). The Delphi method was chosen as the most appropriate methodology to assist in its development.

The Delphi method, which evolved out of economic research, is a flexible approach which has been applied to a wide range of research settings including mental health (Burns et al., 2011a; Fiander & Burns, 1996; Prochaska & Norcross, 1982). The method has been used to develop research instruments such as scales, questionnaires, assessment tools, inventories and structured interviews. Psychometric studies for these instruments demonstrated validity and reliability of between adequate and very good (Harmon & Maretzki, 2006; Simon et al., 2006; Yates, Morley, Eccleston, & Williams, 2005). In healthcare the measures have been used with practitioners and patients to examine theoretical constructs, quality of relationships (Walker & Selfe, 1996), therapeutic processes (Schnyer et al., 2005; Walker & Selfe, 1996) practitioner competencies (Giordano & Briones, 2003; Simon et al., 2006; Thielsen & Leahy, 2001; Walker & Selfe, 1996)

treatment quality (Yates et al., 2005; Walker & Selfe, 1996) and patient attitudes (Harmon & Maretzki, 2006).

Application of the Delphi method is indicated for complex problems where judgemental information is influential (Adler & Ziglio, 1996; Okoli & Pawlowski, 2004). The method involves obtaining the views of experts on a given research topic and then using an iterative, re-rating procedure to reach consensus about the most important factors. In particular, the process helps to achieve and measure consensus in areas where there is a range of opinion. First, a panel of experts is formed to 'brainstorm' their views on a given research topic, followed by rounds of re-rating until consensus is reached on its most important factors. Expert is defined as an individual well informed in the appropriate area (Armstrong, 1978; Hanson & Ramani, 1988; Welty, 1972). Criteria for inclusion on Delphi panels are often at least 5 years post-qualification of working in the relevant field and / or two or more publications on the subject of interest. The process draws on the broad knowledge and experience of those involved rather than imposing a view from outside and it is configured to give all an equal voice, thereby reducing excessive influence from vocal or powerful members. In particular, anonymity avoids peer pressure and allows participants to change their views without the fear of losing status. The Delphi is usually carried out in rounds where opinions are canvassed, analysed, refined and re-presented until consensus is achieved. This process is generally overseen and co-ordinated by a researcher.

The literature points to four crucial aspects of the Delphi that set it apart from other more conventional decision-making fora (Linstone & Turroff, 1975):

i. anonymity of panel members when making ratings circumvents group dynamics such as hierarchies, peer influence, or reluctance to publicly change views in mid-debate
ii. iteration between rounds promotes movement toward consensus
iii. controlled feedback between rounds allows panellists to clarify, refine or change their views in the light of opinions voiced by other group members
iv. statistical aggregation of responses permits quantitative analysis and interpretation of data.

3.2. Aims

The aim of this study was to develop an observer-rated measure of group therapy engagement for use within a forensic setting. Specifically the measure had to be simple to administer and assess levels of engagement capturing Greenberg and Pascual-Leone's four principles of working with emotion in therapy (see chapters 1 and 2).

3.3. Methods

3.3.1. Design

My Delphi process had two main components:

i. brainstorming exercise to identify items of group therapy engagement
ii. rating the importance of the items during two iterative rating rounds

Brainstorming workshops took place over a two-week period in May 2008. The two rating rounds took place over a two-month period between May and July 2008.

3.3.2. Participants

Participants were group therapy facilitators from the Fens Unit, HMP Whitemoor and had publications on personality disorder, psychopathy or psychotherapy and / or at least 5 years experience of delivering groups in forensic settings (clinicians and prison officers) (*N* = 21*).* An email was sent out to 30 group facilitators on the unit outlining the main study and inviting them to take part in the Delphi process. From these 21 agreed to take part (70%).

3.3.3. Procedure

3.3.3.1. Delphi Workshops

To ensure maximum recruitment three workshops were arranged to suit the unit regime. One, two-hour workshop for prisoner officers took place at the beginning of the day and two, one hour workshops for clinicians ran at lunch time. All workshops were held in a quiet meeting room off the prison wing, were facilitated by the researcher and followed a structured format.

At the beginning of the session the aim of the exercise (to develop a measure of group therapy engagement) was explained followed by a description of the Delphi process. Next Greenberg and Pascual-Leone's four principles for working with emotion in therapy were outlined followed by presentation of four related research questions.

The four topics and corresponding prompt questions used to generate relevant questionnaire items were:

i. Awareness and arousal: 'What indicates awareness and arousal of emotion?'
ii. Emotion regulation: What indicates ability to enhance emotion regulation, i.e. ability to gain psychological distance from overwhelming feelings?
iii. Reflecting on emotion: What indicates ability to reflect on emotion and make sense of it?
iv. Transformation of emotion: What indicates transformation of emotion, i.e. the ability to change emotion with emotion?

Taking one question at a time, participants were asked to brainstorm what things might indicate each of the above. Participants were encouraged to include behaviours, expressions and attitudes which indicate engagement as well as those which indicate absence of engagement. Prison officers addressed all four questions in their two hour workshop and clinicians addressed the first two questions in workshop one, completing the remainder in workshop two. The discussions from all three workshops were summarised in bullet point form and a list of potential questionnaire items was produced at the end of the workshop. This list consisted of 101 items.

3.3.3.2. Rating of Items on Importance

Following completion of the workshops all 101 items were arranged in a questionnaire format grouped under the four topics described above, corresponding to the four aspects of engagement outlined previously. Two weeks after the workshops, the questionnaires were circulated to the

participants who were asked to rate each item on a 5-point Likert scale (1 = not important at all to 5 = very important). When considering the importance of an item, participants were instructed to consider the following when rating:

i. how well an item indicates someone is / is not engaged in the group process
ii. the participant's opinion ***not*** 'the correct answer'
iii. which of the four topics the item best reflected

Participants rated the items in confidence to maintain their anonymity. After the first round of rating the group median rating and inter quartile range (IQR) were calculated for each item. A second rating sheet was then generated which included the group median rating and IQR alongside the participant's original rating. Participants were asked to reconsider their earlier rating in the light of the group average and to change it if they were persuaded to do so. However, it was made clear that participants did not have to change ratings if they did not wish to do so. Table 1 shows an example of the rating sheet circulated during the second rating round.

Table 1 Example of rating sheet used during second rating round

	How important is each item as an indicator of emotional engagement in therapy? Consider your rating (marked 'X') against the average rating (marked 'A') and decide whether you would like to re-rate items accordingly. Please also consider the IQR. ***Indicate your response clearly***	Not important at all	Not important	Neutral	Important	Very important	IQR
A. Awareness and Arousal							
1	Someone breaks down and cries when talking about past abuse				AX		0.5
2	Big expressions of basic emotions e.g. throwing a chair because they are angry				A	X	0.25
3	Person says what they are feeling				AX		1.75
4	Emotions being experienced by therapist				AX		1
5	Emotional connection and agreement between therapist and patient				AX		1
6	Absence of competition within the group	X		A			2

Following the second round of rating, sufficient consensus on item importance was reached (agreement ≥ 80% for majority (62%) of items) therefore no further rounds were conducted.

3.4. Results

3.4.1. Delphi Workshops

Participants' characteristics and the number of rating rounds they were involved in are shown in Table 2.

Table 2 Delphi panel participants by designation

Designation	Post-qualification experience (yrs) (Mean)	Post-qualification experience (yrs) (Min-max)	N with Publications on PD, psychopathy and/or psychotherapy	Workshop	Round 1	Round 2
Clinical Psychologist	8.8	5-16	2	6	5	5
Forensic Psychologist	8.0	8	0	1	1	1
Psychotherapist	20.0	20	2	1	1	1
Forensic Psychiatrist	30.0	30	1	1	1	1
Psychiatric Nurse	5.0	5	1	2	2	2
Prison Officer	8.8	5-20	1	10	7	7
Total	**NA**	**NA**	**7**	**21**	**17**	**17**

Following the workshops four participants (one clinician and three prison officers) left the unit and were not involved in the rating rounds. Clinicians and prison officers were equally represented in the brainstorming component of the process (52% and 48% respectively). A similar pattern can be seen for the rating rounds (clinicians = 59%, prison officers = 41%) although the departure of three prison officers increased the gap between the two groups slightly. Less than half the panel had published on personality disorder, psychopathy and / or psychotherapy (41%). All had at least 5 years post-qualification experience.

The clinician's workshop comprised of a number of professions including, forensic psychologist (9%), psychotherapist (18%), psychiatrist (9%), psychiatric nurse (9%) and clinical psychologist (55%). The numbers were very similar for the rating rounds although one clinical psychologist left the unit before the start of the first round. Table 3 shows the number of items proposed for each research question.

Table 3 Number of items by research question

Research Question	No. of items generated
1. What indicates awareness and arousal?	26
2. What indicates ability to regulate emotions?	31
3. What indicates ability to make sense of emotions?	24
4. What indicates ability to transform emotions?	20
Total	**101**

In total 101 proposed items of therapy engagement were generated. The greatest number of items were generated for ability to regulate emotions (31%) followed by awareness and arousal (25%) and ability to make sense of emotions (24%). The smallest number of items was produced for ability to transform emotions (20%).

3.4.2. Rating of Items on Importance

Following the final round of ratings the median score and the inter-quartile range for each item were calculated. The items that were rated as 'important' or 'very important' by at least 80% of participants and had an inter-quartile range ≤ 1 were retained for the final questionnaire. Only one participant suggested an item from topic 2 would be better placed under topic 3 therefore all items remained under their original topic headings. Once selection criteria were applied the total number of items was reduced by 38% from 101 to 63. Table 4 shows the numbers of initial items and final items by research

question. The greatest reduction was for items of emotion regulation ability (58%) followed by ability to transform emotions (40%). The smallest reductions were for awareness and arousal (27%) and ability to make sense of emotions (21%).

Table 4 Numbers of initial and final items by research question

Research Question	Initial No. of items	Final No. of items
1. Awareness and arousal: What indicates awareness and arousal?	26	19
2. Emotion regulation: What indicates ability to regulate emotions?	31	13
3. Making sense of emotion: What indicates ability to make sense of emotions?	24	19
4. Transformation of emotion: What indicates ability to transform emotions?	20	12
Total	**101**	**63**

The final questionnaire consisted of 63 items rated on a 5-point Likert scale (1 = never to 5 = always) (see Appendix L). Tables 5 to 8 show the medians and IQRs for retained items by rating (see Appendix M for findings of all items).

Table 5*: Medians and IQRs for items of awareness and arousal of emotion*	Round 1		Round 2		
	Median	IQR	Median	IQR	% rating 4-5
Patient breaks down and cries when talking about past abuse	4	0.5	4	1	94.1
Patient demonstrates expressions of basic emotions e.g. throwing a chair because they are angry	4	0.25	4	0	82.3
There is an emotional connection and agreement between therapist and patient	4	1	4	1	88.2
Patient shows empathy, care, nurturance when another group member expresses emotion	5	1	5	1	100.0
Patient has genuine understating of another's perspective	4	1	4	0.75	88.2
Patient uses non verbal cues – body language e.g. foot tapping, restlessness, someone sitting intensely still for long period of time and there is a sense that he is feeling anger	4	1	4	1	88.2
Physical symptoms e.g. patient's eyes fill up with tears, voice is elevated	4	1	4	1	100.0
Patient self harms during session e.g. scratching / picking skin	4	1	4	0	82.4
Behavioural signs of avoidance e.g. patient asks to leave the room / leaving the room	4	0	4	0	94.1
Patient shows overt expression of emotion e.g. crying during group	4	1.5	4	0.5	88.2
Patient is violent in group	4	1.5	4	1	88.2
Patient talks incessantly using cruel and hurtful language	4	1.5	4	0	88.3
Patient expresses emotion which fits with the situation	4	1	4	1	94.1
There is congruence with what patient is saying and showing	4	1	5	1	94.1
Patient says what he is feeling	4	1	4	0.5	100.0
Patient shows a variety of emotions	4	1	4	0.5	94.1
Patient is able to demonstrate understanding between behaviour and emotion	4	1	4	1	100.0
Patient identifies emotional triggers to their behaviour	5	1	5	1	94.1
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which make me feel 'y'	4	1	4	1	100.0

Table 6: *Medians and IQRs for items of emotion regulation*	Round1		Round2		
	Median	IQR	Median	IQR	% rating 4-5 Round 2
Patient uses improved coping strategies to their norm	4	0.5	4	0.5	100.0
Patient overcompensates e.g. increased narcissism, boasting (n)	4	1	4	0	82.4
Patient becomes more distant from other group members (n)	4	1	4	0	82.3
Patient does not turn up for group session (n)	4	2	4	1	82.4
Patient humiliates others in the group (n)	4	1.5	4	1	100.0
Patient uses humour or sarcasm to avoid emotion (n)	4	1	4	0	82.4
Patient denigrates or shows contempt for facilitators and/or group members (n)	4	0.5	4	0	88.3
Patient employs coping strategies when feeling strong emotions e.g. time out, counting to 10	4	0.5	4	0	82.4
Patient takes part in group process whilst experiencing strong emotion	5	1.5	4	1	82.3
Patient is able to tolerate emotion	4	1	4	1	82.3
Patient has a sense that they will survive and will not be annihilated by emotions	5	1	4	1	94.1
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think about the emotion	4	0.5	4	0	82.4
Patient is able to feel and reflect	4	1	4	1	94.1

(n=items to be reverse scored)

Table 7: *Medians and IQRs for items of ability to reflect on emotion and make meaning of emotion*	Round1		Round 2		
	Median	IQR	Median	IQR	% rating 4-5 Round 2
Patient is able to speak to facilitator concerning an emotional issues	4	1	4	1	94.1
Patient uses the first person 'I' indicating an ability to 'wear the feeling'	4	0	4	0	82.4
Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective	4	1	4	1	94.1
Patient has moments of insight into emotions sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	4	1	4	1	88.2
Patient is able to talk about the past and work out how they felt in the past then is able to name the emotion from the past	4	1	4	1	82.3
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	4	1	4	0.5	94.1
Patient realises presumptions are wrong and is able to take on someone else's view about a situation	4	1.5	4	0	82.4
Patient expresses pride when they have understood the emotion and it's meaning within a situation	4	1	4	0	88.3
Patient is able to make links between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	4	0.5	4	0	94.1
Patient makes sense of feelings in terms of what is happening in the hear and now	4	1	4	1	100.0
Patient is beginning to use a greater range of words to describe feelings whilst owning basic emotion e.g. owning anger and naming frustration	4	0.5	4	0	94.1
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	4	1	4	0.5	100.0
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	4	1	4	0	100.0
Patient is able to describe and understand a range of emotions and a range of related sensations	4	1	4	1	94.1
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	4	1	4	0.5	100.0
Patient explores the past and experiences it in a more emotionally connected way	4	1	4	0.5	94.1
Patient is aware of emotional triggers and being able to deal with them on the unit – putting into practice what they've learnt in groups	5	1	5	1	100.0
Patient knows their own unique disposition e.g. they feel sad when favourite prison officer is off work even when their peers don't	4	1	4	0	82.4
Patient uses group to explore and check out emotion	4	1	4	0	88.3

Table 8: *Medians and IQRs for items of ability to transform emotion: change one emotion with another emotion*	Round 1		Round 2		
	Median	IQR	Median	IQR	% rating 4-5 Round 2
Patient's emotions are more context appropriate than on previous occasions	4	1	4	0	82.4
Patient is able to compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	4	0.5	4	0	88.2
Patient comes to the group with negative emotion and leaves with positive emotion because of group's influence	4	1	4	0	82.4
Patient reduces parallel offending behaviour	5	1	5	1	94.1
Patient demonstrates changes of emotion following self harm (cutting, burning etc.) e.g. anger to sadness	4	1	4	0	100.0
Patient is willing to hear feedback and accept it e.g. 'normally when you get angry like this it's because you're scared'	4	0	4	0	88.3
Patient is able to override habitual response to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely he seeks out someone to talk to	4	0	4	0	100.0
Patient remains connected with new emotions at times of stress	4	1	4	0.5	88.2
Patient behaves differently in response to a feeling e.g. less avoidant, smoking less, greater tolerance of emotive situations	4	0.75	4	0	82.4
Patient shares a sense of mutual care in group e.g. feeling guilty about not coming to the group because he will let the others down	4	0	4	0	88.3
Patient believes other people's needs and the survival of the group are important	4	1	4	0	82.4
Patient shows an increasing ability to work with others in the group in a selfless way	4	2	4	1	88.2

3.5. Discussion

The Delphi process drew on the experience of 21 group facilitators from a range of professional backgrounds. Participants met at least one criterion for expert as recommended in the literature. The method was used effectively to develop a 63-item observer-rated measure, which captures the emotional and cognitive features of group therapy engagement consistent with Greenberg and Pascual-Leone's four principles. The measure is simple and takes approximately 10 minutes to administer. Items were generated with specific reference to the participants' experience of facilitating groups with a forensic population therefore the questionnaire may be particularly useful in forensic settings. Greenberg and Pascual-Leone's principles of working with emotion in therapy proved to be a meaningful reference point for generating items of therapy engagement. Regardless of professional background, participants

were able to relate the principles to their own observations from practice and identify items with relative ease.

The GEEQ provides an assessment of engagement by measuring in-session emotional and cognitive functioning believed to be essential for therapeutic progress (Greenberg, 2008; Greenberg & Pascual-Leon, 2006; Whelton, 2004). As such, the GEEQ offers a more sophisticated measure of engagement than attendance in sessions or length of time in therapy and a more direct assessment than the therapeutic alliance. Unlike extant measures of engagement, the GEEQ has been specifically designed for use in a forensic custodial setting so may be particularly useful for assessing progress in offence reduction therapy.

The GEEQ could be used to detect deficits in specific areas of engagement so may help practitioners to develop effective strategies for engagement improvement as suggested by Howells and Day, 2007. In this way treatment efficacy could be enhanced. For example, psychopaths demonstrate poverty of emotion and goal oriented behaviour with a callous disregard for others (Blair, 2005) therefore, they may excel at cognitive engagement but struggle with in-session emotional arousal. Conversely those with borderline personality disorder, characterised by emotion dysregulation and erratic mood swings, may demonstrate emotion but struggle to regulate or make sense of it. As a simple assessment tool designed to identify these differences in engagement patterns the GEEQ may be useful when deciding treatment targets.

The GEEQ is not limited to clinical application it could be used in research to help establish an evidence base for effective treatment. Currently the evidence base for effective treatment of personality disorder (including psychopathy) is inadequate. The GEEQ was designed with reference to personality disorder (including psychopathy) therefore it may be useful for building an evidence base for treatment of this group. In the current study the GEEQ should ensure that the dependent variable (emotional and cognitive engagement in therapy) is measured accurately.

The study may have been limited by directing participants to consider engagement in terms of Greenberg and Pascual-Leone's four principles. Some Delphi studies take a less directive approach to the research question (Linstone & Turoff, 1975). As such, the present study could have asked participants generally 'What are the indicators for group therapy engagement?' The current approach may have introduced bias and failed to include salient indicators of engagement such as quality of therapeutic alliance, attendance at sessions or completing homework exercises. However other authors have emphasised the need to tailor the Delphi approach to focus on the specific questions on which consensus is being sought. It is worth noting that the final version of the GEEQ was the only engagement measure that was significantly related to level of psychopathy (see chapter 8). The Group Engagement Measure (MacGowan, 1997) and the Experiencing Scale (Klein, Mathieu, Gendlin, & Keisler, 1969) did not detect significant differences in engagement for psychopathy in the main study sample. Therefore, the GEEQ may be more sensitive to particular aspects of therapy engagement in psychopathy. The psychometric properties of the GEEQ will

need to be tested with other patient groups (other personality disorders, anxiety, depression) and in non-custodial settings to assess whether it is of use beyond incarcerated psychopaths.

The next stage of questionnaire development is to evaluate its psychometric properties. The next chapter describes how the GEEQ was tested for validity and reliability. Specifically Exploratory Factor Analysis was used to explore the underlying structure of the GEEQ and to reduce the number of items to enhance reliability. In addition the GEEQ was tested for internal and inter-rater reliability, construct (convergent and divergent) and predictive validity.

CHAPTER 4: PSYCHOMETRIC EVALUATION OF THE GROUP EMOTIONAL ENGAGEMENT QUESTIONNAIRE

Chapter 4

4. PSYCHOMETRIC EVALUATION OF THE GROUP EMOTIONAL ENGAGEMENT QUESTIONNAIRE (GEEQ)

4.1. Introduction

As described in the preceding chapter the GEEQ is a new 63-item observer-rated measure of therapy engagement. The measure was developed using the Delphi method with reference to Greenberg and Pascual-Leone's four principles of working with emotion in psychotherapy (Greenberg & Pascual-Leone, 2006). To generate items four research questions were posed:

i. Awareness and arousal: what indicates awareness and arousal of emotion?
ii. Emotion regulation: what indicates ability to gain psychological distance from overwhelming feelings?
iii. Reflecting on emotion: what indicates ability to making sense of emotion?
iv. Transformation of emotion: what indicates the ability to change emotion with emotion?

This chapter outlines how the psychometric properties of the GEEQ were examined. This involved reducing the number of items and testing for internal reliability, inter-rater reliability, construct validity (convergent and discriminant) and predictive validity.

4.1.1. Reliability

Reliability refers to the stability of a measure. When an instrument demonstrates reliability we can be confident that any results are due to true differences rather than individual idiosyncrasies of raters, setting or time (John & Benet-Martinez, 2000). Reliability consists of three elements. First, internal reliability describes the degree to which components (items, subscales) within an instrument measure the same latent construct. This is investigated during the development of a measure by calculating the inter-correlations between items. Second, inter-rater reliability (IRR) explains the extent to which variance in observed scores is due to true variance once error variance between raters has been accounted for. Variance between raters should be low because a good and reliable instrument should produce the same score irrespective of the individual rater administering it. This is examined by assessing level of agreement (correlation) in scores between two or more raters. Third, test re-test reliability refers to the stability of a measure over time and is assessed by comparing scores on two separate occasions. Length of time between ratings is not prescribed rather experiences likely to influence scores, for example, training, treatment or life events, must not occur during the intervening period. In all three cases, reliability is indicated when strong relationships between items or scores are found. The current study tested for internal and inter-rater reliabilities therefore approaches to measuring these are now described.

4.1.1.1. Internal Reliability

Internal reliability refers to the degree that a measure assesses a construct consistently. To enhance reliability it is usual during questionnaire

development to reduce the items to those which are most highly correlated with each other, and together, most parsimoniously account for the variance in the data collected. These items most consistently capture the same underlying construct of interest. In addition some items will account for larger portions of the overall measure variance, than others, which may contribute little or no descriptive power. The latter can usually be dropped on the basis that they are adding nothing to the overall measure. One item reduction method is Exploratory Factor Analysis (EFA), which assesses how many factors are needed to explain the underlying dimensions of the construct of interest. For this, a complete analysis of covariance between all of the questionnaire items is undertaken to determine which items are most closely related and if their relationships fall into factors. It is important to demonstrate that the items of each factor 'belong together'. For example, items from one factor should show greater communality with each other than with items from any of the other factors. Interrelationships between items are explored and items are reduced (Pett, Lackey, & Sullivan, 2003). This is often achieved by considering the value of item-to-factor loadings alongside related theoretical frameworks so that decisions can be made about where items may best belong. It is a bottom-up data driven procedure.

A number of criteria should be used when deciding how many factors to retain (Comrey & Lee, 1992; Costello & Osborne 2005; Gorsuch, 1983; Lance et al., 2006; McCallum & Preacher, 2003; Pett et al., 2003). These include factor eigenvalues, examination of the scree plot (a graph of the eigenvalues in descending order), explained variance of each factor solution (cumulative percentage of variance extracted), item-to-factor loadings and related

theories. Once the number of factors has been decided and the items reduced accordingly, it is usual to test each of the factors for internal reliability using Cronbach's alpha (Cronbach, 1951, 1984). For this, inter-correlations between items are calculated to indicate the degree to which they measure the same latent construct. Reliability is supported when alphas fall between .70 and .90. Alphas below .70 indicate low reliability and those exceeding .90 indicate item redundancy (Nunally & Bernstein, 1994). Items can be reduced further if alphas suggest item redundancy. When a new measure is developed internal reliability is the first stage of psychometric testing. Once this has been established the measure can be subjected to further tests of reliability and validity.

4.1.1.2. Inter-Rater Reliability

Inter-rater reliability is tested by comparing simultaneous ratings between two or more raters. To achieve this studies employ different designs depending on the availability of multiple raters (for a review see Hallgren, 2012). These include inter-ratings made by multiple raters for all subjects or for a sub-sample and can be fully crossed or not. In fully crossed designs, subjects are assessed by the same set of raters whereas non-fully crossed designs employ different subsets of raters for different subjects. Levels of reliability may be underestimated in designs that are not fully crossed (Hallgren, 2012). In all cases ratings must be conducted independently.

Analytical approaches vary depending on the number of raters and type of data collected. Although demonstrating IRR involves testing the level of agreement between raters the literature warns against simply calculating percentage of agreement or correlating ratings between raters (Hallgren,

2012; Howell, 2007; Kottner et al., 2011). First calculating the percentage of agreement between raters (usually undertaken with categorical data) does not consider chance agreement so may overestimate the level of reliability. Therefore, categorical data is better examined using kappa statistics as they are not biased by chance agreement (Kottner et al., 2011). Typically, categorical data rated by two raters is investigated using Cohen's (1960) kappa or one of its variants (e.g. Byrt, Bishop, & Carlin, 1993; Seigel & Castellan, 1988). If the data is categorical with an ordinal structure, Cohen's (1968) weighted kappa is normally used. For categorical data with more than two raters, Fleis' (1971) kappa is employed. Second, for continuous data correlating the ratings of two raters, or averaging pairwise correlations when there are more than two raters, cannot account for differences between raters such as one rater consistently scoring higher than others do. In these cases, the correlation would be high even though the raters are making very different assessments. Therefore, continuous data collected from two or more raters is best examined using intra-class correlation (ICC) as it accounts for differences between raters (Hallgren, 2012; Howell, 2007).

4.1.2. Validity

4.1.2.1. Construct Validity

Construct validity refers to the extent to which an instrument assesses the construct it is designed to measure (Cronbach & Meehl, 1955) and includes the following two factors:

i. Convergent validity, which assumes measures of related constructs will correlate highly

ii. Discriminant validity, which assumes measures of unrelated constructs will not correlate.

Usually convergent validity is examined by administering an established measure of a related construct alongside the new measure and comparing them using correlation to determine if the two measures are associated (John & Benet-Martinez, 2000). Validity is supported if a significant relationship is found. However, the relationship should not be so strong as to indicate redundancy of the new measure. Conversely, discriminant validity is tested by measuring an unrelated construct simultaneous to the new measure then comparing them (John & Benet-Martinez, 2000). Ideally, validity is supported if no significant relationship is found, but in practice evidence of a considerably weaker correlation for discriminant compared to convergent measures supports validity. For example, depression and anxiety are correlated with each other but a new measure for depression should correlate more strongly with an existing depression measure than an anxiety measure.

4.1.2.2. Predictive Validity

Predictive validity refers to the extent a measure is able to predict a proposed related outcome in the future. The related outcome is assessed following administration of the new measure (for example 3, 6 or 12 months after). As a future event is being predicted it is usual to conduct a linear regression rather than a simple correlation to test for predictive validity. Validity is supported when a significant relationship is found between the measure and the future outcome. This is often seen as the most important type of validity because a measure which can predict the likelihood of future outcomes allows more effective targeting of resources. For example, an instrument that can predict

those patients most likely to benefit from a particular course of therapy could inform effective screening during enrolment thereby improving the cost effectiveness of treatment programmes.

4.2. Aims

This study aimed to test the psychometric properties of the GEEQ. First EFA was used to extract factors and reduce items. Second internal reliabilities of the factors and total questionnaire were tested using Cronbach's alpha. Third, inter-rater reliability was tested using ICC.

Fourth convergent validity was tested by comparing GEEQ scores to scores on two reliable and valid measures of therapy engagement, the Group Engagement Measure (GEM; MacGowan, 1997) and the Experiencing Scale (EXP; Klein, Mathieu, Gendlin, & Keiser, 1969). The GEM was chosen because it was developed with a forensic population to assess engagement in group therapy and so measures a related construct for a similar population. The EXP was chosen because it measures emotional experiencing in therapy, a concept associated with therapy engagement.

Fifth discriminant validity was examined by comparing GEEQ scores to IQ scores (Weschler Abbreviated Scale of Intelligence [WASI; Weschler, 1998]), age and scores for the Eysenck Personality Questionnaire Lie scale (EPQ; Eysenck & Eysenck, 1991). The WASI measures intelligence and the EPQ Lie scale assesses tendency to give socially desirable answers when completing self-report questionnaires. Age, WASI IQ and EPQ Lie Scale were chosen

because they are valid and reliable measures of constructs unrelated to engagement.

Sixth predictive validity was inspected by comparing GEEQ scores to levels of group therapy attendance six months following assessment. Therapy attendance is a prerequisite of therapeutic engagement (meaningful engagement is not possible without attendance), therefore an instrument which measures engagement well should predict attendance in a population such as this where levels of attendance are highly variable.

It was hypothesised:

i. One or more subscales related to the four conceptual domains of engagement (awareness and arousal, emotion regulation, reflecting on emotion, transforming emotion) would emerge.
ii. Considerable item reduction (from 63 initial items) would be required after EFA.
iii. The engagement measures GEM and EXP would significantly correlate positively with the GEEQ.
iv. Level of engagement would not be related to age, intelligence or impression management so there would be little or no association between GEEQ scores and age, WASI IQ or EPQ Lie scale scores.
v. Higher GEEQ scores would predict greater levels of therapy attendance 6 months following questionnaire completion.

4.3. Methods

4.3.1. Participants

Participants were facilitators of group therapy at HMP Whitemoor and HMP Frankland consisting of psychologists (forensic and clinical), psychotherapists, psychiatrists, psychiatric nurses and prison officers (*N* = 30*).* Participants assessed level of therapy engagement for 100 prisoners attending offence reduction group therapy. To assess inter-rater reliability a sub-sample of prisoners (*n* = 53) were assessed simultaneously by two raters (*n* = 22). These consisted of 16 combinations of 22 facilitators from those outlined above. All facilitators who were approached agreed to take part in the study. Data collection took place in a cross sectional design over a 15-month period from August 2009 to November 2010.

4.3.2. Materials

The GEEQ is a 63-item observer-rated measure of the emotional and cognitive aspects of group therapy engagement. Specifically, the following four features of therapy engagement are measured: awareness and arousal of emotion, emotion regulation, ability to reflect on emotion and tendency to transform emotion. The GEEQ is scored using a 5-point Likert scale (1 = never to 5 = most or all of the time) on how the patient usually presents.

The GEM (MacGowan, 1997) is a 27-item observer-rated measure of the cognitive aspects of group therapy engagement arranged under seven subscales (attending, contributing, relating to facilitator, relating with members, contracting, working on own problems, working with other's problems). The questionnaire is scored on a 5-point Likert scale (1 = rarely or

none of the time to 5 = most or all of the time) over three consecutive sessions. Tests conducted for internal reliability and construct validity demonstrated results of excellent and good respectively (MacGowan, 1997, 2000; MacGowan & Levenson, 2003; MacGowan & Newman, 2005). In addition, the GEM has been validated with sex offender group programmes (MacGowan & Levenson, 2003).

The EXP (Klein et al., 1969) is an observer-rated measure of the experiential aspects of therapy engagement. The instrument allows for seven levels of experiencing. Level 1 indicates that a patient offers emotionless, impersonal accounts of their experience. Level 4 corresponds to a patient's ability to be internally focused, and to process feelings and the meanings of significant personal events. Level 7 reflects the patient has readily accessible feelings and is able to synthesise them to form new meaning and solve problems. The EXP is designed for use in individual and group settings and assessment is conducted with reference to one therapy session. Good reliability and validity have been demonstrated with schizophrenic and anxiety disordered patients (Klein et al., 1969; Klein, Mathieu-Coughlan, & Keisler, 1989).

The WASI (Weschler, 1998) is a measure of intelligence for use in clinical, educational and research settings. The scale consists of four subtests (vocabulary, similarities, block design, matrix reasoning) and yields verbal, performance and full IQ scores. The WASI has demonstrated good reliability and validity and has been standardised for use with children and adults aged 6 to 89 years (Weschler, 1998).

The EPQ Lie scale consists of 21 items that measure the tendency to provide socially desirable answers on self-report assessments. Response is yes / no. The scale has demonstrated good validity and reliability (Eysenck & Eysenck, 1975).

4.3.3. Procedure

Prior to questionnaire completion, the researcher met with participants to explain the purpose of the study and to clarify the instructions for each measure. Participants completed the three measures (GEEQ, GEM, EXP) for each prisoner in their group. All three questionnaires were completed simultaneously. In total, the questionnaires took approximately 20 minutes to complete for each prisoner.

Simultaneous to questionnaire completion, WASI IQ scores and age were obtained from prison records and six months later attendance levels were taken from group therapy registers. The EPQ Lie scale was administered to prisoners three months before therapists completed the group engagement measures.

4.4. Results

4.4.1. Item Reduction

Before performing validity and reliability analyses the 63 item GEEQ was subjected to EFA using varimax orthogonal rotation (Kaiser-Meyer-Olkin = .88, Bartlett's test of sphericity <.001). The EFA proposed a 10-factor solution by eigenvalue (> 1). However, the literature cautions against relying solely on eigenvalues > 1 to determine the number of factors to retain (Comrey & Lee,

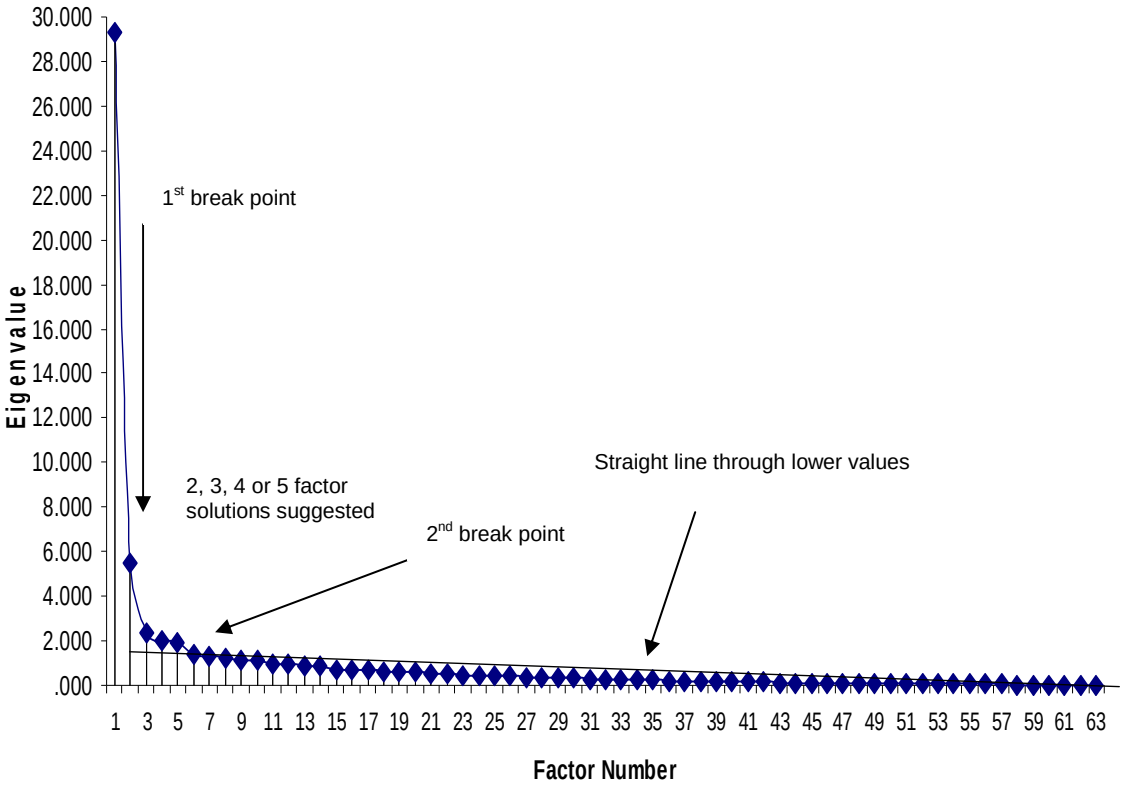
1992; Gorsuch, 1983; Lance et al., 2006; McCallum & Preacher, 2003; Pett et al., 2003;). In a Monte Carlo study Costello and Osborne (2005) found 36% of their samples were over-inclusive when using this criterion. In addition, Gorsuch (1983) notes that unless there are fewer than 40 variables and a large sample, retention of factors by eigenvalue may not be the most accurate approach. Therefore, it is preferable to combine a number of criteria when deciding which factors to retain (Preacher & MacCallum, 2003; Osborne, Costello, & Kellow, 2008; Pett et al., 2003; Thompson & Daniel, 1996) especially when the sample size is small and the number of variables exceeds 40 as in the current study. In particular, eigenvalue, examination of the scree plot, explained variance (cumulative percentage of variance extracted), item-to-factor loadings following rotation and related theories should all be considered when selecting the number of factors.

4.4.1.1. Scree Plots

The scree plot is a graph of the eigenvalues in descending order and is interpreted by identifying the 'elbow' or point at which the slope of the curve changes. This signifies the division between important and trivial factors as those with eigenvalues < 1 account for less variability than a single item. The number of values above this point (excluding the point itself) determines how many factors to retain. Often this is achieved by plotting a straight line through the lower values of the graph. The point at which the line intersects the curve is taken as the break point and all factors above this are included (Cattell & Jaspars, 1967; Pett et al., 2003). However, in many cases it may be unclear where the cut off occurs, for example, when there are multiple 'elbows', if a number of values cluster closely around the curve or if the curve is smooth

(Tabachnik & Fidell, 2007). Figure 1 shows in the present case the curve first starts to change at the third point (suggesting two factors) but a second change occurs when the curve dips at the sixth point and where the curve is intercepted by the straight line (suggesting five factors). In addition, a number of values (3, 4 and 5) are clustered closely around the curve which is smooth. Therefore observation of the scree plot suggested possible 2, 3, 4 or 5-factor solutions (see Figure1).

Figure1 Scree plot of EFA results for the GEEQ (N = 100)



4.4.1.2. Explained Cumulative Variance and Item-to-Factor Loadings

As advised in the literature, multiple analyses were performed by forcing 2-, 3-, 4- and 5-factor solutions so that explained cumulative variance and item-to-factor loadings could be examined and compared for each solution (Osborne et al., 2008; Tabachnik & Fidell, 2007). Although there are no

definitive guidelines to determine the threshold for explained variance, it is desirable that individual factors contribute at least 5% of the explained variance, and cumulative variance (all factors) accounts for ≥ 60% (Hair, Black, Babin, Anderson, & Tatham, 2006). Guidelines for item removal based on level of item-to-factor loadings vary (Pett et al., 2003). A meta-analysis of studies using EFA reported removal thresholds ranging from .25 to .80 (Osborne et al., 2008). When determining item-to-factor fit Comrey and Lee (1992) classify item loadings in the following way:

>.44 (20% shared variance) = fair

>.54 (30% shared variance) = good

>.62 (40% shared variance) = very good

>.71 (50% shared variance) = excellent

For small samples, as in the current study, a threshold of .60 is recommended (MacCallum, Widaman, Preacher, & Hong, 2001). Consequently items were removed if they demonstrated factor loadings < .60. In addition, to demonstrate independence of factors there should be no or very few cross-loading items. Finally, because factors describe the characteristics a number of variables have in common they should include at least three items (Osborne et al., 2008). All of these criteria were observed when deciding factors in the current study.

A summary of the results is shown in Table 1 (see Appendix N for detailed tables of item-to-factor loadings for each solution). The five-factor solution explained the greatest variance (65%) but two of its factors had fewer than three items. The two and three-factor solutions each had cumulative variance < 60% and a factor that contained fewer than three items. Only the four-factor

solution met all selection criteria accounting for 62% of the variance with eigenvalues > 2.

Table 1 Examination of item-to-factor loadings and variance explained for 2-, 3-, 4- and 5-factor solutions

Individual factors	**Number of Items loading >.60**			
	2 factor solution	***3 factor solution***	***4 factor solution***	***5 factor solution***
Factor 1	46	22	32	27
Factor 2	1	2	9	2
Factor 3	NA	5	4	4
Factor 4	NA	NA	4	3
Factor 5	NA	NA	NA	2
	Variance explained (%)			
	2 factor solution	***3 factor solution***	***4 factor solution***	***5 factor solution***
Factor 1	46.50	34.15	32.12	34.61
Factor 2	8.76	16.06	16.02	13.01
Factor 3	NA	8.73	7.20	6.99
Factor 4	NA	NA	6.78	5.99
Factor 5	NA	NA	NA	4.45
Cumulative variance explained	55.26	58.94	62.12	65.05

Four factors with number of items ranging from 4 to 32 were produced as shown in Table 2. Inspection of item content and overall size of Factor 1 (*N* = 32) suggested the presence of more than one factor. Following Pett, Lackey and Sullivan (2003) this factor was subject to further EFA as described earlier using varimax orthoginal rotation (Kaiser-Meyer-Olkin = .94, Bartlett's test of sphericity <.001). A two-factor solution was suggested by eigenvalue (> 1) however the scree plot suggested a one-factor solution was also possible (see Figure 2).

As previously one and two-factor solutions were forced so that explained variance and item-to-factor loadings could be examined and compared for each solution. The same selection criteria as before were applied to these solutions. A summary of the results is shown in Table 3. The single factor solution explained 65% of the variance however the number of items were

only reduced from 32 to 30. The two-factor solution explained more of the variance (67%) with number of items reasonably balanced across the factors (16 and 10) and overall number reduced from 32 to 26. Therefore, this solution was retained. Item-to-factor loadings for the two-factor solution are presented in Table 4 (see Appendix O for item-to-factor loadings for both factor solutions).

In summary, careful consideration of eigenvalues, scree plots, explained variance of each factor solution, item-to-factor loadings and related theories suggested a five factor solution. The number of items for each factor ranged from 4 to 16.

Figure 2 Scree plot showing results of further EFA of Factor 1 (N = 100)

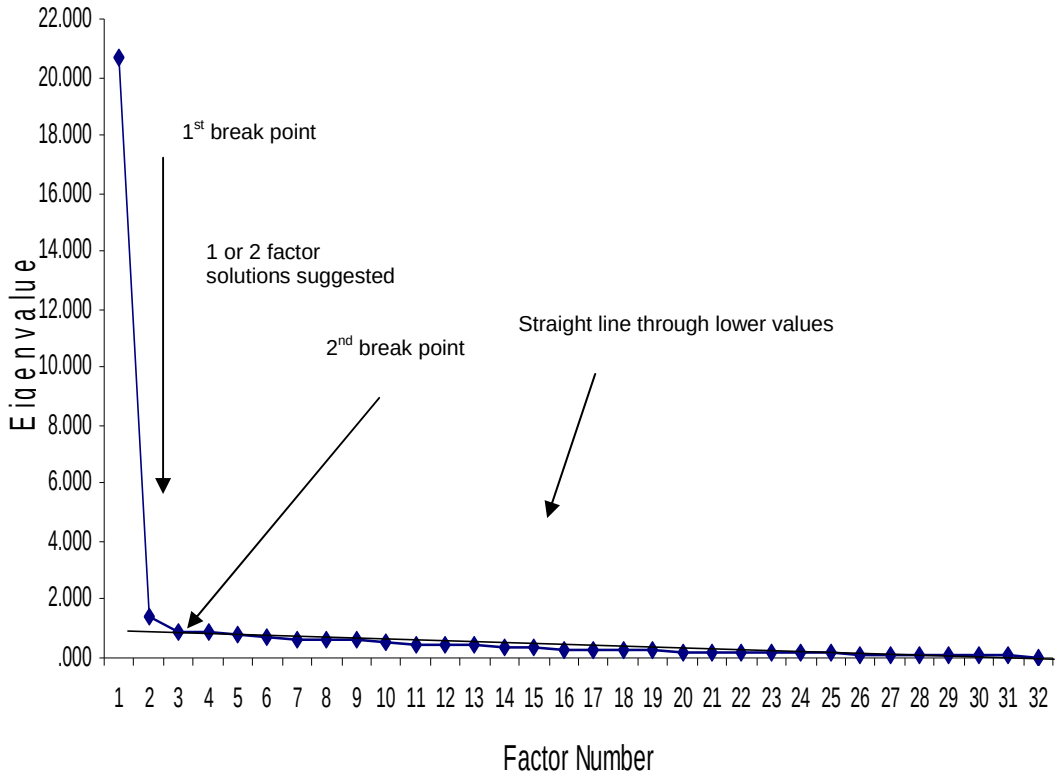


Table 2 Factor loadings following initial EFA

Item	Factor loadings			
	1	2	3	4
Patient shows a variety of emotions	.60			
Patient is able to demonstrate understanding between behaviour and emotion	.66			
Patient identifies emotional triggers to their behaviour	.73			
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y'	.65			
Patient uses improved coping strategies to their norm	.70			
Patient employs coping strategies when feeling strong emotions e.g. time out, counting to 10	.62			
Patient takes part in group process whilst experiencing strong emotion	.60			
Patient has a sense that they will survive and will not be annihilated by emotions	.68			
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion	.73			
Patient is able to feel and reflect	.69			
Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective	.70			
Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	.70			
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.70			
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.80			
Patient realises presumptions are wrong and can take on someone else's view about a situation	.65			
Patient expresses pride when they have understood the emotion and it's meaning within a situation	.74			
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.70			
Patient is beginning to use a greater range of words to describe feelings whilst owning the basic emotion e.g. owning anger and naming frustration	.78			
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.80			
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.72			
Patient is able to describe and understand a range of emotions and a range of related sensations	.80			
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.72			
Patient explores the past and experiences it in a more emotionally connected way	.78			
Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups	.70			
Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't	.62			
Patient's emotions are more context appropriate than on previous occasions	.79			
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.76			
Patient reduces parallel offending behaviour	.66			
Patient is willing to hear feedback and accept it e.g. 'normally when you get angry like this it's because you're scared'	.66			
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to	.79			
Patient remains connected with new emotions at times of stress	.80			
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations	.76			
Patient shows empathy, care, nurturance when another group member expresses emotion		.65		
Patient has genuine understanding of another's perspective		.66		
There is congruence with what patient is saying and showing		.72		
Patient says what he is feeling		.73		
Patient can speak to facilitator concerning a emotional issues		.69		
Patient uses the first person 'I' indicating an ability to 'wear the feeling'		.61		
Patient shares a sense of mutual care in group e.g. feeling guilty about not coming to the group because he will let the others down		.60		
Patient believes other people's needs and the survival of the group are important		.76		
Patient shows an increasing ability to work with others in the group in a selfless way		.71		
Patient overcompensates e.g. increased narcissism, boasting			.82	
Patient humiliates others in the group			.82	
Patient uses humour or sarcasm to avoid emotion			.73	
Patient denigrates or shows contempt for facilitators and/or group members			.82	
Patient breaks down and cries when talking about past abuse				.65
Patient uses non verbal cues – body language e.g. foot tapping, restlessness, sitting intensely still for long period of time and there is a sense that he is feeling anger				.60
Physical symptoms e.g. voice is elevated				.65
Patient shows overt expression of emotion				.70

Table 3 Examination of item-to-factor loadings and variance explained for one and two-factor solutions

Individual factors	**Number of Items loading >.60**	
	1 factor solution	***2 factor solution***
Factor 1	30	16
Factor 2	NA	10
	Variance explained (%)	
	1 factor solution	***2 factor solution***
Factor 1	64.56	36.69
Factor 2	NA	30.54
Cumulative variance explained	NA	67.24

Table 4 Item-to-factor loadings for EFA of Factor 1

Item	**Factor loadings**	
	1	**2**
Patient shows a variety of emotions	.66	
Patient is able to demonstrate understanding between behaviour and emotion	.71	
Patient identifies emotional triggers to their behaviour	.77	
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y'	.84	
Patient uses improved coping strategies to their norm	.66	
Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	.73	
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.77	
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.76	
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.65	
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.68	
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.67	
Patient is able to describe and understand a range of emotions and a range of related sensations	.72	
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.64	
Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't	.67	
Patient's emotions are more context appropriate than on previous occasions	.72	
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.65	
Patient takes part in group process whilst experiencing strong emotion		.64
Patient has a sense that they will survive and will not be annihilated by emotions		.71
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion		.64
Patient realises presumptions are wrong and can take on someone else's view about a situation		.65
Patient explores the past and experiences it in a more emotionally connected way		.62
Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups		.61
Patient reduces parallel offending behaviour		.78
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to		.74
Patient remains connected with new emotions at times of stress		.64
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations		.75

4.4.2. Reliability

4.4.2.1. Internal Reliability

The five factors were then tested for internal reliability using Cronbach's Alpha. Factors 2, 4 and 5 demonstrated alphas >.90 indicating item redundancy and were subjected to further item reduction. Following Pett et al.

(2003) each factor had its items re-entered into SPSS in ranked descending order according to level of factor loading (highest loading item first). Cronbach's alphas were calculated and an item was removed following each calculation until an alpha ≤ .90 was reached.

Table 5 Summary of final EFA results for the GEEQ (N = 100)

Item	Factor loadings				
	1	2	3	4	5
Factor1: Arousal of emotion					
Patient breaks down and cries when talking about past trauma	.65				
Patient uses non-verbal cues, body language e.g. foot tapping, restlessness, sitting intensely still for long period of time and you sense he is feeling anger	.60				
Physical symptoms e.g. voice is elevated	.65				
Patient shows overt expressions of emotion	.71				
Factor2: Awareness of emotion					
Patient believes other people's needs and the survival of the group are important		.76			
Patient says what he is feeling		.73			
There is congruence with what the patient is saying and showing		.72			
Factor3: Emotion regulation					
Patient overcompensates e.g. increased narcissism, boasting			.82		
Patient humiliates others in group			.82		
Patient uses humour or sarcasm to avoid emotion			.73		
Patient denigrates or shows contempt for facilitators and/or group members			.82		
Factor4: Reflecting on emotion					
Patient identifies cognitive processes linked to their emotions e.g. 'I think 'x' which makes me feel 'y''				.84	
Patient can talk about the past and work out how they felt in the past, then is able to name the emotion from the past				.77	
Patient identifies emotional triggers to their behaviour				.77	
Factor5: Transforming emotion					
Patient reduces parallel offending					.78
Patient behaves differently in response to a feeling e.g. is less avoidant, smoking less, has greater tolerance of emotive situations					.75
Patient can over-ride habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. seeking out someone to talk to when feeling lonely instead of masturbating					.74
Patient has a sense that they will survive and will not be annihilated by emotions					.71
Patient realises presumptions are wrong and can take on someone else's view about a situation					.65
Somatising: patient has an awareness that a physical ailment/pain is about emotion and is able to then think about the emotion					.64

Table 5 shows the item-to-factor loadings for the five derived factors. Factor 1 (arousal of emotion) consisted of four items describing behavioural indicators of emotional arousal (α = .74). Factor 2 (awareness of emotion) included three

items related to awareness of emotion in self and other group members (α = .83). Factor 3 (emotion regulation) contained four items referring to strategies used during group sessions to gain distance from overwhelming feelings (α = .87). Factor 4 (making meaning of emotion) consisted of three items describing ability to make sense of emotion (α = .90) and Factor 5 (transforming emotion) had six items illustrating capacity to manage emotions in and out of group sessions (α = .90). Finally internal reliability for GEEQ total items (*N* = 20) was tested and found to be high (Cronbach's α = .90).

Table 6 shows the items as they appeared under the four research questions outlined above (described in chapter 3) and their corresponding factor positions following item reduction using EFA. Column 2 shows the item position following initial item generation using the Delphi method (also described in chapter 3) and column three shows the item position after EFA. The majority of retained items loaded onto factors in accordance with the research questions (70%). However, there were four research questions but five factors following EFA. This is because EFA suggested items developed as indicators of arousal and awareness of emotion during the Delphi method fell into two separate factors (arousal of emotion, awareness of emotion).

Table 6 Item positions before and after EFA

Item	Research question that generated item during Delphi method	Factor loading following EFA
Patient breaks down and cries when talking about past trauma	Awareness & Arousal	Arousal of Emotion
Patient uses non-verbal cues, body language e.g. foot tapping, restlessness, sitting intensely still for long period of time and you sense he is feeling anger	Awareness & Arousal	
Physical symptoms e.g. voice is elevated	Awareness & Arousal	
Patient shows overt expression of emotion	Awareness & Arousal	
Patient believes other people's needs and the survival of the group are important	Transforming Emotion	Awareness of Emotion
Patient says what he is feeling	Awareness & Arousal	
There is congruence with what the patient is saying and showing	Awareness & Arousal	
Patient overcompensates e.g. increased narcissism, boasting	Emotion Regulation	Emotion Regulation
Patient humiliates others in group	Emotion Regulation	
Patient uses humour or sarcasm to avoid emotion	Emotion Regulation	
Patient denigrates or shows contempt for facilitators and/or group members	Emotion Regulation	
Patient identifies cognitive processes linked to their emotions e.g. 'I think 'x' which makes me feel 'y''	Awareness & Arousal	Reflecting on Emotion
Patient can talk about the past and work out how they felt in the past, then is able to name the emotion from the past	Reflecting on Emotion	
Patient identifies emotional triggers to their behaviour	Awareness & Arousal	
Patient reduces parallel offending	Transforming Emotion	Transforming Emotion
Patient behaves differently in response to a feeling e.g. is less avoidant, smoking less, has greater tolerance of emotive situations	Transforming Emotion	
Patient can over-ride habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. seeking out someone to talk to when feeling lonely instead of masturbating	Transforming Emotion	
Patient has a sense that they will survive and will not be annihilated by emotions	Reflecting on Emotion	
Patient realises presumptions are wrong and can take on someone else's view about a situation	Reflecting on Emotion	
Somatising: patient has an awareness that a physical ailment/pain is about emotion and is able to then think about the emotion	Emotion Regulation	

4.4.2.2. Inter-Rater Reliability

The design of the current study was not fully crossed and used continuous data collected for a sub-sample (Whitemoor site only n = 53). Therefore inter-rater reliability for the GEEQ was examined using a one-way random, absolute, single-measures ICC (Hallgren, 2012; McGraw & Wong, 1996) to test the extent of absolute agreement between raters when assessing level of

therapy engagement across subjects. The GEEQ demonstrated single measure ICC values of .89 for total scores and between .74 and .87 for the five subscales supporting IRR. The lower bounds of the ICC 95% confidence intervals (CI) for total score and the five sub-scales were all above .60. Results are presented in Table 7.

Table 7 Inter-class correlations for the GEEQ subscales and total (n = 53)

Scale	Mean (SD)		ICC*	ICC 95% CI*
	Rater 1	Rater 2		
Arousal of emotion	8.96 (3.45)	8.98 (2.94)	.74	.60-.85
Awareness of emotion	8.71 (2.83)	8.51 (2.62)	.87	.77-.93
Emotion regulation	13.63 (4.21)	13.75 (3.78)	.85	.74-.92
Reflecting on emotion	7.69 (3.15)	8.06 (2.85)	.74	.61-.85
Transforming emotion	13.75 (5.06)	14.55 (4.78)	.81	.66-.89
GEEQ Total	52.73 (14.25)	53.84 (13.46)	.89	.82-.94

*ICC values are based on single rater

4.4.3. GEEQ Descriptive Statistics

Table 8 shows the descriptive statistics for all measures used in the questionnaire development and testing.

Table 8 Descriptive statistics for construct validity variables

Measure	Mean	SD	Range
GEEQ Arousal of emotion	8.08	3.05	13.00
GEEQ Awareness of emotion	8.40	2.76	11.00
GEEQ Emotion regulation	15.20	3.88	16.00
GEEQ Reflecting on emotion	7.90	2.94	10.00
GEEQ Transforming emotion	14.76	5.13	21.00
GEEQ Total score	54.34	12.46	57.00
GEM Attending	4.11	.86	4.00
GEM Contributing	3.37	1.13	4.00
GEM Relating to facilitator	3.21	1.12	4.00
GEM Relating to members	2.94	1.23	4.00
GEM Contracting	4.33	1.01	4.00
GEM Own problems	2.83	1.07	3.40
GEM Others problems	2.60	1.21	4.00
GEM Total score	23.34	6.24	27.20
EXP Peak	3.53	1.59	6.00
EXP Mode	2.92	1.40	5.00
EPQ Lie scale	7.85	3.26	12.00
WASI IQ	94.51	14.00	75.00
Age	39.72	9.88	40.00
Attendance 6 months after assessment %	87.18	23.39	100.00

Scores were similar for other studies using the GEM (MacGowan, 1997, 2003) and EXP (Klein et al., 1986; Pos, Greenberg, Goldman, & Korman,

2003). The mean IQ (*M* = 94.51, *SD* = 14) was lower than the general population but higher than Mottram found for the UK prison population (*M* = 87, *SD* = NA) (Mottram, 2007). Lie scale scores were moderately elevated compared to those found by Lojk, Eysenck and Eysenck (*M* = 6.80, *SD* = 4.14) (1979) but considerably higher than those found by Loo (*M* = 4.84, *SD* = 2.76) (1979).

4.4.4. Validity

4.4.4.1. Construct Validity

To test for convergent validity bivariate correlations were conducted between scores on the GEEQ and the GEM and EXP (Peak, Mode). GEEQ total scores were significantly positively correlated with the GEM, (r = .81, p < .001) and EXP Peak, (r = .66, p < .001) and Mode, (r = .69, p < .001) supporting convergent validity (see Table 9).

Table 9 Bivariate correlations for the GEEQ, GEM and EXP (Peak and Mode) (N = 100)

	GEEQ Total	GEM Total	EXP Peak	EXP Mode
GEEQ Total	1.00			
GEM Total	.81**	1.00		
EXP Peak	.66**	.63**	1.00	
EXP Mode	.69**	.64**	.90**	1.00

**. Correlation is significant at the 0.01 level (1-tailed).

Discriminant validity was tested by comparing GEEQ scores to WASI IQ, age and the EPQ Lie scale. Associations with age and EPQ Lie were non-significant (r = .07, p > .24 and r = .08, p > .24 respectively). A significant positive relationship was found with WASI IQ r = .36, p > .001 but this was considerably weaker (around half) than with the GEM and EXP and so arguably, can be considered to support discriminant validity (see Table 10).

Table 10 Bivariate Correlations for GEEQ, WASI IQ, Age and EPQ Lie Scale

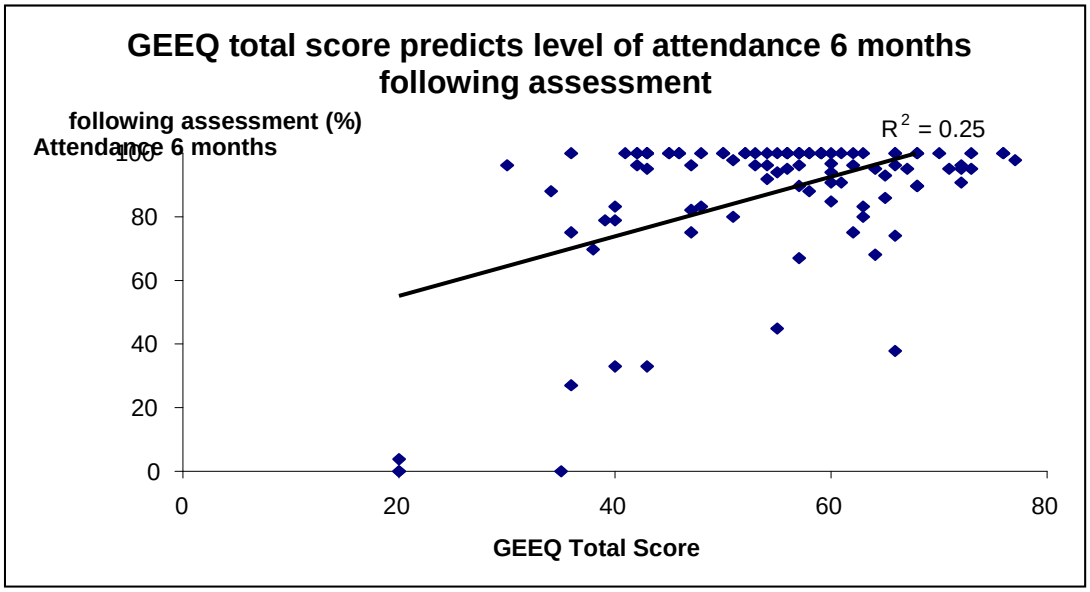
	GEEQ Total	WASI IQ	Age	EPQ Lie
GEEQ Total	1.00			
WASI IQ	.36**	1.00		
Age	.07	.23*	1.00	
EPQ Lie	.08	-.06	-.07	1.00

** Correlation is significant at the 0.01 level (1-tailed).
* Correlation is significant at the 0.05 level (1-tailed).

4.4.4.2. Predictive Validity

To test for predictive validity a linear regression was conducted using the enter method with GEEQ scores (predictor) and attendance 6 months following assessment (dependent variable). Entry criteria was set at $p < .05$. GEEQ scores were shown to predict percentage attendance during the 6 months following assessment ($R^2 = .25$), $F(1, 98) = 32.6$, $p < .001$. Scores for the GEEQ significantly predicted attendance, accounting for a quarter of the variance. This relationship was in a positive direction so that greater engagement (higher GEEQ scores) was associated with better attendance.

Figure 3 Higher GEEQ scores were associated with better attendance during the 6 months following assessment



4.5. Discussion

This chapter described the psychometric evaluation of the GEEQ an observer-rated measure of group therapy engagement. The GEEQ exhibited good psychometric properties. Use of EFA and Cronbach's alpha effectively reduced the number of items from 63 to 20 and suggested a five-factor structure which corresponded to Greenberg and Pascual-Leone's principles for working with emotion in therapy (see Appendix I). The five factors demonstrated internal reliability at levels between adequate and very good as did the total scale.

The majority of retained items loaded onto factors in a pattern consistent with their groupings under the Delphi method research questions (described in chapter 3). However, a fifth factor emerged from the EFA that suggested items developed for awareness and arousal of emotion comprised two separate factors. Examination of the factors revealed that the first consisted of items describing arousal of emotion while the second corresponded to emotional awareness. This finding is supported by research and clinical observations that suggest awareness and arousal are closely related but separable mechanisms (Greenberg, 2008). For example, patients may exhibit emotional arousal but lack awareness. One goal of therapy may be to address this dissociation so that patients become more aware of their feelings.

The GEEQ demonstrated inter-rater reliability for total score and each subscale. All ICC values met the thresholds appropriate for research purposes (Kottner et al. 2011) and the total score approached the suggested cut-off needed for clinical judgement (Kottner et al. 2011; Nunally, 1978;

Nunally & Bernstein, 1994). Reliability was lower for the arousal of emotion and reflecting on emotion subscales however this may have improved with training (Hallgren, 2012; Kottner et al., 2011). For the main study all raters received training before completing the assessment.

High levels of convergent validity were demonstrated. The GEEQ was more strongly related to the GEM than the EXP. This may be because the GEM was specifically developed for use in group therapy and was developed with a forensic community population. By contrast the EXP was developed for use in individual and group therapy with a general psychiatric population. The strong association between the GEEQ and GEM may suggest redundancy however the main study demonstrated the GEEQ but not the GEM was significantly related to psychopathy suggesting that they measure different aspects of engagement for this group. This may reflect that the GEEQ was developed with a personality disorder population in mind. In addition, the GEEQ includes emotional items, unlike the GEM, so may identify emotion processing deficits related to engagement for psychopathic patients. Finally, as mentioned earlier measures of anxiety and depression correlate highly however they are generally believed to measure different underlying constructs. Similarly, IQ correlates highly with many tasks that are believed to measure concepts that are more specific than general intelligence.

High levels of discriminant validity were demonstrated when comparing the GEEQ with age and the EPQ Lie Scale. A significant positive association was found between the GEEQ and WASI IQ but as stated earlier discriminant validity can still be supported as long as associations between measures of

unrelated concepts are weaker than those with related concepts. In this study the association between the convergent variables (GEM, EXP) was high but for WASI IQ it was low suggesting discriminant validity is supported.

The GEEQ exhibited predictive validity. Higher GEEQ scores (greater engagement) predicted better attendance during the six months following assessment. Greater treatment dosage is associated with better therapeutic outcome (Skeem, Monahan, & Mulvey, 2002) for psychopathic populations therefore an instrument that predicts attendance may help identify those patients in this group most likely to benefit from therapy. This is a particular strength of the study as measures are rarely examined for predictive validity (Tetley, Jinks, Huband, & Howells, 2011).

The present study had limitations that may influence the generalizability of the GEEQ. First the sample size was small, this was particularly true in the case of inter-rater reliability where just over half of the sample were used. Second the GEEQ was specifically developed with reference to a forensic custodial setting therefore it may not be as useful in a general psychiatric or community setting. Third test-retest reliability was not assessed. Therefore, further examination of the psychometric properties of the GEEQ should be conducted. This should involve a larger sample with patients in a variety of custodial and non-custodial settings and including test-retest reliability.

Finally as described in chapter 3 the initial items for the GEEQ were developed using the Delphi method. The findings of this psychometric evaluation support the use of the Delphi method in questionnaire

development. Important for the present study the results support using the GEEQ as one of the dependent variables in the thesis mediation analysis.

The next chapter outlines the research methods used in the main study starting with a description of the sample and recruitment process. The materials used to characterise the sample, assess psychopathy and measure therapy engagement will be set out. In addition, each of the emotion processing tasks and any associated questionnaires will be outlined. The chapter concludes with the interview protocol.

CHAPTER 5:
MAIN STUDY METHODS

Chapter 5

5. MAIN STUDY METHODS

Chapter 2 provided an overview of the study design, including the selection rationale for its measures as well as its aims and hypotheses. This chapter will describe the study's research methods. The chapter is organised into three main sections: participants, materials and procedure. The first section describes the sample and recruitment process. The second section outlines the self-report measures used to characterise the sample, the personality disorder assessments (independent variable) and the therapy engagement questionnaires (dependent variable). The section continues with a description of each emotion processing task and any associated questionnaires (mediator variables). The chapter concludes with the interview protocol.

5.1. Participants

The sample consisted of all consenting prisoners undergoing offence related group therapy at HMP Whitemoor (*N* = 70). Recruitment was carried out over a fourteen-month period between June 2009 and July 2010. Eligible prisoners were approached on their wing and given a consent form and information sheet explaining the study. Prisoners were given 24 hours to consider the information before consent was taken. From 95 prisoners approached 70 (74%) consented to take part in the study (Appendices A and B show participant information sheet and consent form).

5.2. Materials

5.2.1. Characterising the Sample

The sample was a complex one with potential confounding differences alongside psychopathy, therefore it was important to ensure it was characterised well.

5.2.1.1. Demographic Information

Demographic information that may be associated with emotion processing ability or therapy engagement was extracted from prison records:

i. psychiatric history (including all diagnoses)

ii. offence and sentencing history (including index offence)

iii. employment history

iv. education

v. marital status (including number of children)

Any significant relationships found between these characteristics and levels of psychopathy were factored into the main analyses.

5.2.1.2. Personality Measures

It was also important to measure personality characteristics believed to be associated with emotion processing ability. In particular, extroversion, neuroticism and psychoticism, were measured using the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975). Any significant relationships found between these characteristics and levels of psychopathy were factored into the main analyses.

5.2.1.2.1. Eysenck Personality Questionnaire

The EPQ is a 106-item self-report questionnaire with three dimensional scales (Extroversion, Neuroticism, Psychoticism) plus a Lie scale. Item response is yes / no (see Appendix F). The EPQ is used widely in personality and emotion processing research (Claridge & Davis, 2003) and has demonstrated good validity and reliability (Eysenck & Eysenck, 1975). EPQ normative data (Eysenck & Eysenck, 1975) for males (community and prison) are shown in Table 1.

Table 1 Normative data for Eysenck Personality Questionnaire

	Community sample		**Prison sample**	
	M	SD	M	SD
Neuroticism	9.8	5.2	13.1	5.2
Psychoticism	3.8	3.1	5.7	3.6
Extroversion	13.2	4.9	13.6	4.7
Lie	6.8	4.1	6.8	4.3

5.2.1.3. Personality Disorder Measures

Personality disorder was assessed using the Psychopathy Check List-Revised (PCL-R; Hare, 2003) and the International Personality Disorder Examination (IPDE; Loringer et al., 1994). The PCL-R was used as the independent variable in the study. Any significant relationships found between the IPDE and levels of psychopathy were factored into the main analyses.

5.2.1.3.1. Psychopathy Check List-Revised

The PCL-R consists of a semi-structured interview which is used in conjunction with a collateral file search to give a measure of psychopathy on a scale of 0 to 40 (a sliding scale of 0 to 2 for each of the 20 traits). Higher scores indicate greater levels of psychopathy, in clinical settings a score of 30 is used as a diagnostic cut-off. However, see chapter 1 for a discussion of different cut-offs used dependent on setting. The measure has demonstrated

good predictive validity for treatment outcome and violent recidivism (Hare, 1991, 2002; Quinsey, Harris, Rice, & Cormier, 1998; Serin, 1996; Seto & Barbaree, 1999) and cross-cultural generalizability (Cooke, 1998; Sullivan, Abromowitz, Lopez, & Kosson, 2006). The PCL-R is regarded as the 'gold standard' for measuring psychopathy in clinical and research settings.

5.2.1.3.2. The International Personality Disorder Examination

The IPDE is a semi-structured clinical interview developed by the World Health Organisation to assess the 10 personality disorders described in the DSM-IV (paranoid, schizoid, schizotypal, narcissistic, histrionic, borderline, anti-social, dependent, avoidant, obsessive-compulsive). Assessment combines self-report with informant-report to give a definite, possible or traits only diagnosis for each personality disorder. The IPDE has demonstrated adequate reliability and validity as well as cross- cultural generalizability (Loringer et al., 1994).

5.2.2. Engagement Measures

Levels of therapy engagement were assessed using three observer rated measures of engagement. These were the Group Engagement Measure (GEM; MacGowan, 1997), the Experiencing Scale (EXP; Klein, Mathieu, Gendlin, & Keiser, 1969) and the Group Emotional Engagement Questionnaire (GEEQ). The GEEQ was developed specifically for the current study and its development and psychometric properties are described in chapters 3 and 4. These measures were used to assess the study's dependent variable (for engagement measures see Appendices G to I).

5.2.2.1. The Group Engagement Measure

The GEM is an observer-rated assessment of engagement in treatment groups. There are 27 items arranged under seven subscales (attending, contributing, relating to facilitator, relating with members, contracting, working on own problems, working with other's problems) and scored on a 5-point Likert scale (1 = rarely or none of the time to 5 = most or all of the time) over three consecutive sessions. The GEM has shown excellent reliability and good validity (MacGowan, 1997, 2000, 2006; MacGowan & Levenson, 2003; MacGowan & Newman, 2005).

5.2.2.2. The Experiencing Scale

The EXP is an observer-rated measure designed to assess a participant's level of experiencing in psychotherapy. Assessment is of one therapy session. The instrument allows for seven levels of engagement with low levels of engagement indicated at Level 1 increasing in stages to Level 7. The more sophisticated a participant's experiencing the higher the EXP level they are given. Level 1 indicates that a participant offers emotionless, impersonal accounts of their experience. Level 4 corresponds to a participant's ability to be internally focused, and to process feelings and the meanings of significant personal events. Level 7 reflects the participant has readily accessible feelings and is able to synthesise them to form new meaning and solve problems (Klein et al., 1969). The EXP has demonstrated good reliability and validity with schizophrenic and anxiety disordered participants (Klein et al., 1969; Klein, Mathieu-Coughlan, & Keisler, 1986).

5.2.2.3. Group Emotional Engagement Questionnaire

The GEEQ is an observer rated measure of engagement in group psychotherapy. There are 20 items organised under five subscales (awareness of emotion, arousal of emotion, psychological distancing from overwhelming feelings, ability to reflect on emotion, ability to transform emotion) scored using a 5-point Likert scale (1 = never to 5 = most or all of the time) on how the participant usually presents. The GEEQ's psychometric properties are described in chapter 4; it demonstrated good reliability and validity including predictive validity.

5.2.3. Emotion Processing Measures

Emotion processing ability was examined using computerised tasks each designed to measure one of the cognitive mechanisms of emotion processing outlined in chapter 1 (Greenberg & Pascual-Leone, 2006). To enhance ecological validity each task was designed to be analogous to a real therapy situation. All computerised tasks were undertaken using a computer with Intel Pentium M processor working at 798MHz on Windows XP Professional with /1GB working memory. A Dell CRT monitor was connected for running the programmes. In addition, three questionnaires were administered to measure emotional awareness (Levels of Emotional Awareness Scale [LEAS; Lane, Quinlan, Schwartz, Walker, & Zeitlin, 1990]) and emotion regulation ability in daily life (Emotion Regulation Questionnaire [ERQ; Gross & John, 2003], Negative Mood Regulation Scale [NMRS; Cantanzaro & Mearns, 1990]) (see Appendices C to E for emotion processing questionnaires). The selection rationale for each task is presented in chapter 2.

5.2.3.1. Awareness and Arousal of Emotion

5.2.3.1.1. Levels of Emotional Awareness Scale-Short Form

Greenberg and Pascual-Leone (2006) have described the LEAS as their principal of awareness and arousal operationalized. The LEAS uses open-ended questions to measure five levels of emotional awareness: physical sensations, action tendencies, single emotions, blends of emotion, and higher-order blends of emotional experience in oneself and others (Lane et al., 1990). Twenty scenes described in two to seven sentences are presented. The scenes involve two people (self, other) and describe situations designed to trigger an emotional response. Participants are asked to state how they would feel and how the other person would feel for each scene. Instructions allow participants to write as much or as little as they wish but stipulate that the word 'feel' must be included in the response.

Each scene is scored for self and other (0 to 4). Level 0 reflects a non-emotional response, for example 'feel' is used to describe a thought not a feeling. Level 1 demonstrates awareness of physiological cues, for example 'I'd feel thirsty'. Level 2 denotes expression of an undifferentiated emotion, for example 'I'd feel good'. Level 3 signifies expression of a single differentiated emotion, for example 'I'd feel happy'. Level 4 indicates use of two or more level 3 words conveying distinct emotions, for example 'I'd feel sad and guilty'. In addition a total score is given for each scene by taking the higher of the self and other scores. If two level 4 scores are reached for self and other a level 5 total score is awarded as long as the emotions expressed are different, for example 'I'd feel sad and guilty but they'd feel hurt and angry'. Self, other and

total scores are each summed to produce a score for that scale. The LEAS has demonstrated good reliability and validity (Lane et al., 1990).

5.2.3.1.2. Approach / Avoidance Task

Aims: The Approach / Avoidance Task (AAT; Rinck & Becker, 2007) tests for behavioural approach towards groups depicting different emotions (as measured by reaction times).

Design: Approach / avoidance behaviour was measured using the AAT, a reaction time measure of arm movements towards and away from stimuli presented on a screen. Stimuli showed 3 x 4 arrays of people expressing 6 emotions (happiness, fear, anger, sadness, disgust, neutral) presented in 2 ratios 6:6 (6 emotional faces: 6 neutral faces) and 10:2. There were 10 group presentations per motion by emotion by ratio.

Ecological validity was enhanced by randomly varying:

i. The identities used in each set

ii. The number of faces depicting the relevant emotion

Both were designed to make the stimuli more analogous to a real therapy group setting.

Stimuli: Each stimulus consisted of 12 (3 x 4) adult faces taken from the NIMSTIM (NIMSTIM; Tottenham et al., 2009) facial affect series resized to 72.0 mm x 98.8 mm with 32-bit colour. Faces were chosen with reference to the NIMSTIM validation data, which gives percentage ratings of correct identification of emotional expression for each face. Criteria for face selection was correct identification of expression at ≥ 60% (most were ≥ 70%) (see Table 2).

Table 2 Percentages of correctly identified expressions by actor and emotion

Actor	Anger%	Disgust%	Fear%	Sad%	Happy%	Neutral%
01 female	>80	>80	70	>80	>80	70
05 female	>80	>80	80	>80	>80	70
07 female	>80	>80	80	>80	>80	70
09 female	>80	>80	80	>80	>80	70
10 female	>80	>80	>80	>80	>80	70
20 male	>80	>80	80	>80	>80	80
23 male	>80	>80	80	80	>80	60
26 male	>80	>80	70	>80	>80	80
27 male	>80	>80	>80	>80	>80	80
29 male	>80	>80	60	>80	>80	60
36 male	>80	>80	>80	>80	>80	70
37 male	>80	>80	>80	>80	>80	80

The level of emotion (number of faces with an emotional expression) within each condition was manipulated. I used one third of trials per emotional condition at each of the following levels: 6:6 (e.g. 6 emotional faces: 6 neutral faces) and 10:2. Each picture was shaded in two different colours: red and green; and was constructed in seven different sizes: 200 x 202 pixel, 300 x 303 pixel, 400 x 404 pixel, 500 x 505 pixel, 600 x 606 pixel, 700 x 707 pixel and 760 x 768 pixel. The start position was the 500 x 505 pixel size.

Apparatus: A Logitech Attack3 joystick was used. Stimuli were presented using a DOS-based executable file that measured response times in milliseconds.

Procedure: Instructions for the task appeared on the monitor screen at the beginning of the task. The instructions told participants to either push or pull the joystick depending on the colour shading of the picture as it appeared on the screen, and to do this as quickly as possible. At the beginning of each trial the picture appeared in its medium size while the joystick was in an upright position. The pictures were either green or red in shade and the instruction to either green = push or red = pull versus red = push or green = pull were counterbalanced across participants. Participants were instructed to continue

pushing or pulling the joystick until the faces disappeared. When the joystick was pulled the picture increased in size in three stages (approach). When the joystick was pushed the pictures decreased in size in three stages (avoidance). In the final push and pull positions, the picture disappeared. Participants were given 20 practice trials with stimuli to allow them to become familiar with the task required.

Example of trial design: Each stimulus was presented twice, once in red (requiring one motion), once in green (for the other motion). Colour response assignment was counterbalanced between participants (P1 pushed to red; P2 pushed to green). This was implemented in the programme by varying the instructions between participants.

Table 3 Design calculations (example for one emotion)

Ratio	**6/6**		**10/2**		
Motion	Push	Pull	Push	Pull	
Number of trials	10	10	10	10	40 trials per emotion

Six emotions yielded a task of 40 x 6 = 240 trials. Neutral trials did not vary in terms of ratio, but there was the same number. The task took approximately 20 minutes to complete (see Figure 2).

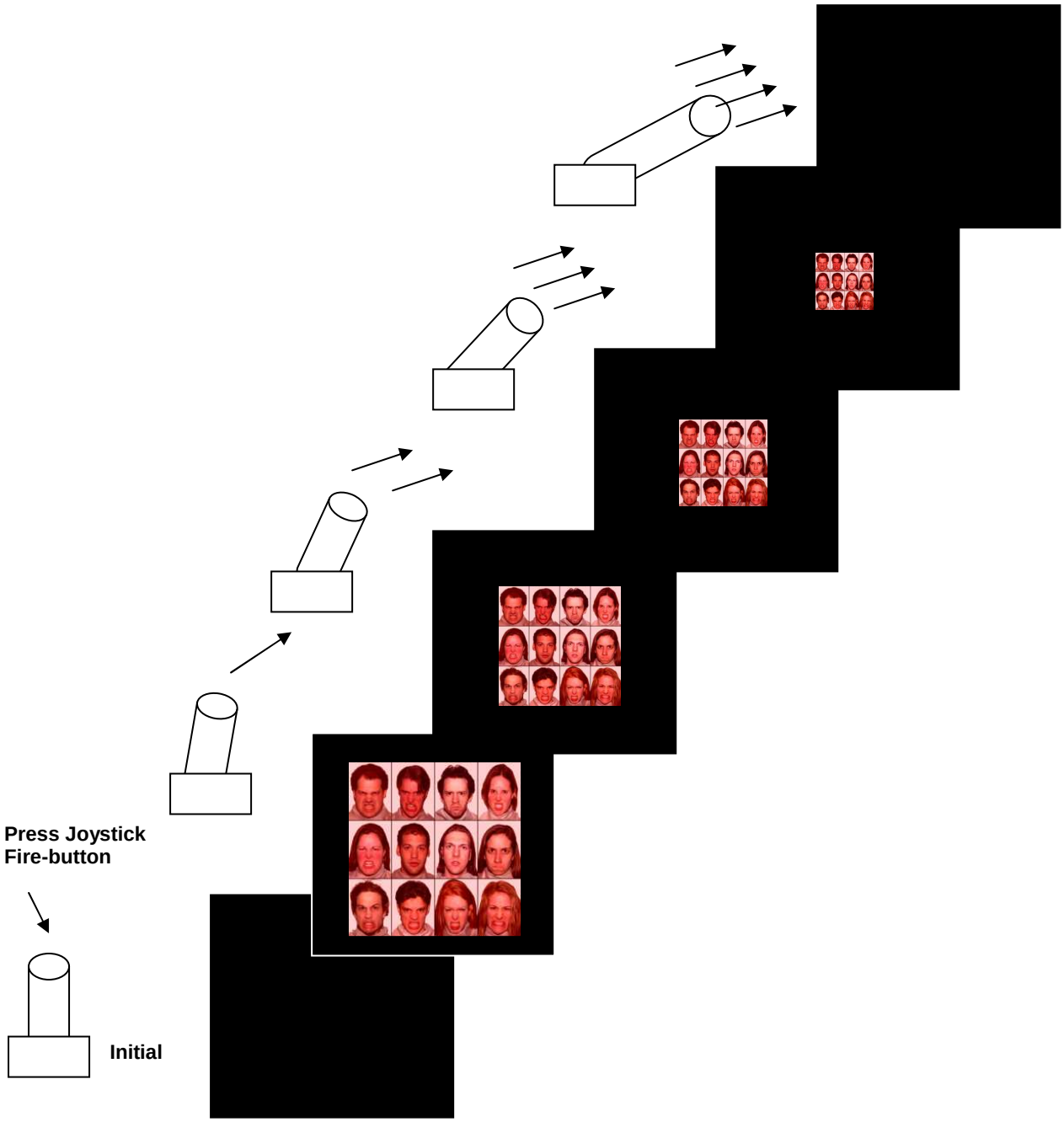
Stimuli for one emotion type: Six stimuli per emotion per ratio were used, one set in red and a second identical set in green. There were 12 stimuli per emotion in total. For each emotion in each ratio six different random layouts were used. For example the stimuli depicting ratio 6:6 for emotion X was:

Figure 1 Example of stimuli layout for ratio 6:6 emotion X

Layout	1	2	3	4	5	6
	XXNN	NXXN	NNNX	XXXN	XNXN	XXNX
	NXXX	XNXN	XXNX	NNXX	NNNX	NXXX
	XNNN	NXXN	NXNX	XNNN	NXXX	NNNN

Within each stimulus there were a variety of different identities (people). The same 12 people were used for each trial but it varied where they occurred in the array and who expressed the emotion. The idea was for the trials to vary analogous to a therapy group (same people attending), but for all the trials to have as a single common factor (within each condition), the degree and type of emotion depicted.

Figure 2 Example of Approach / Avoidance Task trial for anger ratio 10:2



5.2.3.1.3. Rating for Approach / Avoidance Task

Aims: The Rating Approach / Avoidance Task (RAAT) measured awareness of emotional expression for AAT stimuli by asking participants to assess the AAT groups on how approving / disapproving they found them to be. It is usual to run a rating task such as the RAAT alongside the AAT (Douilliez, Yzerbyt, Gilboa-Schechtman, & Philippot, 2012; Lange, Keijsers, Becker, & Rinck, 2008; Philippot & Douilliez, 2005)..

Design: Awareness of emotion in groups was measured using groups of faces expressing 6 emotions (angry, happy, sad, disgust, fear, neutral) presented in 2 ratios 6:6 (6 emotional faces: 6 neutral faces) and 10:2. There were 10 group presentations per emotion per ratio.

Table 4 Design calculations for Rating Approach / Avoidance Task

Ratio	**6/6**					**10/2**					
Emoton	Anger	Disgust	Fear	Sad	Happy	Anger	Disgust	Fear	Sad	Happy	Neutral
Trials	10	10	10	10	10	10	10	10	10	10	20

Six emotions yielded a task of 10 x 12 = 120 trials. The neutral trials did not vary in ratio but there was the same number. The dependent measure per trial was approving-disapproving rating.

Stimuli for one emotion type: Stills of the stimuli used in the AAT were used in the ratings task. Ten stimuli were used per emotion per ratio. There were 20 stimuli per emotion in total. For each emotion in each ratio 10 different random layouts were used:

Figure 3 Example of stimuli layout for ratio 6:6 emotion X

Layout:	1	2	3	4	5	6	7	8	9	10
	XXNN	NXXN	NNNX	XXXN	XNXN	XXNX	XNXN	XXNN	XXXX	NNNN
	NXXX	XNXN	XXNX	NNXX	NNNX	NXXX	NXXN	NNNX	NNNN	XNXN
	XNNN	NXXN	NXNX	XNNN	NXXX	NNNN	XXNN	NXXX	XNXN	XXXX

Within each stimulus, there was a variety of different identities (people). The same 12 people were used for each trial but it varied where they occurred in the array and who was expressing the emotion.

Apparatus: Stimuli were presented using E-prime, which also measured response.

Procedure: At the beginning of the task instructions appeared on the monitor screen. Participants were instructed to 'look carefully at the groups of faces about to appear on the screen, then imagine being in a situation with each group and think about how approving or disapproving they appear to be'. Each trial began with a fixation (1 sec). A single group of faces was then presented randomly (presentation terminated with response) followed by a rating scale (1 = very approving to 7 = very disapproving). The task took approximately 20 minutes to complete.

Figure 4 Example of Rating Approach / Avoidance Task trial for anger ratio 10:2



5.2.3.2. Emotion Regulation

5.2.3.2.1. Emotion Regulation Task

Aims: The Emotion Regulation Task (ERT) was used to assess ability to regulate emotions using pictures from the International Affective Picture

System (IAPS; Lang, Bradley, & Cuthbert, 1999) (negative, positive) under three conditions (look, increase, decrease).

Design: In an adaptation of Oschner et al. (2004) participants viewed pictures (negative, positive) presented under three conditions (look: view naturally, increase: get into the emotion depicted, decrease: view as a detached observer). Conditions were counterbalanced between participants.

Table 5 Design calculations for Emotion Regulation Task

Condition	**Look**		**Increase**		**Decrease**	
Picture Type	Negative	Positive	Negative	Positive	Negative	Positive
Assigned Condition Number	1	2	3	4	5	6
Picture Number	LN 1-4	LP 1-4	IN 1-4	IP 1-4	DN 1-4	DP 1-4
Number of Trials	4	4	4	4	4	4

Each participant received each condition once. The order in which a participant received the conditions was counterbalanced according to the following Latin square:

Table 6 Latin square showing counterbalanced order of conditions

Participant	**Conditions**
Participant 1	1 2 3 4 5 6
Participant 2	2 3 4 5 6 1
Participant 3	3 4 5 6 1 2
Participant 4	4 5 6 1 2 3
Participant 5	5 6 1 2 3 4
Participant 6	6 1 2 3 4 5

The particular pictures used in each condition were counterbalanced across all possible conditions in which those pictures could be used. There were three possible conditions for each type of picture (1, 3, 5 for negative pictures; 2, 4, 6 for positive pictures). Thus, three matched sets of pictures were assigned to the three possible conditions in an order that was counterbalanced across conditions.

Table 7 Picture sets by type

	Positive pictures (12)	Negative pictures (12)
SET 1	P1	N1
SET2	P2	N2
SET3	P3	N3

Table 8 Table showing which picture sets were assigned to which condition using Latin square counterbalancing

	Negative conditions			Positive conditions		
Condition	**1**	**3**	**5**	**2**	**4**	**6**
Participant1	N1	N2	N3	P1	P2	P3
Participant2	N2	N3	N1	P2	P3	P1
Participant3	N3	N2	N1	P3	P2	P1

Thus according to the above schedule, pictures were assigned to the different conditions that participants viewed in the appropriate counterbalanced order:

Table 9 Assignment of pictures to condition by counterbalanced order

Participant 1	1	2	3	4	5	6
	N1	P1	N2	P2	N3	P3
Participant 2	2	3	4	5	6	1
	P2	N3	P3	N1	P1	N2
Participant 3	3	4	5	6	1	2
	N2	P1	N1	P2	N3	P3
Participant 4	4	5	6	1	2	3
	P2	N3	P3	N1	P1	N2
Participant 5	5	6	1	2	3	4
	N1	P1	N2	P2	N3	P3
Participant 6	6	1	2	3	4	5
	P2	N3	P3	N2	P1	N1

Condition
Picture sets assigned to that condition

There were two dependent variables per trial: rating of strength of emotion (1 = weak to 7 = strong) and heart rate during picture viewing. The rationale for selecting heart rate as the dependent measure is discussed in chapter 2.

Stimuli: Stimuli were selected from the IAPS (12 positive, 12 negative) with reference to the IAPS validation data (Lang, Bradley, & Cuthbert, 1999). The inclusion criteria for picture selection were pictures with mean ratings of high arousal and low valence (negative pictures) or high valence (positive pictures) (see Table 10).

Apparatus: Heart rate measured by finger pulse amplitude (FPA) was recorded with a photoplesythmograph connected to a pulse oximeter and placed by a clip on the second finger of the non-dominant hand. FPA was sampled at 1000Hz using CED Micro 1401 data acquisition unit with Spike2 version 4 software. Stimuli were presented using E-prime which also recorded response.

Table 10 Mean ratings for pictures selected for Emotion Regulation Task

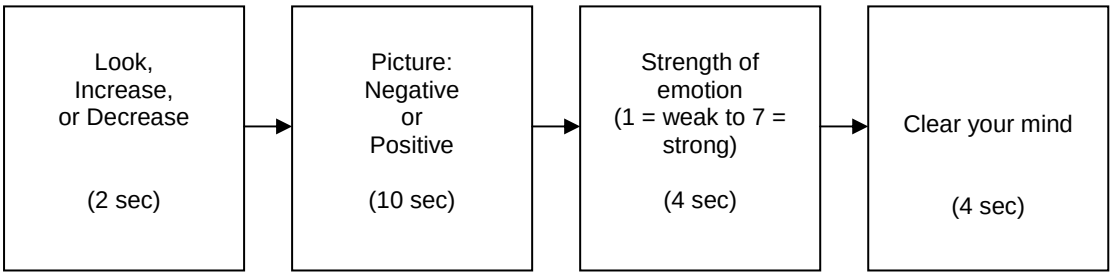
IAPS Pic No.	Valence	Arousal	Threat	ERT Picture Set
6260	2.53	7.10	2.92	N1
3500	2.50	6.80	2.70	N1
3550	3.10	5.69	3.73	N1
9921	2.60	6.09	4.26	N1
3350	2.00	5.65	3.48	N2
6250	2.98	6.35	2.70	N2
9910	2.35	6.00	2.98	N2
9570	1.90	5.84	3.49	N2
3530	2.10	6.85	2.94	N3
6230	2.73	7.10	2.34	N3
6570	2.29	6.06	4.02	N3
9300	2.90	5.69	4.12	N3
4689	7.00	6.26	5.91	P1
8490	6.85	6.25	5.33	P1
8380	7.25	6.02	5.65	P1
8260	6.90	6.69	5.42	P1
8370	7.67	6.46	5.20	P2
8470	7.55	6.31	6.24	P2
8161	6.50	5.93	6.17	P2
8190	8.13	6.41	6.17	P2
4599	7.02	5.73	6.54	P3
8210	7.46	5.87	6.09	P3
8180	7.50	6.54	4.83	P3
4660	7.63	6.92	6.69	P3

Procedure: Before running the task the FPA apparatus was applied, heart rate recording started and continued throughout the task. At the beginning of the task instructions appeared on the monitor screen telling participants they were about to see a series of pictures. Participants were told before each picture 'the word 'Look', 'Increase' or 'Decrease' will appear on the screen'. When 'Look' preceded the picture, participants were instructed to 'view the picture naturally as if you had come across it in a magazine or on TV'. When 'Increase' appeared, participants were told to 'get into the feeling of the

picture by imagining yourself involved in the scene depicted'. Conversely, when the word 'Decrease' was presented participants were instructed to 'view the picture with the detached perspective of a photographer'. Participants were instructed to attend to each picture for its entire presentation time.

At the start of each trial the word 'Look', 'Increase' or 'Decrease' appeared on the screen (2 sec) indicating which condition the picture should be viewed under. The picture presentation followed (10 sec) and the start and end times of each presentation were recorded. Participants then rated the picture on strength of emotion experienced (1 = weak to 7 = strong). To encourage immediate appraisal of strength of emotion rating was time-limited to 4 seconds. The trial finished with a rest period (4 sec). Participants were given three practice trials (look, increase, decrease) with stimuli to allow them to become familiar with the task required. The task took approximately 30 minutes to complete.

Figure 5 Example of Emotion Regulation Task trial



5.2.3.2.2. Emotion Regulation Questionnaire

The ERQ is a 10 item self-report measure of two emotion regulation strategies (suppression, reappraisal). There are four suppression items, for example 'I control my emotions by not expressing them'. And six reappraisal items, for example 'I control my emotions by changing the way I think about the situation

I'm in'. Response is on a 7-point scale (1 = disagree strongly to 7 = agree strongly). The ERQ has demonstrated good reliability and validity (Gross & John, 2003).

5.2.3.2.3. Negative Mood Regulation Scale

The NMRS is self-report and measures expectancy that a behaviour or cognition will terminate a negative mood state. There are 30 items scored on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Higher scores indicate positive expectancies about ones ability to regulate moods if upset. The NMRS has shown good reliability and validity (Cantanzaro & Mearns, 1990).

5.2.3.3. Interpreting Emotion

To examine interpreting emotion stimuli were developed with reference to Young's schema theory. This theory is now outlined and its relationship to psychopathy and the theoretical framework of the study (Greenberg and Pascual-Leone's principles for working with emotion in therapy) are explained.

5.2.3.3.1. Outline of Young's schema theory

Young's schema theory builds on Beck (1979, 1988) and describes schemas as "broad, pervasive themes regarding oneself and one's relationships with others, developed during childhood and elaborated throughout one's lifetime, and dysfunctional to a significant degree" (Young, n.d.). These arise from an interaction between innate temperament and situations when core developmental needs (love, understanding, guidance, protection) were unmet by caregivers, siblings or peers. Young's theory underpins schema focused

therapy which aims to treat personality disorder, including psychopathy (Young & Klosko, 1994; Young, Klosko, & Weishaar, 2003).

Similar to other authors (e.g. Bartlett, 1932; Piaget & Inhelder, 1973; Rumelhart, 1980; Schank & Ableson, 1977) Young suggests schemas provide automatic references for processing complex social information, especially emotional information, based on understanding and interpretation of past experiences. Young believes that early maladaptive schemas are firmly held convictions, which persist into adulthood and guide perception and behaviour (Young, 1999). As such, beliefs and expectations about interpersonal relationships and the environment are regarded as absolute truths. An individual with a mistrust / abuse schema thinks in terms of 'when' rather than 'if' they will be mistreated.

When schemas are triggered, they evoke strong emotions such as fear, sadness or shame (Bernstein, Arntz, & de Vos, 2007). In addition, information that confirms schemas is attended to while that which disconfirms them is ignored. This bias is thought to contribute to the formation and maintenance of cognitive distortions (Young et al., 2003). Distortions are difficult to shift and in schema focused therapy they are the object of change (Beck, 1994; Bernstein et al., 2007; Young, 1999; Young & Kloskos, 1994; Young et al., 2003).

Table 11 Young's 18 schemas with definitions and respective domains

Schema	Schema Definition	Domain
1. Abandonment/instability	Individual expects that they will eventually be abandoned by significant others. Others are unreliable and unpredictable in their support and connection. When they think they have been abandoned they switch between feelings of anxiety, grief and anger.	Disconnection and rejection
2. Mistrust / abuse	Individual holds conviction that others will intentionally abuse, cheat or humiliate them in some way. The individual's feelings fluctuate greatly and they are continuously on edge.	
3. Emotional deprivation	Individual believes that others will never or not adequately meet their primary emotional needs (e.g. for support, nurturance, empathy or protection). They feel isolated and lonely.	
4. Defectiveness/shame	Individual believes they are internally flawed and bad. If others get close, they will realise this and withdraw from the relationship. This sense of being worthless often leads to strong feelings of shame.	
5. Social isolation	Individual believes they are socially inept and physically unattractive. They see themselves as boring, dull and ugly.	
6. Dependence/ incompetence	Individual feels extremely helpless and incapable of functioning independently. They are incapable of making day-to-day decisions and are often tense and anxious.	Impaired autonomy and performance
7. Vulnerability to harm & illness	Individual believes imminent catastrophe will strike them and significant others, and that they are unable to prevent this.	
8. Enmeshment / undeveloped self	Individual has an excessive emotional involvement and closeness with one or more significant other(s) (often their parents), as a result of which they cannot develop their own identity.	
9. Failure	Individual believes that they are incapable of performing as well as their peer group. They feel stupid and untalented.	
10. Entitlement / grandiosity	Individual believes they are superior to others and entitled to special rights. They insist they should be able to do or have what they want, regardless of what others think. The key theme is power and being in control of situations or people.	Impaired limits
11. Insufficient self control	Individual has no tolerance of frustration and is unable to control their feelings and impulses. They cannot bear dissatisfaction or discomfort (pain, conflicts or overexertion).	
12. Subjugation	Individual submits to the control of others in order to avoid negative consequences. They ignore their own needs because they fear conflict and punishment.	Other directedness
13. Self sacrifice	Individual focuses on voluntarily meeting the needs of others, whom they consider weaker than themselves. If they pay attention to their own needs, they feel guilty, and then give priority to the needs of others. Finally, they become annoyed with the people they are looking after.	
14. Approval seeking	Individual focuses solely on gaining recognition, approval and attention, at the expense of their own development and needs.	
15. Emotional inhibition	Individual inhibits emotions and impulses because they believe that any expression of feelings will harm others or lead to embarrassment, retaliation or abandonment. They lack spontaneity and stress rationality.	Over-vigilance and inhibition
16. Unrelenting standards/hypocritical	Individual believes that whatever they do is not good enough and that they must always strive harder. They are hypercritical of themselves and others and they are perfectionist, rigid and extremely efficient. This is at the expense of pleasure, relaxation and social contacts.	
17. Negativity/vulnerability to error	Individual is always focused on the negative aspect of life and ignores or plays down the positive aspects. They are frequently anxious and hyper-alert.	
18. Punitiveness	Individual believes that people should be harshly punished for making mistakes. They are aggressive, intolerant, impatient and unforgiving.	

Table 12 Young's five schema domains

Schema domains	Definition
Disconnection and rejection	Individual expects that needs for security, safety, stability, nurturance, empathy, sharing of feelings, acceptance, and respect will not be met in a predictable manner
Impaired autonomy and performance	Individual has expectations about themselves and the environment that interfere with their perceived ability to separate, survive, function independently, or perform successfully.
Impaired limits	Individual is deficient in internal limits, responsibility to others, or long-term goal-orientation. Leads to difficulty respecting the rights of others, cooperating with others, making commitments, or setting and meeting realistic personal goals.
Other directedness	Individual focuses excessively on the desires, feelings, and responses of others, at the expense of own needs - in order to gain love and approval, maintain a sense of connection, or avoid retaliation. Usually involves suppression and lack of awareness regarding own anger and natural inclinations.
Over-vigilance and inhibition	Individual places excessive emphasis on suppressing own spontaneous feelings, impulses, and choices OR on meeting rigid, internalized rules and expectations about performance and ethical behaviour; often at the expense of happiness, self-expression, relaxation, close relationships, or health.

5.2.3.3.2. Young's schema theory in relation to psychopathy

Young does not associate specific schemas with particular personality disorders suggesting instead that patients will exhibit a range of schemas dependent on a given situation. However, Chakhssi, Bernstein and de Ruiter (2012) found the lifestyle and antisocial facets of the PCL-R (corresponding to Factor 2 psychopathy) were positively related to mistrust / abuse and insufficient self-control schemas but negatively related to the subjugation schema as measured by the Young Schema Questionnaire (YSQ; Young & Brown, 2003). There were no significant associations for any of the schemas with the affective and interpersonal facets of the PCL-R (corresponding to Factor 1). The authors conclude treatments that focus on diminishing schemas related to mistrust and poor impulse control may lead to better treatment outcomes for psychopathy (Factor 2). However, they also note that the study consisted of a self-report schema assessment in a forensic setting and as forensic samples are known to under-report the extent of their symptomatology this may have led to an underestimation of the relationship between schemas and psychopathy (Chakhssi et al., 2012). Chakhssi et al.

(2012) call for studies that test implicit cognitions using experimental designs to establish if these are better able to detect symptomatology missed by self-report.

Table 13 Young's three schema coping styles

Coping style	Process: behaviour, thoughts, feelings
Avoidance	Behaviour: active and passive avoidance of anything that might trigger the schema Thoughts: denial of events or memories, dissociation Feelings: smoothing over feelings or feeling nothing at all
Surrender	Behaviour: repeating behaviour patterns from childhood by looking for people and situations that are similar to the circumstances that led to the schema being formed Thoughts: biased processing of information i.e. attending to information that supports the schema and ignoring information that challenges it Feelings: emotion associated with schema is felt directly
Overcompensation	Behaviour: showing behaviour that is opposite to the schema, often in an exaggerated manner Thoughts: thoughts are opposite to the schema. Person denies having the schema Feelings: masking uncomfortable feelings belonging to the schema with opposite feelings (e.g. pride to mask sense of inferiority)

Finally, a number of authors link psychopathy to specific coping styles rather than individual schemas (Beckley, 2011; Bernstein et al., 2007). Specifically, psychopathy is associated with an over-compensatory coping style. When schemas are triggered, psychopaths are more likely to behave in the opposite way to the schema, often in an exaggerated manner. In addition, they are more likely to deny having the schema and to mask unpleasant feelings related to the schema with reverse (exaggerated) feelings.

5.2.3.3.3. Young's schema theory in relation to Greenberg and Pascual Leone's model

Young's schema theory relates to Greenberg and Pascual-Leone's third (making sense of emotion) and fourth (transforming emotion) principles of working with emotion in therapy. As described in chapters 1 and 2, making sense of emotion in therapy involves bringing new understanding to emotive situations so that they can be placed within a new narrative and reassessed.

This involves challenging interpretation biases and cognitive distortions, which in schema theory are the expression of early maladaptive schemas. Applied to schema theory making sense of emotion involves bringing new understanding to schema driven interpretations so that they can be challenged and altered. As described above these interpretations may be particularly pertinent to personality disorder.

Transforming emotion is closely linked to making sense of emotion. It is described as replacing maladaptive emotion with a new state once a different emotion has been accessed (Greenberg, 2008). This is achieved by reinterpreting information that first led to the problematic emotion. When the new interpretation is more balanced and less distorted, it is thought to lead to experiencing more adaptive emotions. Applied to schema theory transforming emotion involves changing schema driven emotions with more adaptive ones.

5.2.3.3.4. Interpretation Bias Task 1

Aims: The Interpretation Bias Task 1 (IBT1) was used to assess level of interpretation bias as measured by completion of emotionally ambiguous sentences (schema, social threat, physical threat) (stimuli are presented in Appendix K).

Design: Interpretation bias was measured using randomly presented emotionally ambiguous scenes. Three ambiguous scene types were used (schema, social threat, physical threat). Four possible interpretations were suggested for each scene (extreme negative, negative, positive, extreme positive). Participants ranked scene interpretations (1 = closest in meaning to 4 = least closest in meaning) to give a measure of interpretation bias. Items

were scored 0 when ranked 4th (i.e. least similar to the passage), through 1, 2 and 4 for those ranked most similar to the passage. Scores for each item type (extreme negative, negative, positive, extreme positive) were then summed. Thus a significantly higher score for a particular type of item indicated a bias of interpretation favouring that item type. Word fragments (congruent / incongruent with a negative interpretation) were presented after each scene. RT to complete word fragments gave an independent measure of interpretation bias.

The task had two dependent variables: rank of scene completion and RT to word completion.

Table 14 Design calculations for Interpretation Bias Task 1

	Number of scenes	Number of word fragments (congruent)	Number of word fragments (incongruent)
Schema	25	12	13
Social threat	10	5	5
Physical threat	10	5	5
TOTAL	**45**	**22**	**23**

Stimuli: Ninety short scenes intended to trigger schemata (*N* = 50) social threat (*N* = 20) and physical threat (*N* = 20) were developed. As described above schema scenes were developed with reference to Young's 18 schemas arranged under 5 schema domains (disconnection and rejection, impaired autonomy and performance, impaired limits, other directedness, over-vigilance and inhibition) (see Tables 11 and 12). To enhance the sensitivity of the stimuli for use with the current sample, clinicians from the Fens Unit Research and Audit Group, four trained schema therapists, were consulted during the development process. Social and physical threat scenes were adapted from Eysenck, Mogg, May, Richards and Matthews (1991) as well as

MacLeod and Cohen (1993). Scenes were organised into two matched sets (see Table 15).

Table 15 Sets of emotionally ambiguous scenes

		Set A	*Set B*
	Scene Type	**Number of scenes**	**Number of scenes**
Schema domain	Disconnection and rejection	5	5
	Impaired autonomy and performance	5	5
	Impaired limits	5	5
	Other directedness	5	5
	Over-vigilance and inhibition	5	5
Threat type	Social	10	10
	Physical	10	10
Total		**45**	**45**

Four possible endings (extreme negative, negative, positive, extreme positive) were developed for each scene (see Figure 6).

Figure 6 Example of scene designed to trigger abandonment schema (within the disconnection and rejection domain)

Your closest friend invites you to her leaving party. At the end of the night she promises to give you her new contact details...

Ranking options:
Extreme non-schema: *you'll be closer than ever and be able to contact each other every day*
Non-schema: *you'll be able to carry on your friendship at a distance*
Schema: *she can't really mean it else she would have given you them then and there*
Extreme schema: *you'll never hear from your friend again, people always leave you*

Ranking:
Which was closest in meaning to what you thought?
And next closest?
And next closest?
And which was least closest in meaning?

Word fragments congruent (*N* = 45) and incongruent (*N* = 45) with a negative interpretation were designed. Words, matched on length and frequency of use in everyday language, were selected and the vowels removed. Scenes and word fragments were counterbalanced across participants yielding four test orders with 45 scenes and word fragments each (see Table 16).

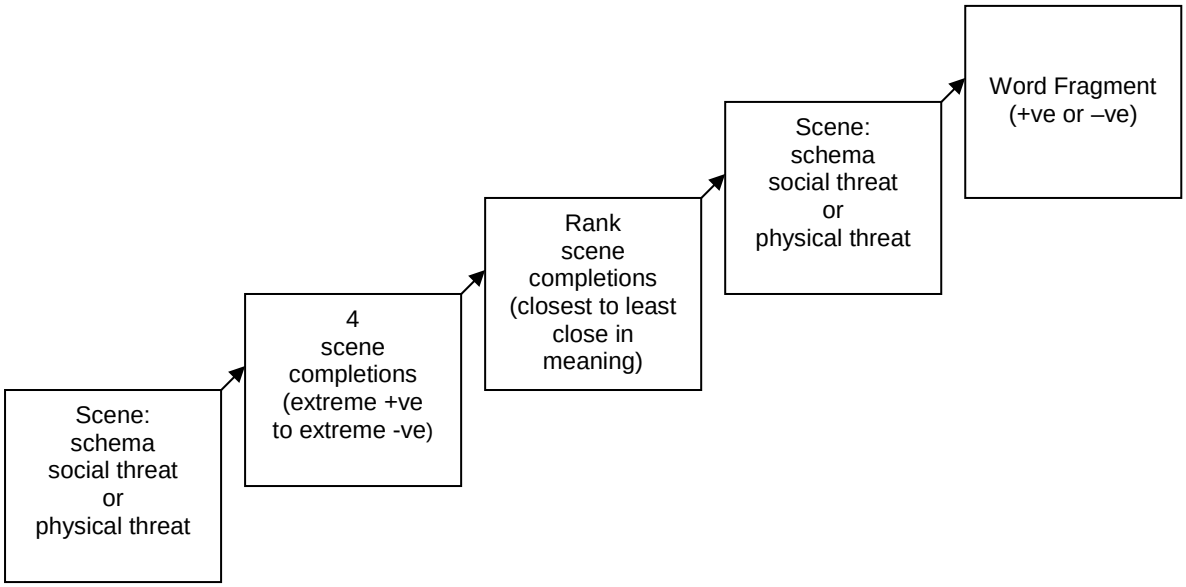
Table 16 Counterbalanced test orders for Interpretation Bias Task 1

Test Order 1		**Test Order 2**		**Test Order 3**		**Test Order 4**	
Set A1		*Set A2*		*Set B1*		*Set B2*	
Scene	Word Fragment	Scene	Word Fragment	Scene	Word Fragment	Scene	Word Fragment
1-22	Congruent	1-22	Incongruent	46-68	Congruent	46-68	Incongruent
23-45	Incongruent	23-45	Congruent	69-90	Incongruent	69-90	Congruent

Apparatus: Stimuli were presented using E-prime which also recorded rank responses and word completion RT in milliseconds.

Procedure: At the beginning of the task instructions appeared on the screen telling participants they were about to see a number of short descriptions. Participants were instructed to picture themselves in each situation described and imagine what they might do or think next. Each trial began with an emotionally ambiguous scene (schema, social threat or physical threat) described in three sentences (presented one sentence at a time in a self-paced manner). Scenes were presented randomly. Each scene was followed by four possible resolutions (extreme negative, negative, positive, extreme positive). Participants ranked the resolutions using their first impressions (1 = closest in meaning to 4 = least close in meaning) to give a measure of interpretation bias. Following ranking, scenes were re-presented followed by a word fragment (congruent / incongruent with a negative interpretation). Participants were instructed to complete the word as quickly as possible. There were three practice trials with stimuli to allow participants to become familiar with the task required. The task took approximately 45 minutes to complete (see Figure 7).

Figure 7 Example of Interpretation Bias Task 1 trial



5.2.3.4. Transforming Emotion

As described above Young's schema theory is pertinent to psychopathy and transforming emotion, Greenberg and Pascual-Leone's fourth principle for working with emotion in therapy. For these reasons, materials based on Young's schema theory were used to test ability to transform emotion.

5.2.3.4.1. Interpretation Bias Task 2

Aims: The Interpretation Bias Task 2 (IBT2) was used to measure ability to resolve interpretation bias with the use of a prime word congruent / incongruent to a negative interpretation.

Design: Transformation of emotion was measured using randomly presented emotionally ambiguous scenes (*N* = 45) preceded by prime words. The design for IBT2 followed that of IBT1 except scene presentation was preceded by a prime word (congruent / incongruent with a negative interpretation) analogous to contextual information provided in a therapy session. In particular,

interpretation in the same direction as the prime was used as an indication of emotion resolution.

Prime words congruent (*N* = 45) and incongruent (*N* = 45) with a negative interpretation were chosen. Words were matched on length and frequency of use in everyday language.

Table 17 Design calculations for Interpretation Bias Task 2

	Number of scenes	Number of primes (congruent)	Number of primes (incongruent)
Schema	25	12	13
Social threat	10	5	5
Physical threat	10	5	5
TOTAL	**45**	**22**	**23**

Scenes and primes were counterbalanced across participants yielding four test orders with 45 scenes and prime words each.

Table 18 Counterbalanced test orders for Interpretation Bias Task 2

TEST ORDER 1		**TEST ORDER 2**		**TEST ORDER 3**		**TEST ORDER 4**	
Set B1		*Set B2*		*Set A1*		*Set A2*	
Scene	Prime	Scene	Prime	Scene	Prime	Scene	Prime
46-68	Congruent	46-68	Incongruent	1-22	Incongruent	1-22	Congruent
69-90	Incongruent	69-90	Congruent	23-45	Congruent	23-45	Incongruent

<u>*Stimuli*</u>: Emotionally ambiguous scenes were as in IBT1 and scenes were counterbalanced across tasks to ensure participants received different stimuli during each task.

Table 19 Counterbalanced test orders for Interpretation Bias Tasks 1 and 2

	TEST ORDER 1		**TEST ORDER 2**		**TEST ORDER 3**		**TEST ORDER 4**	
IBT1	*Set A1*		*Set A2*		*Set B1*		*Set B2*	
	Scene	Word Fragment	Scene	Word Fragment	Scene	Word Fragment	Scene	Word Fragment
	1-22	Congruent	1-22	Incongruent	46-68	Congruent	46-68	Incongruent
	23-45	Incongruent	23-45	Congruent	69-90	Incongruent	69-90	Congruent
IBT2	*Set B1*		*Set B2*		*Set A1*		*Set A2*	
	Scene	Prime	Scene	Prime	Scene	Prime	Scene	Prime
	46-68	Congruent	46-68	Incongruent	1-22	Incongruent	1-22	Congruent
	69-90	Incongruent	69-90	Congruent	23-45	Congruent	23-45	Incongruent

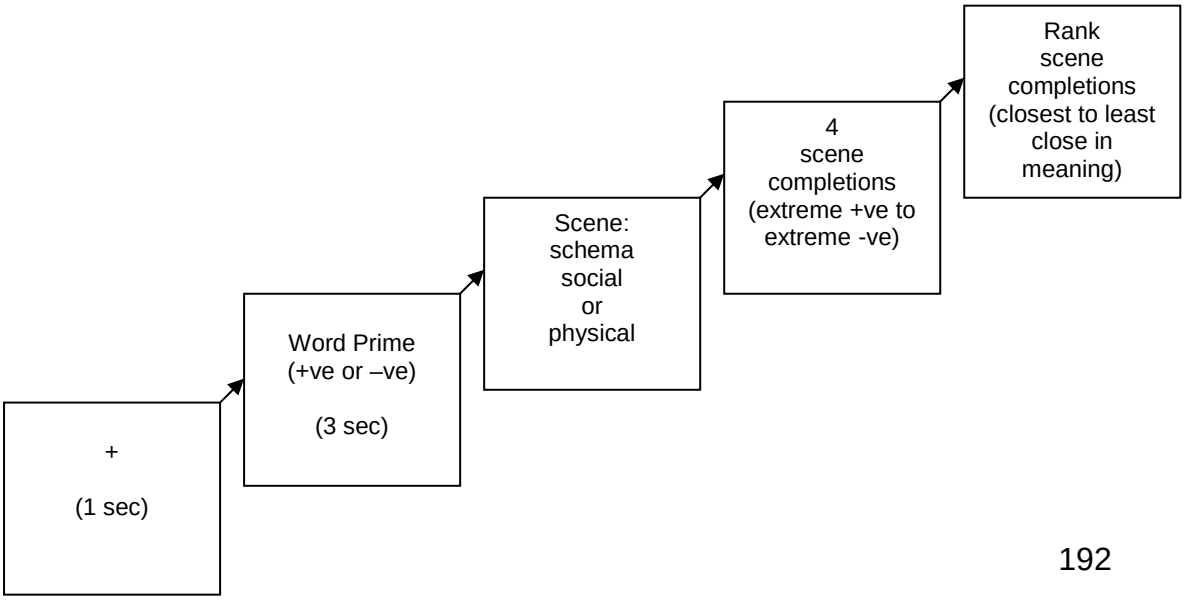
Thus across the two interpretation bias tasks (IBT1, IBT2) the test order was A1B1, A2B2, B1A1, B2A2.

Prime words preceded each scene (schema congruent [*N* = 25] incongruent [*N* = 25], social threat congruent [*N* = 10] incongruent [*N* = 10], physical threat congruent [*N* = 10] incongruent [*N* = 10]) and were matched on length and frequency of use in everyday language.

Apparatus: Stimuli were presented using E-prime that also recorded rank responses.

Procedure: IBT2 followed IBT1 and began with instructions presented on the monitor screen. Participants were told they were about to 'see more short descriptions similar to those in the previous task but this time a word will appear before each description'. Participants were instructed to 'use the word to help make sense of the description'. Each trial began with a fixation cross (1 sec) followed by a prime word (congruent / incongruent to a negative interpretation) (5 sec). The rest of the trial ran as IBT1 but without the word fragment. The task took approximately 35 minutes to complete (see Figure 8).

Figure 8 Example of Interpretation Bias Task 2 trial



5.3. Procedure

Participants were interviewed in a cross-sectional design. Interviews took place in a designated room on a quiet part of the prison wing and took an average of 5 hours to complete over 4 days. Emotion processing ability was assessed using computerised tasks each designed to measure one of the cognitive mechanisms of emotion processing outlined in chapter 1 (Greenberg & Pascual-Leone, 2006). Tasks and questionnaires were administered in a fixed order over three sessions as shown in Table 20. This may have limited the study; in particular, carry over effects may have meant exposure to affective stimuli in one task could have influenced performance during the next. These could have been addressed by counterbalancing tasks between participants. However, methodological and practical considerations cautioned against this. Counterbalancing works well for practice, boredom or fatigue effects and when order effects are known to be symmetrical. In such cases, counterbalancing can eliminate confounding (Field, 2005), which is why the approach was taken within tasks (as described above). However when carry over effects are asymmetrical counterbalancing does not eliminate the associated confounds (Cohen, 2008; Goodwin, 2009). If task A influences performance on task B more strongly than B does on A when the order is reversed counterbalancing simply shares the influence of the effect equally across groups rather than removing it (Field, 2005; Hole, 2012; Kanowitz, Roediger, & Elmes, 2009; Kinnear & Gray, 2008). As such possible confounds are only highlighted for later examination (Langdridge, 2004). Moreover, as the number of tasks increases the likelihood of complex differential carry over

effects increases (Cohen, 2008). This was an important consideration for the present study which had five tasks.

Where asymmetrical carry over effects are suspected methods other than counterbalancing are thought to be more appropriate. For example, separating tasks in time (Cohen, 2008; Hole, 2012; Kantowitz et al., 2009; Langridge, 2004), presenting distracters between tasks (Cohen, 2008) or fixing the order so that the task with the strongest carry over effect is placed last (Sayette, Griffin, & Sayers, 2010). In addition a fixed order presentation may be preferred if one task is thought to be more important than another, so that it is presented first (e.g. Lange et al., 2008) or if carry over effects need to be kept constant across tasks (Sayette, Griffin, & Sayers, 2010).

In an earlier study with the same sample, a number of participants displayed extreme emotional reactions to the IAPS stimuli used in the ERT (Burns et al., 2011a). Therefore, carry over effects from this task may have been stronger than for the others such that receiving the ERT before the other tasks may not have had the equivalent effect as undertaking the tasks in the reverse order. This appears likely when we consider that the earlier study used affective face stimuli comparable to those in the AAT and RAAT and imagery similar to the IBT stimuli without extreme reactions. In addition, as discussed in chapter 2 it was advised that considerable suspiciousness would surround collecting psychophysiological data. It was thought participants might be more inclined to undertake the ERT once rapport had been established. Therefore, to minimise irregular transfer effects and to maximise the sample size the ERT was fixed last in the task order.

It was possible that the RAAT (AAT rating tasks) would have had an unwanted priming effect on the AAT. Conversely, any priming effects in the reverse order were desirable as the RAAT was a test of awareness for AAT stimuli. In addition, unlike the RAAT, the AAT assessed all aspects of Greenberg and Pascual-Leone's definition of awareness and arousal (see chapter 2) so was arguable more important. Therefore, the AAT always preceded the RAAT in line with previous studies (e.g. Lange et al., 2008). In addition, the EPQ was administered between the AAT and RAAT as a distracter. Finally, the AAT and RAAT were thought to be the easiest of the tasks so were presented first and second overall to maximise retention in a sample prone to drop out. The remaining questionnaires (ERQ, NMRS, LEAS) were administered at the end of session one.

The IBT1 established a baseline measure of interpretation bias and IBT2 assessed to what extent this could be shifted by positive or negative priming. Hence it was important that IBT1 ran before IBT2. In addition, if IBT2 had been presented first the instructions to use the prime may have disproportionately interfered with performance during IBT1 (the reverse was thought less likely). Further, as described above, running IBT1 first helped participants make sense of using the additional prime in IBT2. Moreover, keeping any carry over effects between IBT1 and 2 constant in a direction that reflected Greenberg and Pascual-Leone's model was preferred. The model suggests making sense of emotion (as tested by IBT1) precedes transforming emotion (as tested by IBT2). Finally, the IBTs were thought to be more difficult than the AAT and RAAT but less controversial than the ERT so they were conducted in the middle session. As the longest of the tasks running them

consecutively meant fatigue effects were a concern. Therefore participants were given a 15 minute break between the two tasks.

The prison regime was rigid so testing had to be conducted within strict time boundaries. These were 3 hours in the morning (9am to 12pm) and 2 hours in the afternoon (2pm to 4pm). In addition, participants had therapy schedules that needed to be respected. It was thought running the tasks in a fixed order would best help manage these competing demands and accommodate methodological requirements outlined above. Tasks were conducted in three sessions as described in Table 20. To address carry over effects between sessions they were separated in time by 24-hour periods as suggested in the literature (Cohen, 2008; Kantowitz et al., 2009).

Table 20 Order of tasks and questionnaires

Session	Task	Length (min)
	AAT	20
1	EPQ	20
	RAAT	20
	ERQ, NMRS, LEAS	30
	24 Hours	
	IBT1	45
2	*Break*	15
	IBT2	35
	24 Hours	
3	ERT	30

Three months after interview, a measure of emotional engagement in psychotherapy was obtained by asking group therapists to complete three observer-rated measures (GEM, EXP, GEEQ) for each participant. Therapists were blinded to participants' test scores including psychopathy scores. Finally, prison demographic information was extracted from prison files simultaneous to interviewing.

This chapter outlined the study methods; the next chapter will describe the sample characteristics and task-by-task group comparisons. The chapter begins with the sample characteristics before moving on to outline the analysis design and present the group comparison results for each of the five emotion processing tasks. In addition, results for the related questionnaire data will be reported. The chapter concludes with a summary of the group comparison findings.

CHAPTER 6:
ANALYSIS DESIGN AND RESULTS:
TASK-BY-TASK GROUP COMPARISONS

Chapter 6

6. ANALYSIS DESIGN AND RESULTS FOR TASK-BY-TASK GROUP COMPARISONS

Chapter 5 described the methods; the next three chapters report the study results. This chapter reports results for the task-by-task group comparisons, Chapter 7 describes whole sample regression analyses for the same data and Chapter 8 presents results for the mediation analysis, which examined the study's main hypotheses. The analyses included group comparisons and whole sample regressions to permit a thorough examination of the data. The merits and limitations of each approach are discussed below.

The present chapter begins with a discussion of the merits and limitations of the group comparison and regression approaches. Next, the sample characteristics are set out followed by the analysis design and the results for each of the five emotion processing tasks (Approach Avoidance Task, Rating for Approach Avoidance Task, Emotion Regulation Task, Interpretation Bias Task 1, Interpretation Bias Task 2). These tasks were chosen to examine the four cognitive mechanisms of emotion processing associated with therapeutic progress and described in chapter 1 (awareness and arousal of emotion, emotion regulation ability, interpretation of emotion, transformation of emotion) (Greenberg & Pascual-Leone, 2006). For clarity the task results are arranged in four sections each relating to one of these mechanisms.

6.1. Merits and Limitations of the Analysis Design

6.1.1. Merits and Limitations of Group Comparisons

Group comparisons examine the extent to which two or more groups are different from one another. Therefore one merit of using this approach was that it allowed categorical treatment of psychopathy in line with the diagnostic cut-off (two groups, low ≤ 29.9 compared to high ≥ 30) (Hare, 2003). In addition, group comparisons allow detailed examination of complex mixed designs with repeated measures within subjects. This was the case for the current study where each task had several factors repeated within subjects, for example, emotion type (positive, negative), direction (congruent, incongruent) and severity (extreme, non-extreme). Two main advantages arise from this. First, it is possible to examine interactions between factors. Second, because the error variance (the extraneous variance) of the within subject factors of these tasks is likely to be small (subjects vary from themselves less than they do others), sensitivity and power to detect true effects is increased (Shaugnessy, Zechmeister, & Zechmeister, 2011). One disadvantage of group comparisons that use extreme dichotomization is loss of information about individual differences residing in the mid-range data (MacCallum, Zhang, Preacher, & Rucker, 2002; Preacher, Rucker, MacCallum, & Nicewander, 2005). Preacher et al. (2005) recommend that group comparisons be carried out using full-range data therefore this approach was taken in the current study (see below 3.1). However, it should be acknowledged that some authors now consider the dichotomisation of a continuous variable to be ill advised. Currently opinion (and practice) is mixed and journals still publish data treated in this way. It is beyond the scope of my

thesis to resolve this question and therefore I present both approaches (group and continuous).

6.1.2. Merits and Limitations of Regression

In contrast to group comparison, correlation and regression examine the extent to which two or more variables (rather than groups) are related to each other and the nature (direction, strength) of the relationship. These approaches have the advantage of using whole sample data (MacCallum et al., 2002; Preacher et al., 2005). In the current study, regression allowed psychopathy to be treated as a continuous variable. Viewing psychopathy dimensionally reflects other areas of personality research which place personality types or traits within a continuum rather than a taxonomic category (Claridge & Davis, 2003). In addition, multiple regression allows simultaneous examination of more than one independent variable so that the best predictor(s) for the dependent variable can be identified. This permits a fuller understanding of influences on the dependent variable and gives an account of the amount of variance explained by predictors separately and collectively. One limitation of regression is that it is very sensitive to outliers therefore relationships must be linear for results to be optimal. If the data are linear except for one outlier the line of fit will be drawn to include the outlier and therefore may be misleading (stronger or weaker than the true relationship) (Cohen & Cohen, 1983). A further limitation is that any predictions are restricted to the range of data observed (Osborne & Waters, 2002), for example findings for a range of scores between 2 and 20 cannot be used to make predictions about scores below 2 or higher than 20 in a different

sample. While some authors prefer correlation and regression to group comparison, results may be most robust where findings between the approaches agree. Finally, using regression to examine the data was important in relation to the mediation analysis which examined the study's main hypotheses. Regression results were used to inform which variables to include in the mediation analysis.

6.2. Sample Characteristics

Data describing the participant characteristics was collected from prison records simultaneous to testing. Tables 1, 2 and 3 present participant socio-demographic characteristics, psychiatric and offending histories and clinical features respectively.

Table1 Socio-demographic characteristics of the sample

Characteristic	Number	%*
Age at interview (years) (*N* = 70)		
Median (IQR)	40.5	34.8 to 48
Country of birth (*N* = 70)		
UK	67	95.7
Other	3	4.3
Ethnic group (*N* = 70)		
White	55	78.6
Other	15	21.4
Marital status (*N* = 70)		
Single	50	71.4
Married	3	4.3
Widowed, divorced, separated	17	24.3
Any children (*n* = 58)	34	58.6
Years in full time education (*n* = 64)		
Median (IQR)	11	10 to 11
Secondary education completed (*n* = 64)	35	54.7
Received special education (*n* = 68)	23	33.8
Ever employed (*n* = 69)	52	75.3
Longest continual employment (months) (*n* = 52)		
Median (IQR)	3	0 to 22.5

* unless otherwise stated

Table 1 shows the participant average age was just over 40 years. The majority were UK born (96%), white (79%) and single (71%) and just over half (59%) had children. A small majority completed secondary education (55%) and a notable minority received special education (34%). Most had been employed at some point (75%) but the longest average stay in employment was only 3 months.

Table 2 Psychiatric and offending histories of the sample

Psychiatric history	**Number**	**%***
Number of psychiatric hospital admissions prior to age 18 (*N* = 70)		
None	59	84.3
One	6	8.6
Two or more	5	7.1
Number of psychiatric hospital admissions age 18 or after (*N* = 70)		
None	46	65.7
One	12	17.1
Two or more	12	17.1
Conduct disorder prior to age 18 (*n* = 54)	39	72.2
History of hazardous drug use (*N* = 70)	35	50
History of hazardous alcohol use (*N* = 70)	31	44.3
Childhood trauma / abuse (*N* = 70)		
Physical	41	58.6
Sexual	24	34.3
Neglect	12	17.1
Psychological / emotional	27	38.6
Any of above	57	81
Offending history		
Current legal status (*N* = 70)		
Life sentence	58	82.9
Indeterminate	8	11.4
Determinate	4	5.7
Tariff (years), (*N* = 70)		
Median (IQR)	12	6 to 5
Time served on current sentence (*N* = 70)		
Median (IQR)	10.6	4.5 to 16.7
Current index offence (*N* = 70)		
Homicide	37	52.9
Other violent	15	21.4
Sexual	16	22.9
Other	2	2.9
Drugs used at time of index offence (*n* = 61)	36	59
Alcohol used at time of index offence (*n* = 59)	39	66.1
Number of convictions (including index offence) (*N* = 70)		
Median (IQR)	13	7 to 9

*unless otherwise stated

Table 2 shows a minority (16%) had at least one psychiatric hospital admission prior to age 18 with just over twice as many (34%) admitted after that age. Half had a history of hazardous drug use and slightly less (44%) had a history of hazardous alcohol use. Thirty nine participants (72%) had been diagnosed with conduct disorder before 18 years. A large majority had experienced some form of childhood trauma or abuse caused by the actions of a parent or carer (81%). Over half (59%) had experienced physical abuse, over one third had experienced sexual abuse (34%) and a similar number had undergone psychological or emotional abuse (39%). A smaller number had been neglected (17%).

The great majority were serving life sentences (83%) with an average tariff of 12 years. The average amount of time served on the current sentence was just over 10 years. A majority were serving sentences for homicide (53%) with just under a quarter serving sentences for other violent offences (21%) and a similar amount for sexual offences (23%). The average number of convictions including the index offence was 13. At the time of the index offence more than half (59%) were using drugs and just under two thirds (66%) had consumed alcohol.

Table 3 shows the mean PCL-R score was 27.8 (*SD* = 5.5), just below the diagnostic cut-off of 30, with the lowest score at 13 and the highest 36. This is considerably higher than Hare found for noncriminals (*M* = 5) and somewhat higher than that for the general prison population (*M* = 22) (Hare, 1996).The average number of personality disorder diagnoses per participant was two. The most predominant diagnoses were in Cluster B (histrionic, narcissistic,

borderline or antisocial) (68%). Just over one quarter had a diagnosis of anxiety, depression or bipolar (26%), and 11% had a diagnosis of schizophrenia or psychosis that was currently being managed with medication. Almost half (49%) had a diagnosis related to substance abuse.

Comparing Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) scores for the study sample against EPQ normative data for males (community and prison) showed some similarities and differences. Scores for Neuroticism (*M* = 13.2, *SD* = 5.6) were higher than the community normative scores (*M* = 9.8, *SD* = 5.2), but comparable to the prison scores (*M* = 13.1, *SD* = 5.2). Psychoticism scores (*M* = 9.4, *SD* 5.0) were considerably higher than both the community and prison normative scores (*M* = 3.8, *SD* 3.1 and *M* = 5.7, *SD* 3.6 respectively). Extraversion scores (*M* = 14.9, *SD* = 8.7) were slightly elevated compared to both community and prison scores (*M* = 13.2, *SD* = 4.9 and *M* = 13.6, *SD* 4.7 respectively). Lie scores (*M* = 8.1, *SD* = 3.2) were somewhat higher than the community (*M* = 6.8, *SD* 4.1) and prison scores (*M* = 6.8, *SD* = 4.3).

Average risk assessment scores for sexual (Static-99; Harris et al., 2003) and violent (Historic Clinical Risk-20 [HCR-20; Webster, Douglas, Eaves, & Hart, 1997]) re-offending both indicated high levels of risk (*M* = 27.4, *SD* = 5.3 and *M* = 6.3, *SD* = 1.9 respectively). The mean IQ was 95 (*SD* = 13.9) with a range of 66 to 141. IQ was lower than the general population but higher than found by Mottram for the UK prison population (*M* = 87, *SD* = NA) (Mottram, 2007). A small proportion (10%) was diagnosed learning disabled.

Table 3 Clinical characteristics of the sample

Clinical diagnoses	**Number**	**%***	**Range**
PCL-R, (SD) (*N* = 70)	27.8	5.5	13 to 36
IPDE, (*N* = 70)			
Median number (IQR) of PD diagnoses per prisoner	2	1 to 3	
Average number (SD) of PD diagnoses per prisoner	2.2	1.5	
Number of PD diagnoses in:			
Cluster A: Eccentric-odd	29	19	
Cluster B: Dramatic-erratic	104	68	
Cluster C: Anxious-fearful	20	13	
Total all clusters	153	100	
DSM III Axis I Diagnoses (*N* = 70)			
Number of Diagnoses in:			
Anxiety, depression and bipolar	18	25.7	
Schizophrenia and psychoses	8	11.4	
Substance abuse	34	48.6	
Other**	16	11.2	
DSM III Axis II Diagnoses (*N* = 70)	7	10	
LD			
Clinical dimensions	**Mean**	**SD**	
Eysenck Personality Questionnaire Revised (EPQ-R) (*n* = 68)			
Neuroticism	13.2	5.6	
Psychoticism	9.4	5	
Extraversion	14.9	8.7	
Lie score	8.1	3.2	
Risk assessment scores			
HCR-20 (*n* = 50)	27.4	5.3	17 to 38
Static 99 (*n* = 35)	6.3	1.9	3 to 10
IQ score (*n* = 64)	95.3	13.9	66 to 141

*unless otherwise stated ** Other disorders include 5 Asperger's, 5 Attention Deficit Hyperactivity Disorder , 3 Eating Disorder, 1 Sexual Sadism, 1 Somatoform, 1 Tourette's

6.3. Task-by-Task Analysis Design

6.3.1. Emotion Processing Task Data

As stated above and elsewhere, emotion processing ability was assessed using computerised tasks each chosen to measure one of the cognitive mechanisms of emotion processing believed to be associated with treatment progress (Greenberg & Pascual-Leone, 2006) (see chapter 2 for a discussion of the rationales that guided the choice of each task). These mechanisms are awareness and arousal, emotion regulation, interpretation of emotion and transformation of emotion

For each task a group comparison based on the clinical threshold of 30 (high psychopathy group = PCL-R ≥ 30, lower psychopathy group = PCL-R < 30) was performed. Two main factors guided the decision to use a PCL-R score of 30 to determine the group split. First, and most importantly, a score of 30 or more (in the absence of any other personality disorder) is one of the criteria used to assess whether a prisoner requires treatment at one of the Dangerous and Severe Personality Disorder (DSPD) Units in the UK (DSPD Programme, 2008). This also coincides with Hare's recommended cut-off score (Hare, 2003). Second, observation of the sample distribution revealed the mean and median scores were high at 27.8 and 29.5 respectively. Therefore using a cut-off score of 30 employed the whole sample and gave two groups of almost equal size (low *n* = 32 versus high *n* = 30 for the Emotion Regulation Task (ERT), low *n* = 36 versus high *n* = 32 for all other tasks). By contrast a cut-off score of 25, the suggested UK (Semple & Smyth, 2009) and research (Rice, Harris, & Cormier, 1992) cut-off for psychopathy, would have given two very uneven groups (low *n* = 19 versus high *n* = 43 for the ERT, low *n* = 20 versus high *n* = 48 for all other tasks). These groups were compared using repeated measures ANOVAs with within subjects factors of emotion processing ability (number of factors dependent on task), with Group (high psychopathy, lower psychopathy) as a between subjects factor. For each task, indices of emotion processing were calculated and used in the analyses.

Table 4 presents the characteristics of the whole sample and each group separately. The two groups differed significantly in psychopathy score (by

design), and on EPQ Neuroticism, which was therefore used as a covariate in subsequent group comparisons.

Table 4 Participant characteristics for emotion processing task analyses (means with standard deviations in parentheses, unless otherwise stated)

	Whole Sample (n=68[***])	**High Psychopathy Group (n=32[***])**	**Low Psychopathy Group (n=36[***])**	**p[*]**
Age	41 (10)	43 (11)	39 (9)	ns
Years spent in full time education	10.5 (.74)	10.6 (0.7)	10.3 (0.8)	ns
IQ score[**]	95 (14.0)	98 (13.3)	93 (14.4)	ns
PCL-R, overall score	27.9 (5.5)	32.4 (1.8)	23.9 (4.4)	<.001
Factor 1	10.9 (3.3)	13.3 (1.7)	8.8 (2.8)	<.001
Factor 2	14.3 (3.0)	16.1 (1.6)	12.7 (3.1)	<.001
EPQ-R				
Neuroticism	13.0 (5.6)	11.0 (5.0)	14.9 (5.5)	=.04
Psychoticism	9.4 (5.1)	8.8 (4.7)	10.0 (5.4)	ns
Extraversion	15.0 (8.8)	15.6 (5.1)	14.5 (11.2)	ns
Lie	8.0 (3.2)	8.4 (3.3)	7.7 (3.1)	ns
Clinical Diagnoses				
Personality Disorder (number with 1 or more diagnosis):				
Cluster A: Eccentric-odd	24	12	12	ns
Cluster B: Dramatic-erratic	60	29	31	
Cluster C: Anxious-fearful	15	5	10	
All clusters (mean number of diagnoses)	2.2 (1.5)	2.4 (1.6)	1.9 (1.5)	
DSM III Axis I Disorders (number of participants with one or more diagnosis):	17	8	9	ns
Anxiety/Depression/Bipolar Psychoses	8	5	3	
Criminal profile				
Previous convictions	12.9 (14.5)	16.3 (19.1)	9.8 (8.2)	ns
Tariff (years)	12.0 (6.4)	12.8 (6.5)	11.4 (6.4)	ns
Time served (years)	11.2 (7.1)	12.0 (6.8)	10.5 (7.5)	ns
Index offence at time of testing (number of participants)				
Homicide	36	22	14	ns
Other violent	14	5	9	
Sexual	16	5	11	
Other	2	0	2	
Risk of reoffending				
HCR20	27.3 (5.4)	28.5 (5.6)	26.1 (5.1)	ns
Static 99	6.4 (1.9)	6.3 (1.6)	6.4 (2.2)	ns

[*] p values reflect significance of high and low group comparisons using either independent t-tests or chi squared analyses, as appropriate.

[**] Normative scores measured using either the Wechsler Adult Intelligence Scale or the WASI

[***] Numbers may vary on individual measures due to occasional missing data points

6.3.2. Questionnaire Data

In addition to the computerised tasks three questionnaires assessed emotion processing ability in psychopathy (Levels of Emotional Awareness Scale

[LEAS; Lane, Quinlan, Schwartz, Walker, & Zeilin, 1990], Emotion Regulation Questionnaire [ERQ; Gross & John, 2003], Negative Mood Regulation Scale [NMRS; Cantanzaro & Mearns, 1990]). For each questionnaire group comparisons were conducted using independent *t* tests with psychopathy (high, lower) as the group variable and emotion processing ability (questionnaire score) as the dependent variable. Group splits for questionnaires were as described above (see Table 4).

6.4. Awareness and Arousal

Awareness and arousal was the first emotion processing indicator examined. As described in chapter 5 this indicator was measured using the Approach Avoidance Task (AAT), Ratings for Approach Avoidance Task (RAAT) and LEAS. Results for these measures are now described.

6.4.1. Approach Avoidance Task

6.4.1.1. AAT Power Calculations

Approach / avoidance behaviour on the task proposed is indicated by a Group x Emotion x Ratio (2 x 2 x 2) or Group x Emotion x Ratio x Direction (2 x 2 x 2 x 2) within-between interaction. Assuming 80% power, alpha = .05, a correlation between repeated measures of 0.7, and correcting for nonsphericity, our sample of 32 high and 36 low psychopathy participants per group allowed detection of medium effect sizes, corresponding to $f^2 = 0.12$ (2 x 2 x 2 design) and $f^2 = 0.15$ (2 x 2 x 2 x 2 design) (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996).

6.4.1.2. AAT Data Preparation

Following Lange, Keijsers, Becker and Rinck (2008) median reaction times (RT) were calculated for each emotion (happy, anger, disgust, fear, sadness) by ratio (6:6, 10:2) and movement (push, pull). RTs for neutral crowds (pull, push) were calculated in the same manner but without ratio. Previous studies have shown that intermediate and end joystick positions have comparable effects (Rinck & Becker, 2007). Therefore only the end position RTs were calculated. Error trials and outliers (RT < 300ms or > 2000ms) were excluded. Outliers were excluded based on 2.5 *SD* and viewing the distribution tail off (2.86% data excluded). Error frequency was very low (1%) therefore analysis of this was meaningless.

6.4.1.3. AAT Group Comparisons

Analyses reported below were first conducted using the factor emotion with five separate levels (anger, disgust, fear, sad, happy). No significant differences were seen between types of negative emotion and these were therefore collapsed into a single category ‘negative’ which was contrasted with positive (happy). This latter approach is reported below.

Two indices were calculated to analyse the AAT. For the first index, RTs for pull were subtracted from those for push giving an index score where positive values indicated overall approach (slower avoidance and faster approach) and negative values showed overall avoidance. Indices were calculated by emotion (positive, negative) for each ratio (6:6, 10:2) and neutral crowds were not used, as they did not differ in ratio. The second index was calculated so that neutral crowds acted as a baseline from which emotion crowds were

subtracted (Approach Index = Neutral Pull - Emotion Pull; Avoidance Index = Neutral Push - Emotion Push). For the approach index positive values indicated greater approach (vice versa for the avoidance index) relative to neutral.

6.4.1.3.1. First AAT index: emotion pull from emotion push

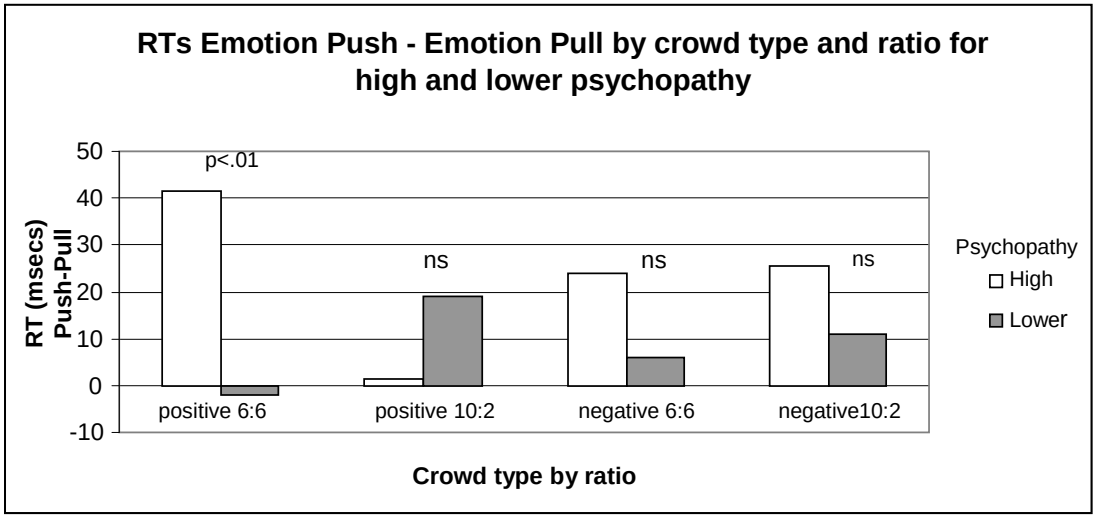
An index of approach avoidance behaviour was calculated. First for all crowd types other than happy the emotion expressed (anger, disgust, fear, sadness) was collapsed into one category (negative) with happy crowd types forming the positive category. Then RTs for pull were subtracted from those for push giving an index score where positive values indicated overall approach (slower avoidance and faster approach) and negative values showed overall avoidance. Indices were calculated by emotion (positive, negative) for each ratio (6:6, 10:2).

A 2 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Emotion (positive, negative) x Ratio (6:6, 10:2) was performed, with EPQ Neuroticism, as a covariate. There were no main effects (all *F*s < 1). However there was a significant interaction of Group x Ratio, $F(1, 66) = 8.01$, $p < .01$, partial $\eta^2 = .10$, which was qualified by a significant three way interaction of Group x Emotion x Ratio, $F(1, 66) = 6.08$, $p = .02$, partial $\eta^2 = .10$.

To examine this interaction 2 x 2 ANOVAs (Group x Ratio) were conducted for each emotion type separately. A significant effect of Group x Ratio for positive emotion (but not negative) $F(1, 66) = 7.83$, $p < .01$, partial $\eta^2 = .10$ was found. Bonferroni-corrected follow up *t* tests revealed the high psychopath group

demonstrated faster approach to crowds expressing moderate levels of positive emotion (ratio 6:6) than the lower psychopathy group, $t(66) = 2.8$, $p < .01$, $d = .61$ (see Figure 1). There were no significant group differences for positive emotion at ratio 10:2 ($p > .3$). Finally, single sample t tests compared mean values for approach to positive crowds (6:6, 10:2) to zero and found significant absolute approach to positive crowds (6:6) (as opposed to just group differences), $t(66) = 2.8$, $p < .01$, $d = .11$.

Figure 1 Psychopathy related group differences in RT for approach to crowds expressing varying levels of emotion (positive, negative)



6.4.1.3.2. Second AAT index: emotion pull / push from neutral pull / push

A further analysis of the same design was conducted. For this a second index of approach avoidance behaviour was calculated as described above whereby neutral crowds acted as a baseline from which emotion crowds were subtracted (Approach Index = Neutral Pull - Emotion Pull; Avoidance Index = Neutral Push - Emotion Push). For the Approach Index positive values indicated greater approach (vice versa for the Avoidance Index). Indices were calculated according to condition (Emotion x Ratio).

A 2 x 2 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Emotion (positive, negative) x Ratio (6:6, 10:2) x Direction (push, pull) was performed, with EPQ Neuroticism, as a covariate. A significant interaction of Group x Emotion x Ratio x Direction was found, $F(1, 66) = 6.08$, $p < .01$, partial $\eta^2 = .10$. This interaction was investigated by conducting a further 2 x 2 x 2 ANOVA (Group x Ratio x Direction) for each type of emotion. A significant interaction of Group x Ratio x Direction for positive (but not negative) emotion $F(1, 66) = 9.34$, $p < .01$, partial $\eta^2 = .10$ was found. An additional 2 x 2 ANOVA (Group x Direction) at each level of Ratio for positive crowds was conducted. A significant effect of Group x Direction for crowds expressing moderate levels of positive emotion was found, $F(1, 66) = 4.68$, $p = .03$, partial $\eta^2 = .10$. Bonferroni-corrected follow up *t* tests revealed the high psychopathy group showed significantly faster approach to positive crowd types (ratio 6:6) relative to neutral (4.63ms vs. -20.21ms) $t(66) = 2.2$, $p < .01$, $d = .53$.

6.4.2. Ratings Approach Avoidance Task

6.4.2.1. RAAT Power Calculations

Awareness of emotion is indicated by a Group x Emotion x Ratio (2 x 2 x 2) within-between interaction. Assuming 80% power, alpha = .05, a correlation between repeated measures of 0.7, and correcting for nonsphericity, our sample of 32 high and 36 low psychopathy participants per group allowed detection of medium effect sizes, corresponding to $f^2 = 0.12$ (Cohen, 1992; Erdfelder et al., 1996).

6.4.2.2. RAAT Data Preparation

Self-reported ratings assessed perceived levels of crowd approval on a 7-point Likert scale, with lower values indicating greater approval. Mean ratings were calculated for each participant separately according to emotion (happy, anger, disgust, fear, sadness) and ratio (6:6, 10:2). Group comparisons controlled for confounding variables in the same way as reported above.

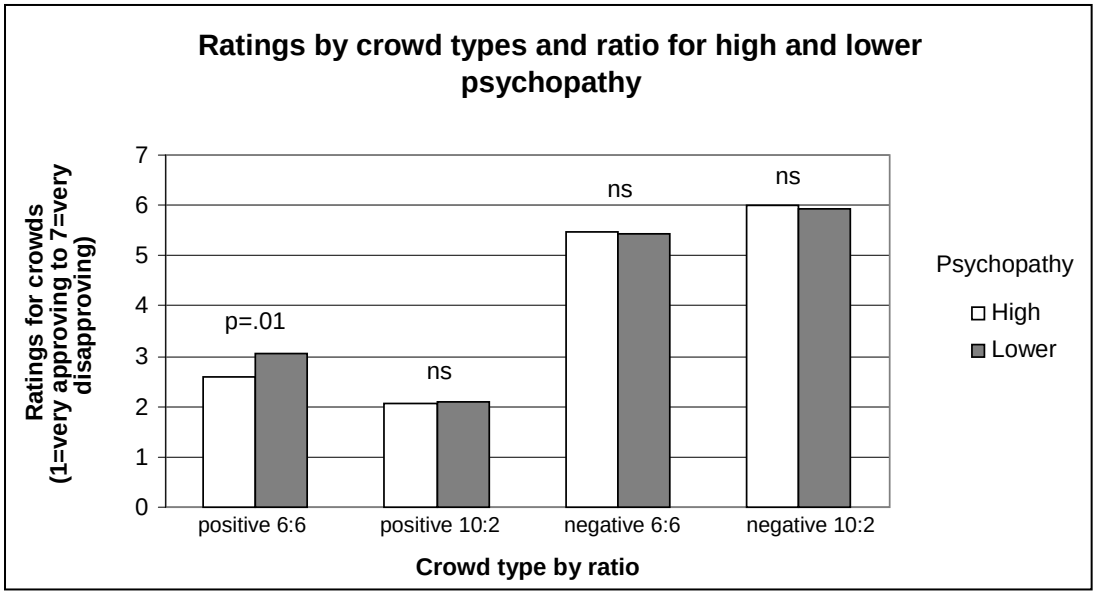
6.4.2.3. RAAT Group Comparisons

The RAAT analyses reported below were first conducted using the factor emotion with 5 separate levels (anger, disgust, fear, sad, happy). No significant differences were observed between types of negative emotion and these were therefore collapsed into a single category 'negative' which was contrasted with positive (happy) as before. Crowd types were arranged therefore by emotion (positive, negative) and ratio (6:6, 10:2). This latter approach is reported below.

A 2 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Emotion (positive, negative) x Ratio (6:6, 10:2) was performed, with EPQ Neuroticism, as a covariate. A significant main effect of emotion was found, $F(1, 66) = 69.31$, $p < .01$, partial $\eta^2 = .50$, due to positive crowds being rated as more approving ($M = 2.47$, $SD = .66$) than negative crowds ($M = 5.71$, $SD = .65$). A significant effect of Emotion x Ratio was also found, $F(1, 66) = 32.00$, $p < .01$, partial $\eta^2 = .30$, as higher ratios of emotion were rated more extremely (more approving *and* more disapproving) ($M = 2.84$, $SD = .73$ [positive 6:6] vs. $M = 2.10$, $SD = .73$ [positive 10:2] and $M = 5.45$, $SD = .64$ [negative 6:6] vs. M = 6.00, $SD = .70$ [negative 10:2]).

A further interaction of Ratio x Group was found, $F(1, 66) = 7.19$, $p < .01$, partial $\eta^2 = .10$. This was qualified by a three-way interaction of Emotion x Ratio x Group which approached significance, $F(1, 66) = 3.73$, $p = .06$, partial $\eta^2 = .10$. This interaction was examined by conducting 2 x 2 ANOVAs (Group x Ratio) at each level of emotion separately. A significant effect of Group x Ratio for positive emotion (but not negative), $F(1, 66) = 6.50$, $p = .01$, partial $\eta^2 = .10$ was found. Bonferroni-corrected follow up *t* tests indicated significant group differences for rating positive crowds at ratio 6:6, $t(66) = -2.55$, $p = .01$, $d = .56$ (see Figure2). The high psychopathy group rated crowds expressing moderate levels of positive emotion as more approving than did the lower group ($M = 2.59$, $SD = .49$ vs. $M = 3.05$, $SD = .89$).

Figure 2 Psychopathy-related group differences in perceived approval from positive crowds expressing moderate levels of positive emotion



6.4.3. Levels of Emotional Awareness Scale

6.4.3.1. LEAS Power Calculations

Awareness of emotion in self and others is indicated by between-groups comparisons. Assuming 80% power, alpha = .05, our sample of 32 high and 36 low psychopathy participants per group allowed detection of medium effect sizes, corresponding to *d* = 0.61 (Cohen, 1992; Erdfelder et al., 1996).

6.4.3.2. LEAS Group Comparisons

Self, Other and Total scores were each summed to produce a score for that scale as described in chapter 5. Higher scores indicated greater emotional awareness for self, others and overall. Independent *t* tests were conducted to compare these scores between high and lower psychopathy groups. No Significant differences were found for any of the subscales (all *p*s > .3).

6.4.4. Summary of Results for AAT, RAAT and LEAS

Table 5 Summary of group comparison results for AAT, RAAT and LEAS

Index	Effect	Main result	*p*
		Approach / Avoidance Task	
RT Emotion push - Emotion pull	Group x Emotion x Ratio x Direction	High psychopathy group showed faster approach to positive crowds (ratio 6:6)	<.01
	Emotion x Direction	Significant absolute approach to positive crowds (6:6)	<.01
RT Neutral pull / push - Emotion pull / push	Group x Emotion x Ratio x Direction	High psychopathy group showed faster approach to positive crowds (ratio 6:6)	<.01
		Ratings Approach / Avoidance Task	
Average ratings by Emotion and Ratio	Emotion main effect	Positive crowds rated more approving than negative crowds	<.01
	Emotion x Ratio	Higher ratios rated more extremely (more approving / more disapproving)	<.01
	Group x Emotion x Ratio	High psychopathy group rated positive crowds (ratio 6:6) more approving than did low group	=.01
		Levels of Emotional Awareness Scale	
LEAS Self	NA	No significant results	ns
LEAS Other	NA	No significant results	ns
LEAS Total	NA	No significant results	ns

The AAT data revealed four main findings of interest. First, approach was faster to crowds expressing moderate than intense levels of happiness. This was particularly true for clinical levels of psychopathy. Third, this group also perceived expression of moderate levels of positive affect as more approving than did the low psychopathy group. Fourth, regardless of psychopathy level, positive crowds were judged as more approving than negative crowds and the greater the expression of emotion (negative and positive) the more approving or disapproving they were rated to be (see Table 5).

6.5. Emotion Regulation

Emotion regulation was the second emotion processing indicator examined. This indicator was measured using the Emotion Regulation Task (ERT) (described in chapter 5). Two types of data were collected; heart rate (HR) and rating of strength of emotion (1 = weak to 7 = strong) during picture viewing. In addition, the ERQ and NMRS were administered.

Participant numbers for the emotion regulation data differed from those for the other three emotion processing indicators. Seven participants refused to have their HR monitored during the task due to paranoid beliefs about the equipment, although one of these agreed to complete the ratings only. Consequently, complete datasets were available for 61 participants with 62 sets of data for the self-report ratings.

The analyses design was the same as described above (group comparison) and Table 6 presents the characteristics of the whole sample and each group separately. As for the previous task analyses the two groups differed

significantly in psychopathy score (by design), and on EPQ Neuroticism, which was therefore used as a covariate in subsequent group comparisons.

Table 6 Participant characteristics for ERT (means with standard deviations in parentheses, unless otherwise stated)

	Whole Sample (n=62*)**	**High Psychopathy Group (n=30***)**	**Low Psychopathy Group (n=32***)**	**p ***
Age	41 (11)	42 (12)	39 (10)	ns
Years spent in full time education	10.5 (.76)	10.3 (0.7)	10.6 (0.8)	ns
IQ score**	96 (13.9)	99 (13.6)	94 (14)	ns
PCL-R, overall score	27.8 (5.7)	32.5 (1.9)	23.5 (4.5)	<.001
Factor 1	11.0 (3.3)	13.5 (1.6)	8.7 (2.7)	<.001
Factor 2	14.1 (3.0)	15.9 (1.4)	12.5 (3.2)	<.001
EPQ-R				
Neuroticism	13.2 (5.6)	11.4 (5.2)	15.0 (5.5)	=.01
Psychoticism	9.3 (5.0)	9.0 (4.8)	9.6 (5.2)	ns
Extraversion	13.9 (5.9)	15.4 (5.5)	12.6 (6.0)	ns
Lie	8.1 (3.1)	8.1 (3.2)	8.1 (3.1)	ns
Clinical Diagnoses				
Personality Disorder (number with 1 or more diagnosis):	17	10	7	ns
Cluster A: Eccentric-odd	22	12	10	
Cluster B: Dramatic-erratic	16	6	10	
Cluster C: Anxious-fearful	2.2	2.3	2.0	
All clusters (mean number of diagnoses)				
DSM III Axis I Disorders (number of participants with one or more diagnosis):	16	7	9	ns
Anxiety/Depression/Bipolar	5	3	2	
Psychoses				
Criminal profile				
Previous convictions	13.4 (15.2)	16.7 (19.6)	10.3 (8.5)	ns
Tariff (years)	12 (6.7)	12.6 (6.8)	11.4 (6.7)	ns
Time served (years)	10.7 (7.4)	11.6 (7.1)	9.9 (7.7)	ns
Index offence at time of testing (number of participants)				
Homicide	32	20	12	ns
Other violent	13	5	8	
Sexual	15	5	10	
Other	2	0	2	
Risk of reoffending				
HCR20	27.1 (5.4)	28.0 (5.3)	26.2 (5.4)	ns
Static 99	6.4 (1.9)	6.5 (1.4)	6.2 (2.3)	ns

* p values reflect significance of high and low group comparisons using either independent t-tests or chi squared analyses, as appropriate.

** Normative scores measured using either the Wechsler Adult Intelligence Scale or the WASI

*** Numbers may vary on individual measures due to occasional missing data points

6.5.1. Emotion Regulation Task

6.5.1.1. ERT Power Calculations

Emotion regulation on the task proposed is indicated by a Group x Picture x Instruction (2 x 2 x 3) within-between interaction. Assuming 80% power, alpha = .05, a correlation between repeated measures of 0.7, and correcting for nonsphericity, our sample of 30 high and 32 low psychopathy participants per group allowed detection of medium effect sizes, corresponding to $f^2 = 0.13$ (Cohen, 1992; Erdfelder et al., 1996).

6.5.1.2. ERT Heart Rate Data Preparation

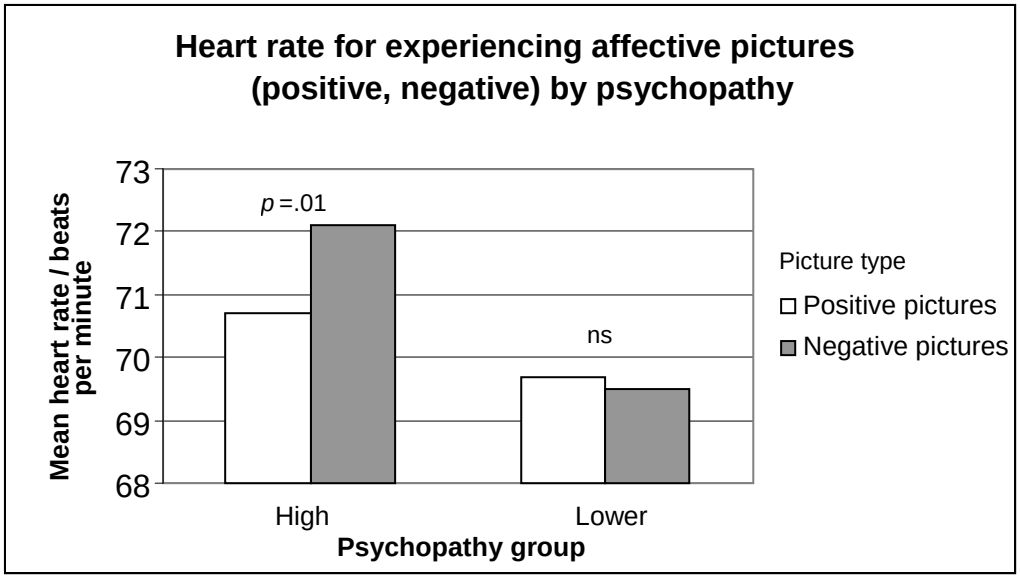
Pulse oximeter HR data was first down-sampled using a low pass differentiator filter to remove extraneous noise. Identification of individual HR events (beats) was based on semi-automated detection of peak amplitudes in the resulting differential data. User-adjustable interactive cursors provided instantaneous event interval displays, which were adjusted by eye to allow optimum event detection on a participant-by-participant basis. Individual recordings were further examined for spurious events (e.g. due to movement artefacts), which were manually removed. Spike 2 automatically generated an evenly sampled waveform from this final, clean datafile which was then used to calculate (in milliseconds) beats per minute by condition (each 10 second picture presentation).

6.5.1.3. ERT Heart Rate Group Comparison

A 2 x 2 x 3 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Picture (positive, negative) x Instruction (look, increase, decrease) was performed, with EPQ Neuroticism as a covariate. There were

no significant main effects, but a significant interaction of Group x Picture, $F(1, 54) = 5.77$, $p = .02$, partial $\eta^2 = .10$. This interaction was interpreted by examining the simple main effects of picture at each level of group. This revealed that while the lower psychopathy group showed no difference in HR response to different types of pictures, the high psychopathy group showed a significant increase in HR when viewing negative compared to positive pictures, $t(28) = 2.6$, $p = .01$, $d = 0.49$ (see Figure 3).

Figure 3 Psychopathy-related group differences in cardiovascular response.



6.5.1.4. ERT Rating Data

Self-reported ratings assessed the strength of feeling experienced on a 7-point Likert scale while viewing each picture, with higher values indicating stronger feeling. Average ratings were calculated for each participant separately according to condition (Picture type x Instruction). As before, EPQ Neuroticism was introduced as a covariate.

6.5.1.5. ERT Ratings Group Comparison

A 2 x 2 x 3 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Picture (positive, negative) x Instruction (look, increase, decrease) was performed, with EPQ Neuroticism as a covariate. There were no significant main effects or interactions (*p*s all > .2).

6.5.2. Emotion Regulation Questionnaires

6.5.2.1. Emotion Regulation Questionnaires Power Calculations

Self-report emotion regulation is indicated by between-groups comparisons (see 5.2.2 below). Assuming 80% power, alpha = .05, our sample of 33 high and 37 low psychopathy participants per group allowed detection of medium effect sizes, corresponding to *d* = 0.60 (Cohen, 1992; Erdfelder et al., 1996).

6.5.2.2. ERQ and NMRS Data

Scores were calculated for the questionnaires (ERQ, NMRS) as described in chapter 5. The ERQ comprised of four suppression items and six reappraisal items and response was on a 7-point Likert scale (1 = disagree strongly to 7 = agree strongly). Higher scores indicated greater reliance on each of the emotion regulation styles (suppression, reappraisal) with lower scores desirable for suppression and higher scores desirable for reappraisal. The NMRS was scored on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Higher scores indicated positive expectancies about ability to regulate moods if upset.

6.5.2.3. ERQ and NMRS Group Comparisons

Independent *t* tests were conducted to compare scores on each questionnaire between high and lower psychopathy groups. No significant associations were found for either questionnaire (all *p*s > .1).

6.5.3. Summary of Results for ERT, ERQ and NMRS

The ERT data reflected two main phenomena of interest. First, there was clear evidence of psychopathy related psychophysiological differences, *in the absence of* corresponding differences in subjective self-report experience. Second high psychopathy (PCL-R ≥ 30) involved faster heart rate during negative picture processing (see Table 7).

Table 7 Summary of group comparison results for ERT, ERQ and NMRS

Effect	Main result	*p*
	Emotion Regulation Task (heart rate data)*	
Group x Picture	High psychopathy group showed increased heart rate when viewing negative compared to positive pictures	=.01
	Emotion Regulation Task (rating data)**	
None	No significant main effects or interactions	ns
Scale		
	ERQ and NMRS (questionnaire data)	
ERQ Reappraisal	No significant results	ns
ERQ Suppression	No significant results	ns
NMRS Total	No significant results	ns

* HR bpm x Picture
** Average ratings Picture x Instruction

6.6. Interpretation of Emotion

Interpretation of emotion was the third emotion processing indicator examined. This indicator was measured using the Interpretation Bias Task 1 (IBT1). Materials used for the IBT1 are described in chapter 5 however, for clarity it may be useful to outline them here. The IBT1 assessed level of interpretation bias as measured by completion of emotionally ambiguous sentences (schema, social threat, physical threat). Schema sentences were

designed to trigger maladaptive schema responses to ambiguous social situations. These sentences were arranged under the five schema domains described by Young, Klosko and Weishaar (2003) and outlined in Table 6 (see chapter 5 for a discussion of Young's schema theory). Social and physical threat sentences were taken from Eysenck, Mogg, May, Richards and Mathews (1991) as well as MacLeod and Cohen (1993) (see Appendix K for all stimuli used).

Two types of data were collected. The sum ranks for scene interpretations (1 = closest in meaning to 4 = least close in meaning) measured interpretation bias. In addition word fragments (congruent / incongruent with a negative interpretation) were presented after each scene. Reaction time to complete word fragments gave an independent measure of interpretation bias. Results for the IBT1 (rank data and word completions) are now described.

Table 8 Young's definitions for the five schema domains

Schema domains	Definition
1.Disconnection and rejection	Expectation that one's needs for security, safety, stability, nurturance, empathy, sharing of feelings, acceptance, and respect will not be met in a predictable manner
2.Impaired autonomy and performance	Expectations about oneself and the environment that interfere with one's perceived ability to separate, survive, function independently, or perform successfully.
3.Impaired limits	Deficiency in internal limits, responsibility to others, or long-term goal-orientation. Leads to difficulty respecting the rights of others, cooperating with others, making commitments, or setting and meeting realistic personal goals.
4.Other directedness	An excessive focus on the desires, feelings, and responses of others, at the expense of one's own needs - in order to gain love and approval, maintain one's sense of connection, or avoid retaliation. Usually involves suppression and lack of awareness regarding one's own anger and natural inclinations.
5.Over-vigilance and inhibition	Excessive emphasis on suppressing one's spontaneous feelings, impulses, and choices OR on meeting rigid, internalized rules and expectations about performance and ethical behaviour; often at the expense of happiness, self-expression, relaxation, close relationships, or health.

6.6.1. Interpretation Bias Task 1

6.6.1.1. IBT1 Power Calculations

Interpretation bias on the task proposed is indicated by a Group x Content x Direction x Severity (2 x 2 x 2 x 2 and 2 x 5 x 2 x 2) and Group x Content x Direction (2 x 2 x 2 and 2 x 5 x 2) within-between interaction. Assuming 80% power, alpha =.05, a correlation between repeated measures of 0.7, and correcting for nonsphericity, our sample of 32 high and 36 low psychopathy participants per allowed detection of medium effect sizes, corresponding to f^2 = 0.15 (2 x 2 x 2 x 2 and 2 x 5 x 2 x 2 design) and f^2 = 0.12 (2 x 2 x 2 and 2 x 5 x 2 design) (Cohen, 1992; Erdfelder et al.,1996).

6.6.1.2. IBT1 Rank Data Preparation

Ranks for scene interpretations (1 = closest in meaning to 4 = least closest in meaning) measured interpretation bias. Items were scored 0 when ranked 4th (i.e. least similar to the passage), through 1, 2 and 4 for those ranked most similar to the passage. Ranks for interpretations were summed therefore a significantly higher score for a particular interpretation type indicated a bias of interpretation favouring that interpretation type. Ranks were summed by content, direction and severity.

6.6.1.3. IBT1 Rank Data Group Comparisons

6.6.1.3.1. IBT1 threat rank data

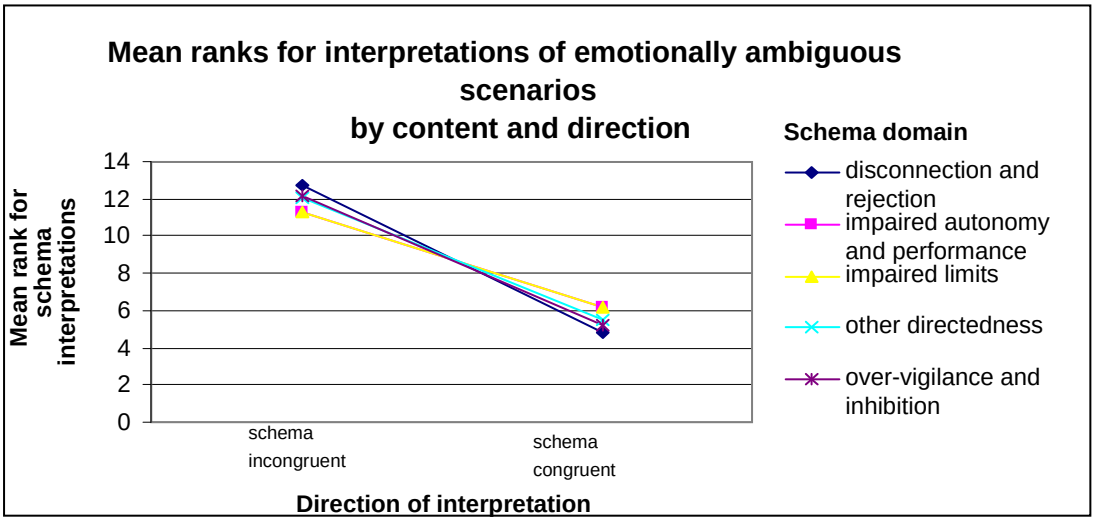
A 2 x 2 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Content (social, physical) x Direction (threat congruent, threat incongruent) x Severity (extreme, non-extreme) was performed, with EPQ Neuroticism as a covariate. There were no significant main effects

however an interaction of Group x Content x Severity approached significance, $F(1, 62) = 3.66$, $p = .06$, partial $\eta^2 = .10$. This interaction was examined by conducting 2 x 2 ANOVAs (Group x Severity) at each level of content separately. No significant effects were found (*p*s all > .3).

6.6.1.3.2. IBT 1 schema rank data

A 2 x 5 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Content (disconnection and rejection, impaired autonomy and performance, impaired limits, other directedness, over-vigilance and inhibition) x Direction (schema congruent, incongruent) x Severity (extreme, non-extreme) was performed, with EPQ Neuroticism as a covariate. Main effects of direction and severity were found, $F(1, 62) = 43.78$, $p < .01$, partial $\eta^2 = .40$ and $F(1, 62) = 10.38$, $p < .02$, partial $\eta^2 = .10$ respectively. These effects were due to greater endorsement of schema incongruent (rank $M = 6.24$, $SD = 2.10$) and non-extreme interpretations (rank $M = 10.00$, $SD = 1.06$). A significant interaction of Content x Direction was also found, $F(4, 248) = 2.65$, $p = .03$, partial $\eta^2 = .10$. Bonferroni-corrected follow up *t* tests revealed schema incongruent interpretations were ranked significantly higher than congruent interpretations across all schema domains (all *p*s < .01). Greatest differences were for disconnection and rejection ($M = 12.78$, vs. $M = 4.83$, $SD = 2.50$), $t(66) = 12.35$, $p < .01$, $d = 3.18$, with least differences for impaired limits interpretations ($M = 11.34$, vs. $M = 6.16$, $SD = 2.60$), $t(66) = 8.17$, $p < .01$, $d = 1.99$ (see Figure 4).

Figure 4 Higher ranks for schema congruent compared to incongruent interpretations across all schema domains



Further examination revealed the difference between incongruent and congruent ranks for disconnection and rejection interpretations (M = 8.04, SD = 5.33) was significantly greater than those for impaired autonomy (M = 5.23, SD = 5.94), $t(66) = 5.59$, $p < .01$, $d = .50$ and impaired limits interpretations (M = 5.19, SD = 5.19), $t(66) = 3.94$, $p < .01$, $d = .54$. Differences between impaired autonomy versus over-vigilance interpretations were also significant (M = 5.23, SD = 5.94 vs. M = 7.03, SD = 5.51), $t(66) = -2.95$, $p = .04$, $d = .32$ (see Table 9).

Table 9 Paired t tests comparing differences for congruent / incongruent interpretations between schema domains

Schema domains	Mean	SD	t	Sig.	d
disconnection and rejection vs. impaired autonomy and performance	2.81	4.11	5.59	<.001	.50
disconnection and rejection vs. impaired limits	2.85	5.93	3.94	<.001	.54
disconnection and rejection vs. other directedness	1.23	4.39	2.42	ns	-
disconnection and rejection vs. over-vigilance and inhibition	1.00	5.32	1.54	ns	-
impaired autonomy and performance vs. impaired limits	.04	6.02	.06	ns	-
impaired autonomy and performance vs. other directedness	-1.51	5.15	-2.40	ns	-
impaired autonomy and performance vs. over-vigilance and inhibition	-1.81	5.01	-2.95	.004	.32
impaired limits vs. other directedness	-1.55	7.12	-1.79	ns	-
impaired limits vs. over-vigilance and inhibition	-1.85	6.50	-2.33	ns	-
other directedness vs. over-vigilance and inhibition	-.30	5.30	-.46	ns	-

Finally an interaction of Group x Direction x Severity was significant, $F(1, 62) = 4.52$, $p = .05$, partial $\eta^2 = .10$. Bonferroni-corrected follow up *t* tests indicated the high psychopathy group, gave significantly less endorsement to extreme schema congruent interpretations compared to the lower group, $t(65) = -2.00$, $p = .05$, $d = .49$.

6.6.1.4. IBT1 Word Completion Data

Average RTs were calculated for word completions by schema domain (disconnection and rejection, impaired autonomy and performance, impaired limits, other directedness, over-vigilance and inhibition) and direction (schema congruent, schema incongruent). An index was calculated by subtracting congruent from incongruent RTs. Therefore negative values indicated faster RTs for incongruent (vice versa for congruent). Outliers (RT > 24400ms) were excluded based on 2.5 *SD* and viewing the distribution tail off (2.37% data excluded). Error trials were also removed. The error rate was very low (< 1%) therefore analysis of these was not meaningful.

6.6.1.5. IBT1 Word Completion Group Comparison

6.6.1.5.1. IBT1 threat word completion data

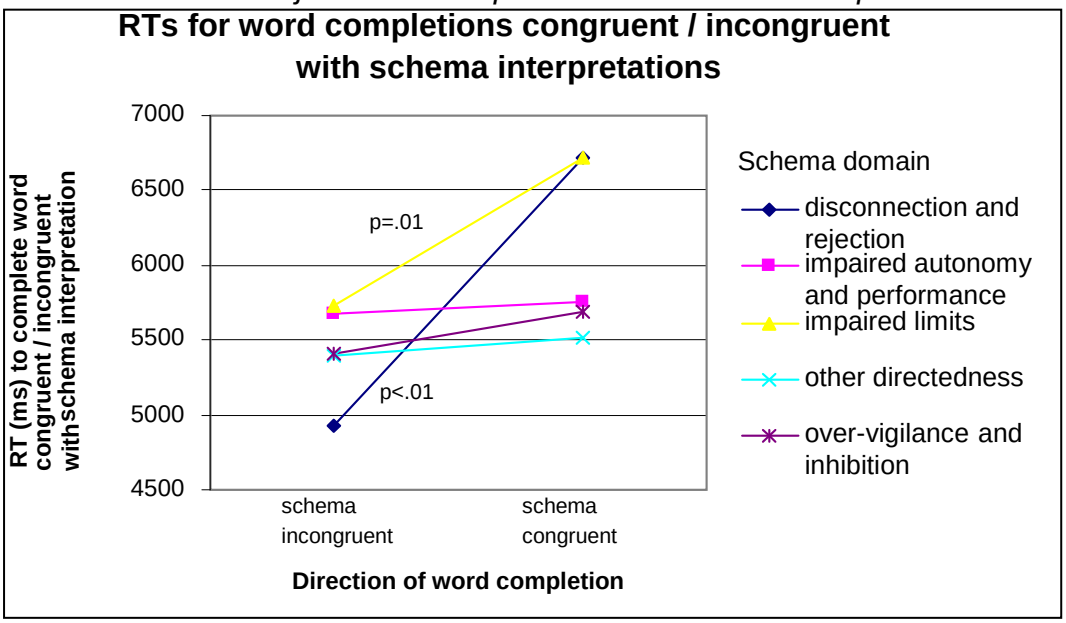
A 2 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Content (social, physical) x Direction (threat congruent, threat incongruent) was performed, with EPQ neuroticism as a covariate. No significant effects were observed (*p*s all > .3).

6.6.1.5.2. IBT1 schema word completion data

A 2 x 5 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Content (disconnection and rejection, impaired autonomy and

performance, impaired limits, other directedness, over-vigilance and inhibition) x Direction (schema congruent, incongruent) was performed, with EPQ Neuroticism as a covariate. There was a main effect of direction, $F(1, 66) = 11.44$, $p < .01$, partial $\eta^2 = .20$, due to faster RTs for schema incongruent compared to congruent word completions (-652.22ms (5425.20 vs. 6077.42ms). A significant interaction of Content x Direction, $F(1, 66) = 3.67$, $p < .01$, partial $\eta^2 = .10$ was found. Bonferroni-corrected follow up *t* tests revealed RTs were significantly quicker for schema incongruent than congruent word completions for disconnection and rejection, and impaired limits word completions (1795.49ms (4932.61 vs. 6728.01ms), $t(66) = -4.08$, $p < .01$, $d = .54$ and (-989.41ms (5733.21 vs. 6722.62ms), $t(66) = -2.64$, $p = .01$, $d = .29$, respectively (see Figure 5). Findings were non-significant for all other word types. Thus individuals were quickest to complete words incongruent with interpretations suggesting abandonment, abuse, emotional deprivation, impulsivity or entitlement.

Figure 5 Significantly faster RTs for word completions that are incongruent with disconnection / rejection and impaired limits schema interpretations



6.6.2. Summary of Results for IBT1

Table 10 shows that overall schema incongruent interpretations were ranked significantly higher than congruent interpretations across all schema domains.

Table 10 Summary of results for IBT1

Effect	Main results	*p*
	Interpretation Bias Task 1 (rank data)*	
	Threat data	
Group x Content x Severity	Interaction that approached significance	=.06
	Schema data	
Direction main effect	Greater endorsement of schema incongruent interpretations	<.01
Severity main effect	Greater endorsement of non-extreme interpretations	<.02
Content x Direction	Greater endorsement of schema incongruent interpretations across all schema domains	<.01
	Greatest difference between incongruent and congruent interpretations for disconnection and rejection domain	<.01
	Least difference between incongruent and congruent interpretations for impaired limits domain	<.01
	Difference between incongruent and congruent interpretations for **disconnection and rejection domain** significantly greater than for **impaired limits domain**	<.01
	Difference between incongruent and congruent interpretations for **over-vigilance and inhibition domain** significantly greater than for **impaired autonomy domain**	<.01
Group x Direction x Severity	High psychopathy group gave less endorsement to extreme schema congruent interpretations	=.05
	Interpretation Bias Task 1 (word completion data)*	
	Threat data	
None	There were no significant effects	ns
	Schema data	
Direction main effect	Faster RT for schema incongruent word completions	<.01
Content x Direction	Faster RT for incongruent word completions for disconnection and rejection domain	<.01
	Faster RT for incongruent word completions for impaired limits domain	<.01

*Summed ranks Content x Direction x Severity
** Average ratings Content x Direction

This was particularly true for interpretations suggesting disconnection or rejection. These results for rank data were supported by quicker RTs to complete words incongruent with schema interpretations (all domains) and

interpretations suggesting disconnection and rejection as well as impulsivity and entitlement particularly. The only group difference observed was an association between high psychopathy and less endorsement of extreme schema congruent interpretations.

6.7. Transformation of Emotion

Transformation of Emotion was the fourth emotion processing indicator examined. This indicator was measured using the Interpretation Bias Task 2 (IBT2). As described in chapter 5, the IBT2 assessed ability to resolve interpretation bias with use of a prime word congruent / incongruent to a negative interpretation. Interpretation in the same direction as the prime was used as an indication of emotion resolution. For example, schema incongruent interpretations following presentation of incongruent primes would indicate ability to utilise contextual emotional information when interpreting emotionally ambiguous situations (vice versa for congruent primes). Ranks for scene interpretations were as described for IBT1 above. Results for the IBT2 are now described.

6.7.1. Interpretation Bias Task 2

6.7.1.1. IBT2 Power Calculations

Transformation of emotion on the task proposed is indicated by a Group x Content x Direction x Severity x Prime (2 x 2 x 2 x 2 x 2 and 2 x 5 x 2 x 2 x 2) within-between interaction. Assuming 80% power, alpha = .05, a correlation between repeated measures of 0.7, and correcting for nonsphericity, our sample of 32 high and 36 low psychopathy participants per group allowed

detection of medium effect sizes, corresponding to $f^2 = 0.16$ (Cohen, 1992; Erdfelder et al., 1996).

6.7.1.2. IBT2 Data Preparation

Ranks for interpretations were scored as described for IBT1 above and summed by content, direction, severity and prime. A higher score for an interpretation in the same direction as the prime indicated transforming emotion. Thus interpretations in the same direction as the prime indicated ability to respond to contextual information in a way that influenced interpretation of emotionally ambiguous situations.

6.7.1.3. IBT2 Group Comparisons

6.7.1.3.1. IBT2 threat data

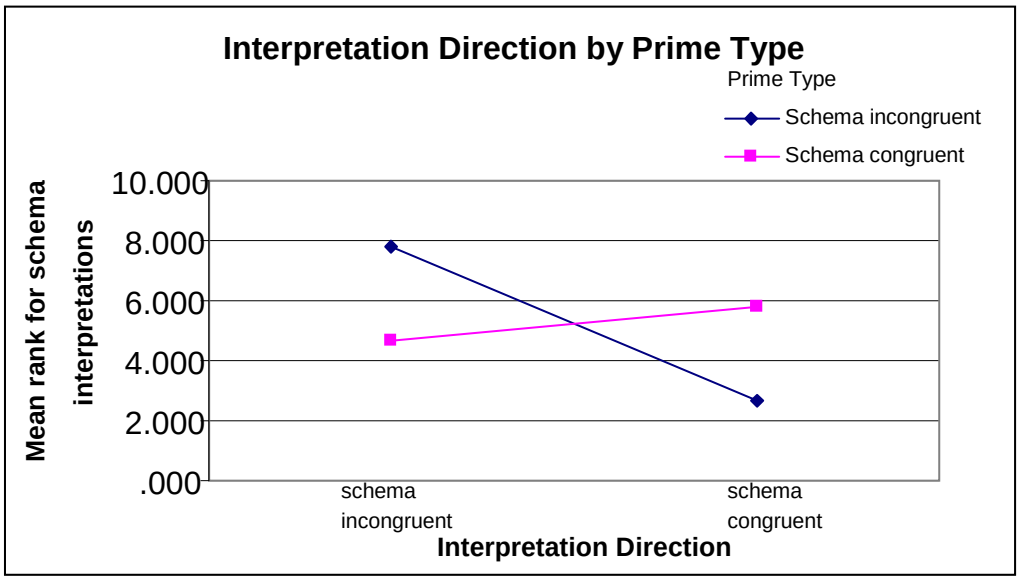
A 2 x 2 x 2 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Content (social, physical) x Direction (threat congruent, incongruent) x Severity (extreme, non-extreme) x Prime (threat congruent, incongruent) was performed, with EPQ neuroticism as a covariate. There were no significant main effects however an interaction of Group x Direction x Severity approached significance, $F(1, 62) = 3.50$, $p = .07$, partial $\eta^2 = .10$. This interaction was examined by conducting 2 x 2 ANOVAs (Group x Severity) at each level of direction separately. A significant effect of Group x Severity for extreme threat congruent interpretations, $F(1, 62) = 4.60$, $p = .04$, partial $\eta^2 = .10$ was observed. Bonferroni-corrected follow up *t* tests revealed the high psychopath group gave significantly less endorsement to extreme threat interpretations, $t(65) = -2.0$, $p = .05$, $d = .50$. The group differences for non-extreme threat interpretations were non-significant ($p > .6$).

6.7.1.3.2. IBT 2 schema data

A 2 x 5 x 2 x 2 x 2 repeated measures ANOVA with Group (high psychopathy, lower psychopathy) x Content (disconnection and rejection, impaired autonomy and performance, impaired limits, other directedness, over-vigilance and inhibition) x Direction (schema congruent, incongruent) x Severity (extreme, non-extreme) x Prime (schema congruent, incongruent) was performed, with EPQ Neuroticism as a covariate. Main effects of direction and severity were found, $F(1, 62) = 6.31$, $p = .02$, partial $\eta^2 = .10$ and $F(1, 62) = 8.23$, $p < .01$, partial $\eta^2 = .10$, respectively, due to greater endorsement of schema incongruent (rank $M = 6.42$, $SD = 1.23$ vs. 4.26, $SD = 1.22$) and non-extreme interpretations (rank $M = 5.61$, $SD = .54$ vs. 4.90, $SD = .53$).

A significant interaction of Direction x Prime was also found, $F(1, 62) = 18.06$, $p < .01$, partial $\eta^2 = .20$ (see Figure 10). Bonferroni-corrected follow-up t tests indicated type of prime significantly influenced ranking so that incongruent interpretations were ranked higher than congruent interpretations following presentation of schema incongruent primes ($M = 7.81$, $SD = 1.14$ vs. 2.70, $SD = 1.14$), $t(66) = 18.95$, $p < .01$, $d = 4.63$. The reverse ranking pattern was observed when congruent primes were presented ($M = 5.83$, $SD = 2.10$ [schema congruent interpretation] vs. 4.67, $SD = 2.10$ [schema incongruent interpretation]), $t(66) = -2.34$, $p = .02$, $d = .52$. In addition, the effect was strongest for incongruent primes. As such the mean difference between ranks for interpretation types (schema incongruent vs. congruent) following incongruent primes was significantly greater than for those following congruent primes ($M = 5.11$, $SD = 4.12$ vs. $M = 1.16$, $SD = 2.22$), $t(66) = -6.74$, $p < .01$, $d = 1.19$ (see Figure 6).

Figure 6 Effect of priming on interpreting emotionally ambiguous schema materials was strongest for incongruent priming



A significant interaction was found for Group x Content x Direction x Prime, $F(4, 248) = 2.38$, $p = .05$, partial $\eta^2 = .10$. This interaction was investigated by conducting further 2 x 2 x 2 ANOVAs (Group x Direction x Prime) for each type of content. An interaction of Group x Direction x Prime for other directedness (but no other) schema type $F(1, 65) = 3.31$, $p = 0.07$, partial $\eta^2 = .10$, approached significance.

Next, additional 2 x 2 ANOVAs (Direction x Prime) at each level of group were conducted, first for schema type collapsed across content and then for other directedness schema type only. In both cases, a significant effect of Direction x Prime at each level of group was found (see Table 8). Ranking was higher for interpretations in the same direction as the prime. This was the case for congruent and incongruent priming and for high and lower psychopathy groups (see Figures 7a to 7d)

Bonferroni-corrected follow up *t* tests revealed significant differences in congruent priming generally (schema type collapsed across content) and specifically when interpreting scenes for other directedness schemas. The lower psychopathy group, but not the high group, were significantly influenced by schema congruent priming generally, $t(33) = -3.03$, $p < .01$, $d = 1.58$ and particularly when interpreting scenes for other directedness schemas, $t(33) = -3.90$, $p < .01$, $d = 1.36$. As such, the lower psychopathy group were more inclined than the high psychopathy group to endorse schema congruent interpretations when primed to do so. In addition, the lower group were more likely to support subjugation, self-sacrifice or seeking other's approval when primed to do so.

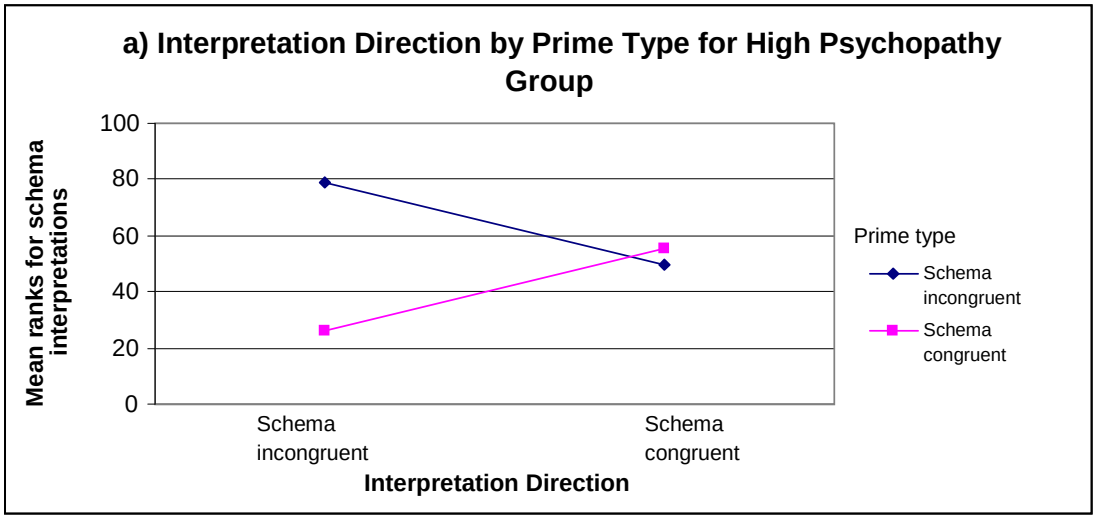
Table 11 Ranking was higher for interpretations in the same direction as the prime regardless of psychopathy level

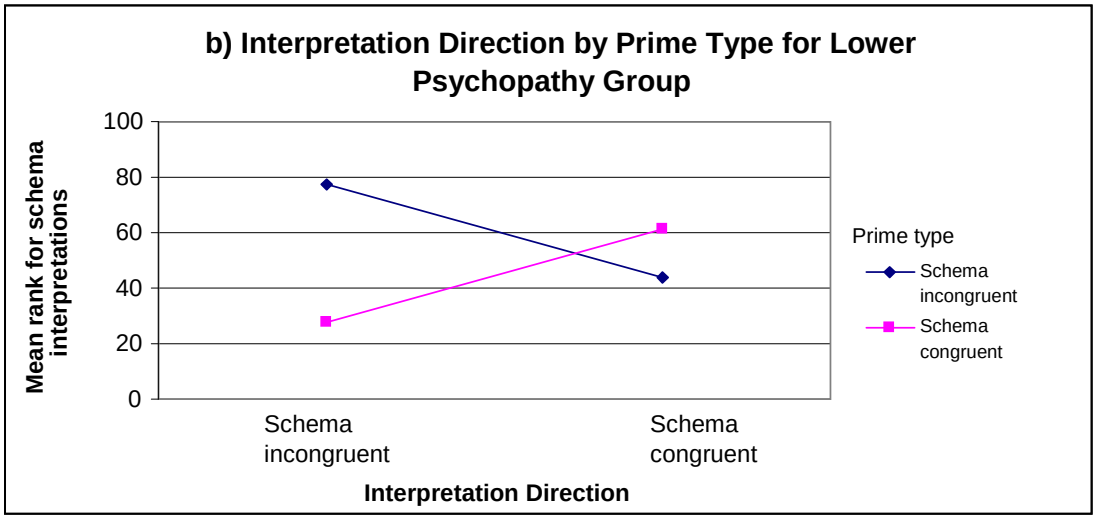
Group	Interpretation type	Mean (incongruent prime)	SD	Mean (congruent prime)	SD	*F**	partial η^2
	Schema collapsed across content						
High psychopathy	Schema incongruent	79.03	12.45	49.62	23.67	39.91	.4
	Schema congruent	26.11	12.36	55.38	23.67	39.66	.4
Lower psychopathy	Schema incongruent	77.47	9.80	43.68	16.91	101.60	.6
	Schema congruent	27.57	9.80	61.29	16.91	101.20	.6
	Other directedness schema type						
High psychopathy	Other directedness incongruent	8.05	2.42	5.17	2.86	19.49	.2
	Other directedness congruent	2.95	2.94	5.58	2.97	12.96	.2
Lower psychopathy	Other directedness incongruent	8.71	2.26	4.32	3.28	41.91	.4
	Other directedness congruent	2.41	1.68	7.18	3.10	62.18	.5

*significant at level <.01

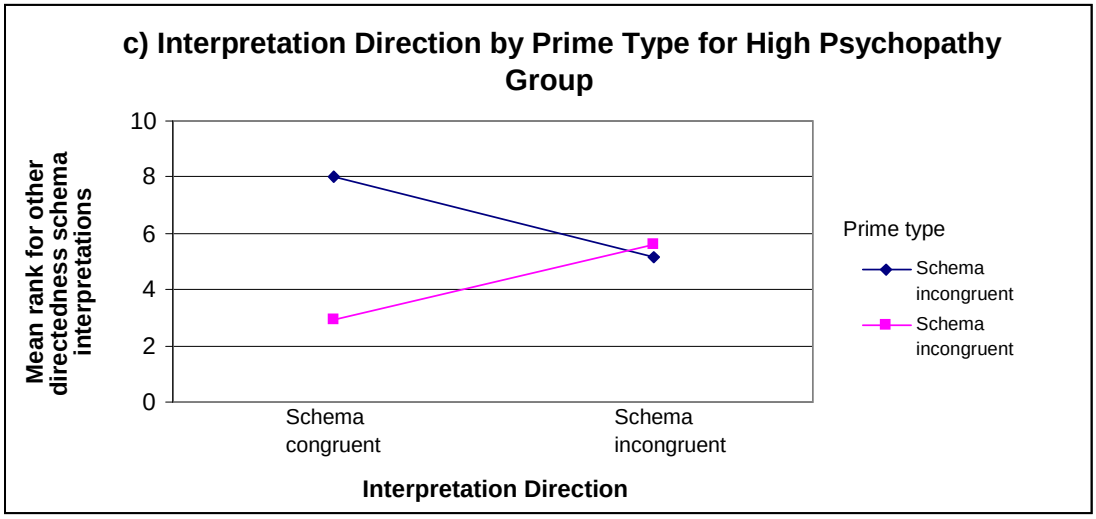
Figures 7 a to d Ranking was higher for interpretations in the same direction as the prime regardless of psychopathy level

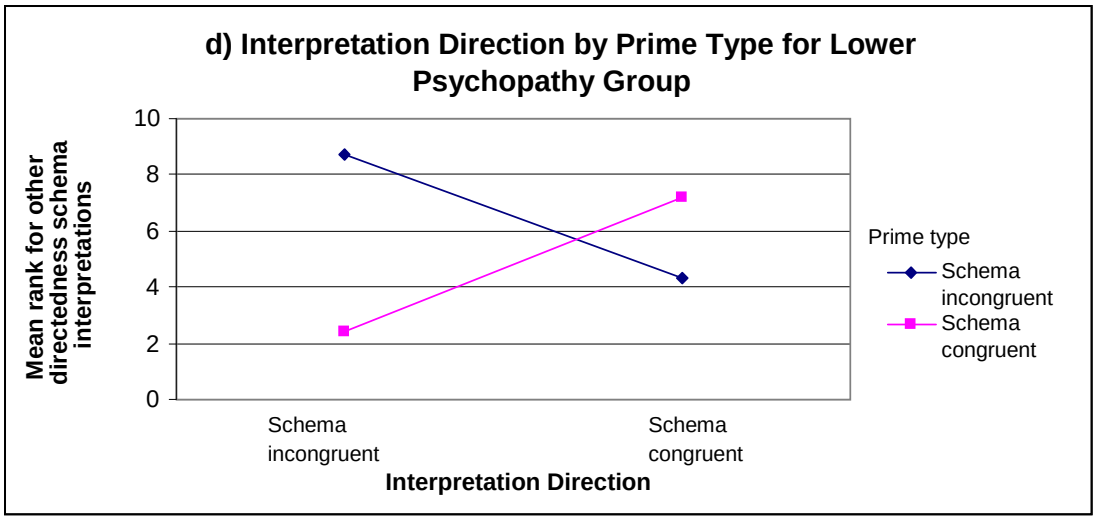
Figures 7 a and b Schema interpretations collapsed across content





Figures 7 c and d Other directedness schema interpretations





6.7.2. Summary of Results for IBT2

Generally, schema congruent priming was less effective for the high psychopathy group (PCL-R ≥ 30). In addition, this group was associated with less effective priming when the prime encouraged subjugation or self-sacrifice or for extreme threat interpretations regardless of prime direction (see Table 12).

Table 12 Summary of results for IBT2 summed ranks for interpretations by scenario Content, Direction, Severity and Prime

Effect	Main results	*p*
	Threat data	
Group x Direction x Severity	High psychopathy group gave less endorsement to extreme threat interpretations (social, physical)	=.05
	Schema data	
Direction main effect	Greater endorsement of schema incongruent interpretations	=.02
Severity main effect	Greater endorsement of non-extreme interpretations	<.01
Direction x Prime	Greater endorsement of schema incongruent interpretations with incongruent prime	<.01
	Greater endorsement of schema congruent interpretations with congruent prime	=.02
	Stronger effect of incongruent compared to congruent primes	<.01
Group x Content x Direction x Prime	High psychopathy group ignored schema congruent priming across content	<.01
	High psychopathy group ignored schema congruent priming for **other directedness domain**	<.01

6.8. Overall Summary of Group Comparison Results

Group comparisons revealed significant differences in emotion processing ability dependent on level of psychopathy. Those with clinical levels of psychopathy were quicker to approach moderately positive crowds and perceived them as more approving than did the lower psychopathy group. In addition clinical levels of psychopathy showed faster heart rate during negative picture processing which was not reflected in self-report experiencing. The same group were less likely to display extreme negative interpretation bias and were less affected by priming especially when the prime encouraged subjugation to others or self-sacrifice. However, power analyses revealed that the tasks would be able to detect medium effects therefore any differences with smaller effects may not have been revealed.

This chapter reported the results of the task-by-task group comparisons; the next chapter presents the results of the whole sample regression analyses for the same data. The chapter is structured in the same manner as the present one beginning with a description of the analysis design and continuing with a report of the task-by-task bivariate correlation and regression results. The chapter concludes with a summary of the regression results including their similarity and difference to the group comparisons.

CHAPTER 7:
ANALYSIS DESIGN AND RESULTS:
TASK-BY-TASK REGRESSIONS

Chapter 7

7. ANALYSIS DESIGN AND RESULTS FOR TASK-BY-TASK REGRESSIONS

Chapter 6 reported the task-by-task group comparisons; this chapter presents the whole sample regression analyses for the same data. The chapter is arranged in the same way as the previous one beginning with the analysis design followed by the results for each of the five emotion processing tasks (Approach Avoidance Task, Rating for Approach Avoidance Task, Emotion Regulation Task, Interpretation Bias Task 1, Interpretation Bias Task 2).

7.1. Analysis Design

7.1.1. Emotion Processing Task Data

As stated above and elsewhere, emotion processing ability was assessed using computerised tasks each chosen to measure one of the cognitive mechanisms of emotion processing believed to be associated with treatment progress (Greenberg & Pascual-Leone, 2006) (see chapter 2 for a discussion of the rationales that guided the choice of each task). These mechanisms are awareness and arousal, emotion regulation, interpretation of emotion and transformation of emotion

For each task whole sample regression analyses were used to examine the relationship between emotion processing ability and individual difference measures, in particular psychopathy. For each task, indices of emotion processing were calculated and used in the analyses. The merits and limitations of regression are discussed in chapter 6, however, the chief

reasons for including this approach were to examine psychopathy as a continuous variable (i.e. dimensionally) and to inform the choice of variables for use in the mediation analysis which examined the study's main hypotheses.

7.1.2. Questionnaire Data

In addition to the computerised tasks, three questionnaires assessed emotion processing ability in psychopathy (Levels of Emotional Awareness Scale [LEAS; Lane, Quinlan, Schwartz, Walker, & Zeilin, 1990], Negative Mood Regulation Scale [NMRS; Cantanzaro & Mearns, 1990], Emotion Regulation Questionnaire [ERQ; Gross & John, 2003]). This was examined in the same manner as described for the computerised tasks.

7.2. Awareness and Arousal

Awareness and arousal was the first emotion processing indicator examined. As described in chapter 5 this indicator was measured using the Approach Avoidance Task (AAT), Ratings for Approach Avoidance Task (RAAT) and LEAS. Results for these measures are now described.

7.2.1. Power Calculations for Tasks and Questionnaires that Examined Awareness and Arousal

Power analyses were conducted for the AAT, RAAT and LEAS. For bivariate correlations, assuming 80% power and alpha = .05 my sample of 68 allowed detection of medium effect sizes corresponding to r = .29 (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996). Regression analysis applying the same assumptions with 3 predictors and a sample of 68 allowed detection of

medium effect sizes corresponding to f^2 = .17 (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996).

7.2.2. Approach Avoidance Task

7.2.2.1. AAT Data Preparation

As described previously, following Lange, Keijsers, Becker and Rinck (2008) median reaction times (RT) were calculated for each emotion (happy, anger, disgust, fear, sadness) by ratio (6:6, 10:2) and movement (push, pull). Reaction times for neutral crowds (pull, push) were calculated in the same manner but without ratio. Previous studies have shown that intermediate and end joystick positions have comparable effects (Rinck & Becker, 2007). Therefore only the end position RTs were calculated. Error trials and outliers (RT < 300ms or > 2000ms) were excluded. Outliers were excluded based on 2.5 *SD* and viewing the distribution tail off (2.86% data excluded). Error frequency was very low (1%) therefore analysis of this was meaningless.

7.2.2.2. AAT Regression Analyses

Analyses were first conducted using the factor emotion with five separate levels (anger, disgust, fear, sad, happy). No significant differences were seen between types of negative emotion and these were therefore collapsed into a single category ‘negative’ which was contrasted with positive (happy). This latter approach is reported.

Two indices were calculated to analyse the AAT. For the first index, RTs for pull were subtracted from those for push giving an index score where positive values indicated overall approach (slower avoidance and faster approach) and negative values showed overall avoidance. Indices were calculated by

emotion (positive, negative) for each ratio (6:6, 10:2) and neutral crowds were not used as they did not differ in ratio. The second index was calculated so that neutral crowds acted as a baseline from which emotion crowds were subtracted (Approach Index = Neutral Pull - Emotion Pull; Avoidance Index = Neutral Push - Emotion Push). For the approach index positive values indicated greater approach (vice versa for the avoidance index) relative to neutral.

7.2.2.2.1. First AAT index: emotion pull from emotion push

Bivariate correlations were conducted between psychopathy scores and the first AAT index (emotion pull from emotion push) described above. Correlations were conducted by crowd type (negative, positive) and ratio (6:6, 10:2). A significant association between Factor 2 psychopathy and negative crowds (ratio 10:2), $r(66) = .26$, $p = .03$, was found. Those higher in Factor 2 psychopathy demonstrated greater approach towards crowds expressing high levels of negative affect (see Figure 1a).

An examination of what other variables were associated with psychopathy and this index score in my sample was conducted to guide the choice of appropriate predictors to enter in regression analyses. Approach to negative crowds (ratio 10:2) was not significantly correlated with any variable other than Factor 2 psychopathy. However Factor 2 psychopathy was significantly correlated with PCL-R total score, $r(66) = .80$, $p < .01$, and Factor 1 scores, $r(66) = .37$, $p < .01$). Therefore Factor 1 and total psychopathy scores were entered alongside Factor 2 scores as predictors in the regression analysis with negative crowds (ratio10:2) as the dependent variable.

The distribution of the dependent variable (approach avoidance index, negative crowds ratio 10:2) was approximately normal. The three psychopathy scores were correlated, therefore for the regression analysis tolerances and variance inflation values were examined to assess potential multicollinearity problems. Where low tolerances (~0) and high variance inflation values (> 2) indicated significant multicollinearity among the predictors the values were z transformed prior to entry into the regression model after which collinearity was acceptable (Cohen, Cohen, West & Aitken, 2003). A linear regression was conducted using the enter method with PCL-R scores (Factor 1, Factor 2 and total) (predictors) and negative crowds (ratio 10:2) (dependent variable). Results of the regression are presented in Table1.

Psychopathy Factor 2 score (the antisocial component of psychopathy) was the strongest predictor of approach to negative crowds (ratio 10:2) and the only one to meet entry criteria ($p < .05$) for the model. This produced a model in which Factor 2 significantly predicted approach to crowds expressing high levels of negative affect ($p = .03$), accounting for 7% of its variance. The higher an individual's Factor 2 score the faster they approached crowds displaying high levels of negative emotion (see Figure1a).

7.2.2.2.2. Second AAT index: emotion pull / push from neutral pull / push

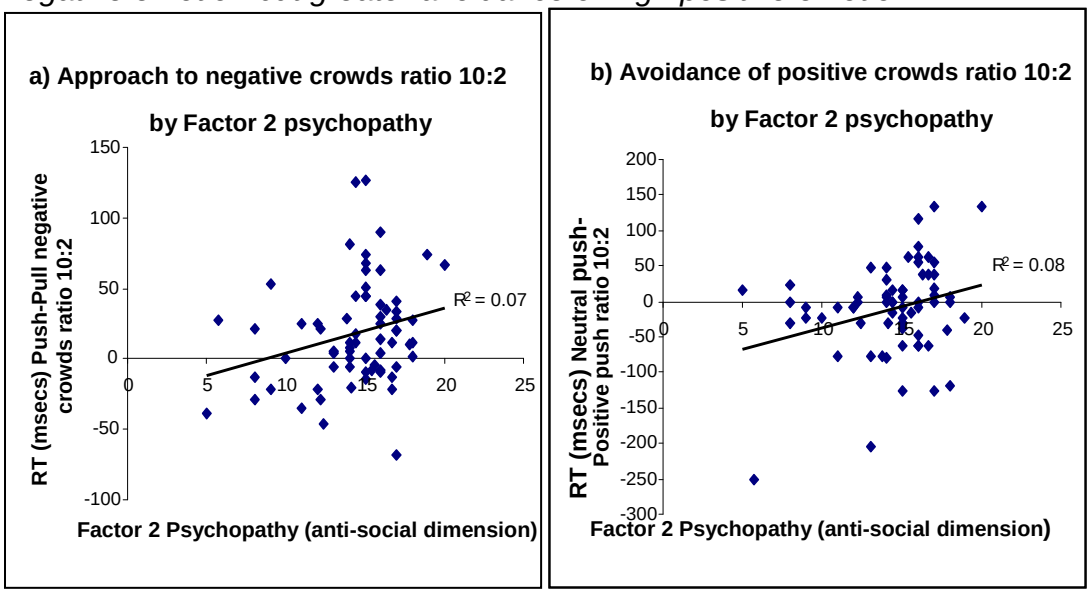
Further bivariate correlations were conducted between psychopathy scores and the second AAT index (emotion pull / push from neutral pull / push) described above. Factor 2 psychopathy scores were significantly related to positive crowds (ratio 10:2), $r(66) = .28$, $p = .02$. Those higher in Factor 2

psychopathy were more avoidant of crowds expressing high levels of positive affect relative to neutral crowds.

As before associations between this index score and other variables were considered to guide the choice of appropriate predictors to enter in regression analyses. There were no significant associations found other than those already described. Regression analysis was conducted as described above and results are reported in Table 1.

Psychopathy Factor 2 score was the strongest predictor for avoidance of positive crowds (ratio 10:2) and the only one to meet entry criteria ($p < .05$) for the model. Factor 2 significantly predicted avoidance of crowds expressing high levels of positive affect ($p = .02$), accounting for 8% of the model's variance. The higher an individual's Factor 2 score the more they avoided crowds expressing high levels of positive emotion relative to neutral crowds (see Figure 1b).

Figure 1 Anti-social traits are associated with greater approach to high negative emotion but greater avoidance of high positive emotion



7.2.3. Ratings Approach Avoidance Task

7.2.3.1. RAAT Data

Self-reported ratings assessed perceived levels of crowd approval on a 7-point Likert scale, with lower values indicating greater approval. Mean ratings were calculated for each participant separately according to emotion (happy, anger, disgust, fear, sadness) and ratio (6:6, 10:2). Types of negative emotion were then collapsed into one category (negative). Regression analysis controlled for confounding variables in the same way as reported above.

7.2.3.2. RAAT regression analyses

Bivariate correlations between psychopathy scores and mean ratings for each crowd type (positive, negative) at each ratio (6:6, 10:2) were conducted. No significant associations were found (all *p*s >.2).

7.2.4. Levels of Emotional Awareness Scale

7.2.4.1. LEAS Regression Analyses

LEAS Self, Other and total scores were each summed to produce a score for that scale as described in chapter 5. Higher scores indicated greater emotional awareness for self, others and overall. Bivariate correlations between psychopathy scores and LEAS scores (Self, Other, total) were conducted. No significant associations were found (all *p*s > .4). However, there were three significant correlations between LEAS scores and the other sample characteristic measures. LEAS Other and total scores were significantly negatively related to number of convictions, $r(66) = -.38$, $p < .01$ and $r(66) = -.25$, $p = .04$, respectively, and LEAS Other score was significantly negatively associated with risk of recidivism (Historic, Clinical, Risk-20 [HCR-20; Webster, Douglas, Eaves, & Hart, 1997]), $r(66) = -.32$, $p = .02$.

7.2.5. Summary of Results for AAT, RAAT and LEAS

The AAT data revealed two main findings of interest for Factor 2 psychopathy. Greater antisocial traits predicted faster approach to negative but greater avoidance of positive emotion. In each case this occurred when crowds expressed high levels of emotion (ratio 10:2) (see Table 1). There were no significant findings for the RAAT and LEAS.

Table 1 Summary of regression results for AAT

Outcome	Predictor	R^2	*F*	β[1]	*t*	*p*
Faster approach to crowds expressing high levels of negative emotion	**Psychopathy Factor 2**	.07*	4.80	.26	2.19	.03
	Psychopathy Total			-.05	-.27	.79
	Psychopathy Factor 1			.01	.08	.94
Faster avoidance of crowds expressing high levels of positive emotion	Psychopathy Factor 2	.08*	5.78	.28	2.41	.02
	Psychopathy Total			.05	.23	.82
	Psychopathy Factor 1			.02	.16	.88

7.3. Emotion Regulation

Emotion regulation was the second emotion processing indicator examined. This indicator was measured using the Emotion Regulation Task ERT) (described in chapter 5). Two types of data were collected; heart rate (HR) and rating of strength of emotion (1 = weak to 7 = strong) during picture viewing. In addition, the NMRS and ERQ were administered.

Participant numbers for the emotion regulation data differed from those for the other three emotion processing indicators. Seven participants refused to have their HR monitored during the task due to paranoid beliefs about the equipment, although one of these agreed to complete the ratings only. Consequently, complete datasets were available for 61 participants with 62 sets of data for the self-report ratings.

[1] For all regression results β = standardised value

7.3.1. Emotion Regulation Task

7.3.1.1. Power Calculations for the Tasks and Questionnaires that Examined Emotion Regulation

Power analyses were conducted for the ERT (psychophysiology and rating data) ERQ and NMRS. For bivariate correlations, assuming 80% power and alpha = .05 my samples of 61, (ERT psychophysiology data) 62 (ERT ratings data) and 68 (questionnaire data) allowed detection of medium effect sizes corresponding to r = .30 (ERT data) and r = .29 (questionnaire data) (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996). Regression analysis applying the same assumptions with 6 predictors and a sample of 61 allowed detection of between medium and large effect sizes corresponding to f^2 = .25 (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996).

7.3.1.2. ERT Heart Rate Data Preparation

Pulse oximeter HR data was first down-sampled using a low pass differentiator filter to remove extraneous noise. Identification of individual HR events (beats) was based on semi-automated detection of peak amplitudes in the resulting differential data. User-adjustable interactive cursors provided instantaneous event interval displays, which were adjusted by eye to allow optimum event detection on a participant-by-participant basis. Individual recordings were further examined for spurious events (e.g. due to movement artefacts), which were manually removed. Spike 2 automatically generated an evenly sampled waveform from this final, clean datafile which was then used to calculate (in milliseconds) beats per minute by condition (each 10 second picture presentation).

7.3.1.3. ERT Heart Rate Regression Analysis

In order to examine emotion regulation across the whole sample indices of up-regulation (increase) and down-regulation (decrease) were calculated. For this the 'just look' condition acted as a baseline which was subtracted from the 'increase' and 'decrease' conditions respectively (Increase Index = Increase - Look; Decrease Index = Decrease - Look). Thus a positive increase index reflected the extent of HR speeding produced by the instruction to 'get into the feeling of the picture', and a negative decrease index reflected HR slowing when attempting to view in a detached manner, relative to simply looking at the pictures. Indices were calculated for HR by type of picture (positive and negative).

Bivariate correlations between these psychophysiological indices and psychopathy scores were examined. Results suggested a possible association between total psychopathy score and the HR increase index for negative pictures, $r(59) = -.29$, $p = .02$ and between Factor 1 psychopathy and the same index, $r(59) = -.31$, $p = .02$. Associations were examined between other variables, psychopathy and this index score in my sample, to guide the choice of appropriate predictors to enter in regression analysis. Psychopathy was significantly negatively correlated with number of years spent in full time education $r(62) = -.29$, $p = .02$, Eysenck Personality Questionnaire Neuroticism (EPQ; Eysenck & Eysenck, 1975), $r(66) = -.26$, $p = .04$, and positively associated with HCR-20 scores, $r(48) = .29$, $p = .04$. Index scores were significantly positively associated with number of years spent in full time education, $r(59) = .30$, $p = .03$ and negatively associated with the HCR20 ($r(48) = -.37$, $p = .02$. These variables were entered as predictors alongside

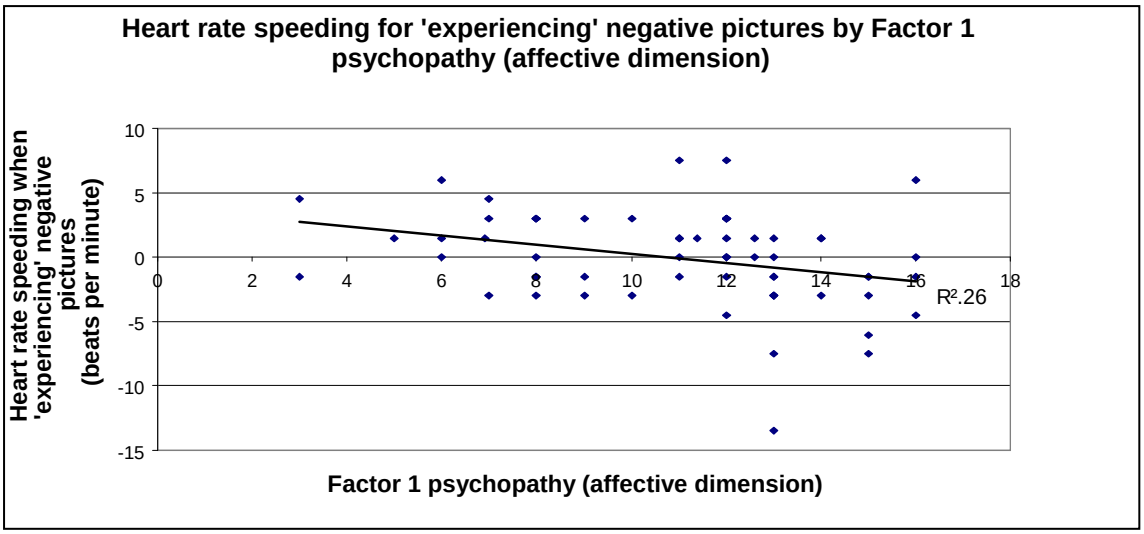
psychopathy in the regression analysis. Regression analysis was conducted in the same manner as for the AAT and RAAT above. Results of the regression are presented in Table 2.

Table 2 Regression results for ERT

Outcome	Predictor	R^2	*F*	*β*	*t*	*p*
Heart rate speeding when instructed to experience negative pictures	**Psychopathy Factor 1**	.26	12.42	-.51	-3.53	.001
	Years in education			.25	1.80	.08
	HCR20			.24	-1.57	.13
	Psychopathy Total			-.20	-.78	.44
	Psychopathy Factor 2			-.10	-.65	.52
	EPQ Neuroticism			.03	.19	.85

As shown in Table 2 psychopathy Factor 1 score was the strongest predictor of HR increase index for negative pictures and the only one to meet entry criteria ($p < .05$) for the model. This produced a well fitting model in which Factor 1 significantly predicted increased HR when experiencing negative pictures ($p < .01$), accounting for just over a quarter (26%) of its variance. As can be seen in Figure 2, the model suggests that for every one-point increase in Factor 1 score, increased HR when experiencing negative pictures will be smaller by approximately half a beat per minute.

Figure 2 Affective component of psychopathy was associated with reduced ability to up-regulate negative emotional experience



7.3.1.4. ERT Rating Data Preparation

Self-reported ratings assessed the strength of feeling experienced on a 7-point Likert scale while viewing each picture, with higher values indicating stronger feeling. Average ratings were calculated for each participant separately according to condition (Picture type x Instruction). Regression analysis controlled for confounding variables in the same manner as reported above.

7.3.1.5. ERT Ratings Regression Analysis

Indices of up-regulation (Increase Index = Increase - Look) and down-regulation (Decrease Index = Decrease - Look) were calculated for rating data. Bivariate correlations between these rating indices and psychopathy scores were examined, but there were no significant associations (all *p*s > .2). There were three other significant correlations between indices and my other sample characteristics. The increase index for negative picture ratings was significantly negatively correlated with age, $r(60) = -.31$, $p = .01$ and time served in prison, $r(60) = -.25$, $p = .05$, while the increase index for positive picture ratings was significantly negatively correlated with EPQ Lie score, $r(60) = -.26$, $p = .05$.

7.3.2. Emotion Regulation Questionnaires

7.3.2.1. ERQ and NMRS Data

Scores were calculated for the questionnaires (ERQ, NMRS) as described in chapter 5. The ERQ comprised of four Suppression items and six Reappraisal items and response was on a 7-point Likert scale (1 = disagree strongly to 7 = agree strongly). Higher scores indicated greater reliance on each of the emotion regulation styles (Suppression, Reappraisal) with lower scores

desirable for Suppression and higher scores desirable for Reappraisal. The NMRS was scored on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Higher scores indicated positive expectancies about ability to regulate moods if upset.

7.3.2.2. Regression Analysis for ERQ and NMRS

Bivariate correlations between ERQ (Suppression, Reappraisal) and NMRS scores with psychopathy scores were conducted. No significant associations were found (all *p*s >.2). However, there were several significant correlations between the emotion regulation scales and the other sample characteristic measures. ERQ Reappraisal score was significantly negatively related to IQ, $r(60) = -.38$, $p < .01$, but positively related to EPQ Psychoticism $r(66) = .27$, $p = .03$. ERQ Suppression score was significantly negatively related to EPQ Psychoticism, $r(66) = -.29$, $p = .02$. NMRS total score was significantly negatively associated with EPQ Neuroticism and Psychoticism, $r(66) = -.40$, $p < .01$ and $r(66) = -.32$, $p < .01$, respectively but positively associated with EPQ Lie, $r(66) = .25$, $p = .04$.

7.3.3. Summary of Results for the ERT, ERQ and NMRS

The ERT data reflected two main findings of interest specific to Factor 1 psychopathy. First, this factor was associated with deficits in the ability to up-regulate (experience) negative emotion. Specifically, those higher in callous unemotional traits demonstrated slower rather than faster heart rate when instructed to experience the emotion depicted in aversive images (see Figure 2 and Table 2). Second, these psychophysiological deficits were inconsistent with subjective self-report experience.

7.4. Interpretation of Emotion

Interpretation of emotion was the third emotion processing indicator examined. This indicator was measured using the Interpretation Bias Task 1 (IBT1). Materials used for the IBT1 are described in chapter 5 however, for clarity it may be useful to outline them here. The IBT1 assessed level of interpretation bias as measured by completion of emotionally ambiguous sentences (schema, social threat, physical threat). Schema sentences were designed to trigger maladaptive responses to ambiguous social situations. These sentences were arranged under the five schema domains described by Young, Klosko and Weishaar (2003) and outlined in Table 3. A description of Young's schema theory and its relationship to the current study is provided in chapter 5.

Table 3 Young's definitions for the five schema domains

Schema domains	Definition
Disconnection and rejection	Expectation that one's needs for security, safety, stability, nurturance, empathy, sharing of feelings, acceptance, and respect will not be met in a predictable manner
Impaired autonomy and performance	Expectations about oneself and the environment that interfere with one's perceived ability to separate, survive, function independently, or perform successfully.
Impaired limits	Deficiency in internal limits, responsibility to others, or long-term goal-orientation. Leads to difficulty respecting the rights of others, cooperating with others, making commitments, or setting and meeting realistic personal goals.
Other directedness	An excessive focus on the desires, feelings, and responses of others, at the expense of one's own needs -- in order to gain love and approval, maintain one's sense of connection, or avoid retaliation. Usually involves suppression and lack of awareness regarding one's own anger and natural inclinations.
Over-vigilance and inhibition	Excessive emphasis on suppressing one's spontaneous feelings, impulses, and choices OR on meeting rigid, internalized rules and expectations about performance and ethical behaviour; often at the expense of happiness, self-expression, relaxation, close relationships, or health.

Social and physical threat sentences were taken from Eysenck, Mogg, May, Richards and Mathews (1991) as well as MacLeod and Cohen (1993) (see Appendix K for all stimuli used).

Two types of data were collected. The sum ranks for scene interpretations (1 = closest in meaning to 4 = least close in meaning) measured interpretation bias. In addition, word fragments (congruent / incongruent with a negative interpretation) were presented after each scene. Reaction time to complete word fragments gave an independent measure of interpretation bias. Results for the IBT1 (rank data and word completions) are now described.

7.4.1. Interpretation Bias Task 1

7.4.1.1. IBT1 Power Calculations

Power analyses were conducted for the IBT1 data (rank and RT). For bivariate correlations, assuming 80% power and alpha = .05 my sample of 68 allowed detection of medium effect sizes corresponding to r = .29 (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996). Regression analyses applying the same assumptions with 7, 5 and 6 predictors and a sample of 68 allowed detection of between medium and large effect sizes corresponding to f^2 = 0.24 (7 predictors) and f^2 = 0.22 (5 and 6 predictors) (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996).

7.4.1.2. IBT 1 Rank Data

Ranks for scene interpretations (1 = closest in meaning to 4 = least closest in meaning) measured interpretation bias. Items were scored 0 when ranked 4th (i.e. least similar to the passage), through 1, 2 and 4 for those ranked most similar to the passage. Ranks for interpretations were summed therefore a significantly higher score for a particular interpretation type indicated a bias of interpretation favouring that interpretation type. Ranks were summed by content, direction and severity.

7.4.1.3. IBT1 Rank Data Regression Analysis

As before, ranks for interpretations were summed by scenario type (disconnection and rejection, impaired autonomy and performance, impaired limits, other directedness, over-vigilance and inhibition, social threat, physical threat) direction (schema / threat congruent, incongruent) and severity (extreme, non-extreme).

To assess interpretation bias across the entire sample bivariate correlations between ranks for ambiguous scenario interpretations and psychopathy scores were investigated. This suggested a negative association between Factor 1 psychopathy scores and ranks for social threat (extreme threat congruent) $r(66) = -.25$, $p = .04$, over-vigilance and inhibition (extreme schema congruent), $r(66) = -.24$, $p = .05$, and disconnection and rejection (schema congruent) interpretations, $r(66) = -.26$, $p = .04$. But a positive association with ranks for other directedness (extreme non-schema) interpretations, $r(66) = .30$, $p = .01$. Factor 2 psychopathy scores were negatively related to ranks for impaired autonomy and performance (extreme non-schema) interpretations, $r(66)$ -.28, $p = .02$).

Regression analyses were conducted as previously described taking into account what other variables were associated with psychopathy and these rank scores in our sample, so that appropriate predictors could be included in the regression models. Significant associations for Factor 2 and Factor 1 psychopathy have already been described. Social threat (extreme threat congruent) interpretations were positively related to EPQ Psychoticism, $r(66) = .35$, $p < .01$, and EPQ Neuroticism, $r(66) = .27$, $p = .03$. Other directedness (extreme schema incongruent) interpretations were negatively associated with

EPQ Neuroticism, $r(66) = -.29$, $p = .02$). As before, these variables were entered as predictors alongside psychopathy in the regression analyses. Regression analyses were conducted as described previously and results are reported below and illustrated in Table 4.

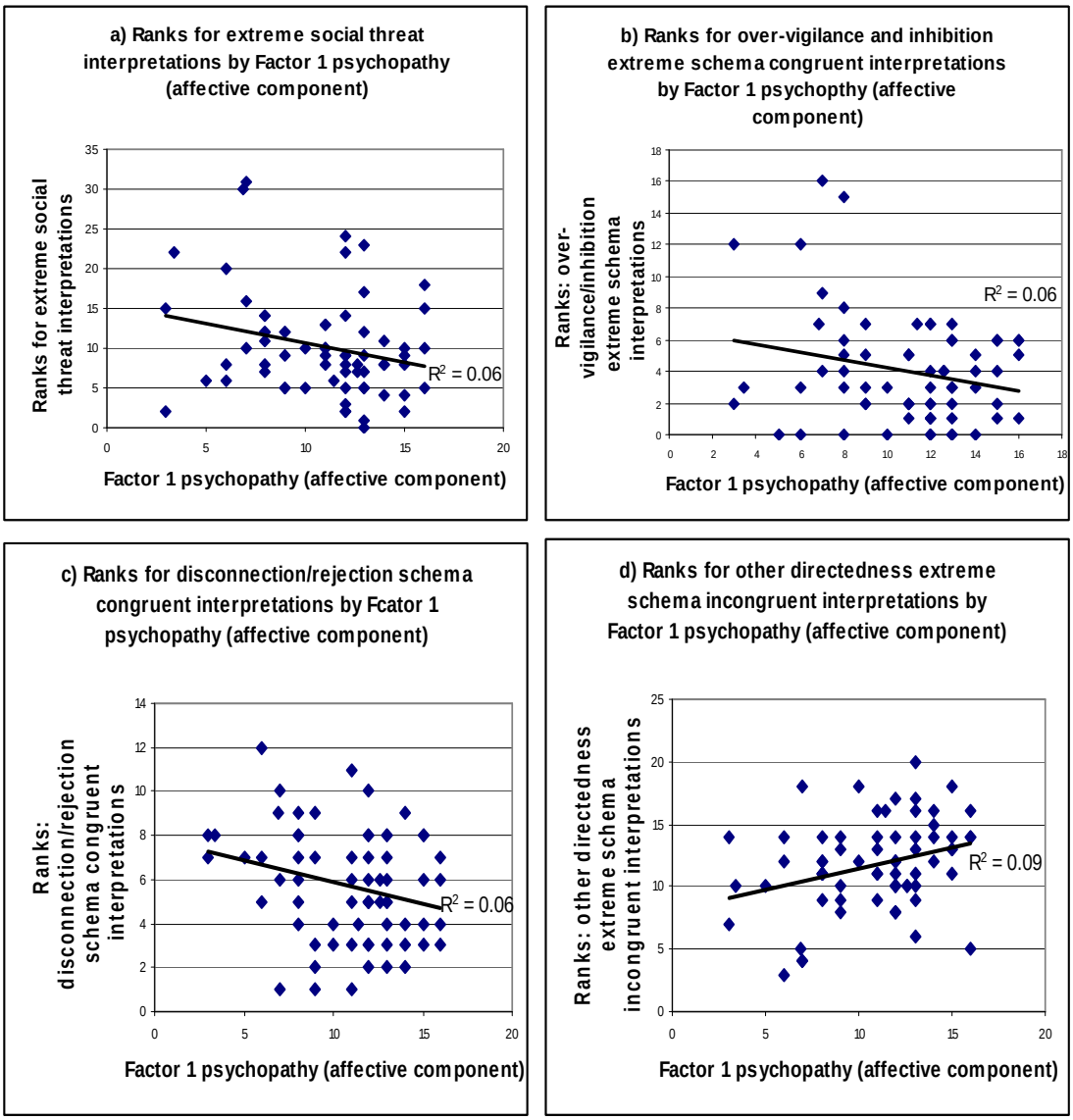
Factor 1 psychopathy was the strongest predictors for extreme threat congruent interpretations of ambiguous social scenarios and the only variables to meet entry criteria ($p < .05$) for the model. This accounted for 6% of the overall variance. Those high in callous unemotional traits were less likely to interpret social situations as extremely threatening (e.g. embarrassing or humiliating) ($p = .04$) (see Figure 3a).

In addition, Factor 1 psychopathy alone was the strongest predictor for extreme schema congruent interpretations for materials designed to trigger over-vigilance. This was the only variable to meet entry criteria for the model ($p < .05$) explaining 6% of the variance. Higher callous unemotional traits significantly predicted less support for extreme interpretations that were punitive or indicated unrelenting standards, emotional inhibition or greater vulnerability to error ($p = .04$) (see Figure 3b).

Similarly, Factor 1 psychopathy was the strongest predictor of schema congruent interpretations for ambiguous scenarios designed to trigger feelings of disconnection and rejection. This was the only variable to meet entry criteria ($p < .05$) for the model and accounted for 6% of the variance. This produced a model in which higher Factor 1 scores significantly predicted less support of interpretations that endorsed feeling abandoned, abused, emotionally deprived, defective or undesirable ($p = .04$) (see Figure 3c).

Factor 1 psychopathy was also the strongest predictor of extreme schema incongruent interpretations for scenarios intended to trigger other directedness schemata. It accounted for 9% of the variance producing a model (entry criteria < .05) in which those with higher callous unemotional traits were more likely to process information in a way that did not support subjugation, self sacrifice or seeking approval from others (p = .01) (see Figure 3d).

Figure 3 Affective component of psychopathy was associated with making sense of situations in ways that did not support schema or threat congruent interpretations



Finally, Factor 2 psychopathy was the strongest predictor of extreme schema incongruent interpretations for scenarios intended to trigger impaired autonomy and performance schemata. This accounted for 8% of the variance (entry criteria < .05) and produced a model in which greater anti-social characteristics significantly predicted less support for interpretations promoting independence from others and less vulnerability to harm or failure (p = .02).

7.4.1.4. IBT1 Word Completion Data

Average RTs were calculated for threat (social, physical) and each schema domain (disconnection and rejection, impaired autonomy and performance, impaired limits, other directedness, over-vigilance and inhibition) by direction (threat / schema congruent, incongruent). An index was calculated by subtracting congruent from incongruent RTs. Therefore negative values indicated faster RTs for incongruent (*vice versa* for congruent). Outliers (RT > 24400ms) were excluded based on 2.5 *SD* and viewing the distribution tail off (2.37% data excluded). Error trials were also removed. The error rate was very low (< 1%) therefore analysis of these was not meaningful.

7.4.1.5. IBT1 Word Completion Regression Analysis

To assess interpretation of emotion across the entire sample bivariate correlations between RT for word completions and psychopathy scores were investigated. This revealed a significant negative correlation between Factor 1 psychopathy and RT for disconnection and rejection schema incongruent, $r(66) = -.29$, $p = .02$, and social threat incongruent, $r(66) = -.27$, $p = .03$) word completions. The relationship between Factor 1 psychopathy and RT for

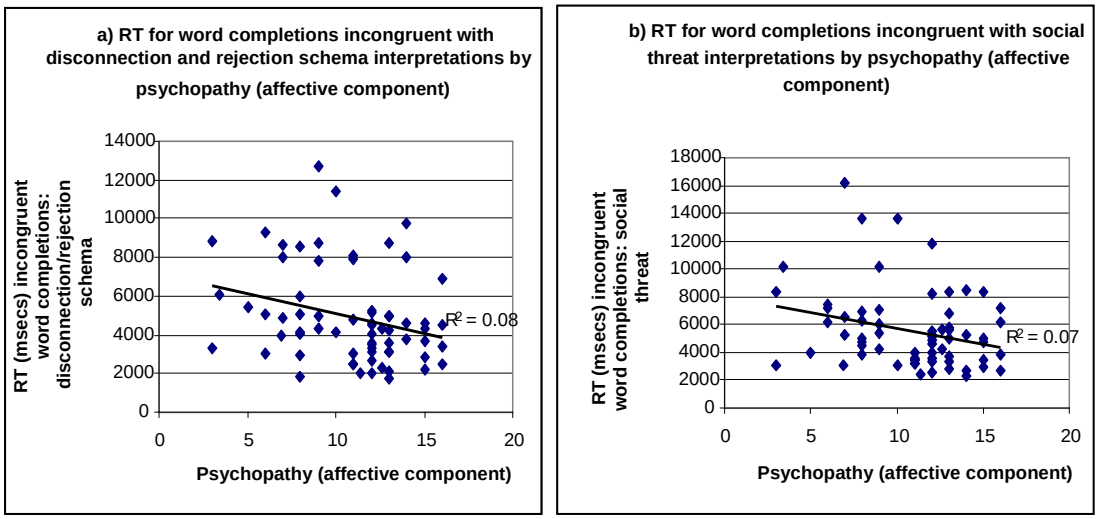
physical threat incongruent word completions approached significance, $r(66) = -.22$, $p = .08$.

As previously, associations between these RTs and other variables in my sample were examined to guide the choice of appropriate predictors for the regression model. No additional significant relationships were found therefore only those variables associated with Factor 1 psychopathy (already mentioned above) were entered into the regression. Regression analyses were conducted as described previously and results are now reported (see Table 4)

Factor 1 psychopathy was the strongest predictor of RT for disconnection and rejection schema incongruent word completions and accounted for 8% of the variance. A model was produced (entry criteria < .05) in which those with higher callous unemotional traits were quicker to complete words incongruent to interpretations supportive of feeling abandoned, abused, emotionally deprived, defective or undesirable ($p = .02$) (see Figure 4a).

Factor 1 psychopathy was also the strongest predictor of RT for word completions incongruent with a social threat interpretation. This accounted for 7% of the variance producing a model (entry criteria < .05) in which those with higher callous unemotional traits were faster to complete words that supported a benign interpretation of social situations ($p = .02$) (see Figure 4b).

Figure 4: The affective component of psychopathy was associated with faster RTs for word completions incongruent to schema interpretations



7.4.2. Summary of Results for IBT1

Rank and RT data suggested Factor 1 was associated with greater endorsement of healthy interpretations of emotionally ambiguous situations. In particular, those higher in callous unemotional traits were less likely to process information in a way that supported feeling abandoned or rejected. This was corroborated by faster word completions for benign but not schema related words. Rank data revealed they were also less likely to endorse interpretations that promoted emotional inhibition or self-sacrifice and subjugation to others. In addition high callous unemotional traits, individuals were less likely to view situations as socially threatening. This was supported by RT data that demonstrated Factor 1 traits were also related to faster completion of words incongruent with a social threat interpretation. Conversely, Factor 2 showed some support for schema related interpretations. Specifically, those higher in anti-social traits were more likely to endorse interpretations promoting dependence on others and suggesting

they or those close to them were vulnerable to harm, illness or failure (see Table 4).

Table 4 Summary of regression results for IBT1, summed ranks for interpretations and average RT for word completion

Outcome	Predictor	R^2	*F*	*β*	*t*	*p*
Endorsement of extreme social threat congruent interpretations	**Psychopathy Factor 1**	.06	6.71	-.23	-2.01	.04
	Years in Education			.02	.17	.91
	HCR20			-.02	-.17	.94
	Psychopathy Factor 2			.05	.41	.85
	Psychopathy Total			.10	.51	.31
	EPQ Neuroticism			.13	1.09	.87
Endorsement of over vigilance / inhibition extreme schema congruent interpretations	**Psychopathy Factor 1**	.06	4.18	-.24	-2.05	.04
	Years in Education			.03	1.76	.08
	HCR20			-.08	-.614	.54
	Psychopathy Factor 2			.17	1.33	.19
	Psychopathy Total			.23	1.11	.27
	EPQ Neuroticism			.12	.97	.33
Endorsement of disconnection / rejection schema congruent interpretations	**Psychopathy Factor 1**	.06	4.65	-.25	-2.15	.04
	Years in Education			-.03	-.27	.79
	HCR20			.02	.19	.85
	Psychopathy Factor 2			.16	1.25	.22
	Psychopathy Total			.19	.90	.37
Endorsement of other directedness extreme schema incongruent interpretations	**Psychopathy Factor 1**	.09	6.73	.30	2.60	.01
	Years in Education			-.13	-1.09	.28
	HCR20			.07	.62	.54
	Psychopathy Factor 2			-.12	-1.00	.32
	Psychopathy Total			-.16	-.76	.45
	EPQ Neuroticism			-.21	-1.82	.07
Endorsement of impaired autonomy / performance extreme schema incongruent interpretations	**Psychopathy Factor 2**	.08	5.54	-.28	-2.35	.02
	Years in Education			.01	.11	.92
	HCR20			.01	.06	.95
	Psychopathy Factor 1			.23	1.85	.07
	Psychopathy Total			.36	1.92	.06
	EPQ Neuroticism			-.17	-1.48	.14
Word completion matching disconnection / rejection schema incongruent interpretation	**Psychopathy Factor 1**	.08	6.55	-.28	-2.38	.02
	Years in Education			-.19	-1.54	.13
	HCR20			-.02	-.12	.90
	Psychopathy Factor 2			.10	.77	.44
	EPQ Neuroticism			-.08	-.68	.50
	Psychopathy Total			.14	.67	.50
Word completion matching social threat incongruent interpretation	**Psychopathy Factor 1**	.07	.5.64	-.27	-2.26	.02
	Psychopathy Total			.25	1.20	.24
	Psychopathy Factor 2			.14	1.15	.26
	HCR20			-.09	-.72	.47
	Years in Education			-.06	-.45	.65
	EPQ Neuroticism			-.02	-.13	.90

7.5. Transformation of Emotion

Transformation of Emotion was the fourth emotion processing indicator examined. This indicator was measured using the Interpretation Bias Task 2 (IBT2). As described in chapter 5, the IBT2 assessed ability to resolve interpretation bias with use of a prime word congruent / incongruent to a negative interpretation. Interpretation in the same direction as the prime was

used as an indication of emotion resolution. For example, schema incongruent interpretations following presentation of incongruent primes indicated ability to utilise contextual emotional information when interpreting emotionally ambiguous situations (vice versa for congruent primes). Ranks for scene interpretations were as described for IBT1 above. Results for the IBT2 are now described.

7.5.1. Interpretation Bias Task 2

7.5.1.1. IBT2 Power Calculations

Power analyses were conducted for the IBT2. For bivariate correlations, assuming 80% power and alpha = .05 my sample of 68 allowed detection of medium effect sizes corresponding to r = .29 (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996). Regression analyses applying the same assumptions with 6 predictors and a sample of 68 allowed detection of between medium and large effect sizes corresponding to f^2 = 0.22 (Cohen, 1992; Erdfelder, Faul, & Buchner, 1996).

7.5.1.2. IBT2 Data

Ranks for interpretations were scored as described for IBT1 above and summed by content, direction, severity and prime. A higher score for an interpretation in the same direction as the prime indicated transforming emotion. Interpretations in the same direction as the prime indicated ability to respond to contextual information in a way that influenced interpretation of emotionally ambiguous situations.

7.5.1.3. IBT2 Regression Analysis

To investigate ability to resolve interpretation bias across the whole sample bivariate correlations between ranks for ambiguous scenario resolutions with preceding primes (schema / threat congruent, incongruent) and psychopathy scores were investigated. Results suggested a significant negative association between psychopathy total score and ranks for extreme physical threat congruent interpretations, $r(66) = -.25$, $p = .04$, and non-extreme disconnection and rejection schema congruent interpretations, $r(66) = -.30$, $p = .01$, both when schema congruent primes were presented. A significant positive correlation was found between psychopathy total score and extreme disconnection and rejection schema incongruent interpretations, $r(66) = .30$, $p = .01$, again following presentation of schema congruent primes.

A number of significant associations were found between psychopathy Factor 1 score and ranks for threat (physical, social) and schema (disconnection and rejection, other directedness) resolutions. Factor 1 psychopathy was significantly negatively related to ranks for extreme physical threat congruent interpretations, $r(66) = -.32$, $p < .01$, and extreme social threat congruent interpretations, $r(66) = -.30$, $p = .01$, but significantly positively associated with extreme social threat incongruent interpretations, $r(66) = .26$, $p = .03$, all following threat congruent primes. In addition, Factor 1 psychopathy was significantly correlated with ranks for disconnection and rejection schema interpretations when schema congruent primes were used. This was in a positive direction for incongruent interpretations, $r(66) = .33$, $p < .01$, and $r(66) = .28$, $p = .02$ (extreme and non-extreme respectively), but negatively for congruent interpretations, $r(66) = -.26$, $p = .04$, $r(66) = -.36$, $p < .01$, (extreme

and non-extreme respectively). Finally, Factor 1 psychopathy was significantly positively correlated with ranks for interpretations related to other directedness, $r(66) = .25$, $p = .04$. This was when interpretations were incongruent with an extreme schema interpretation, if accompanied by schema congruent primes.

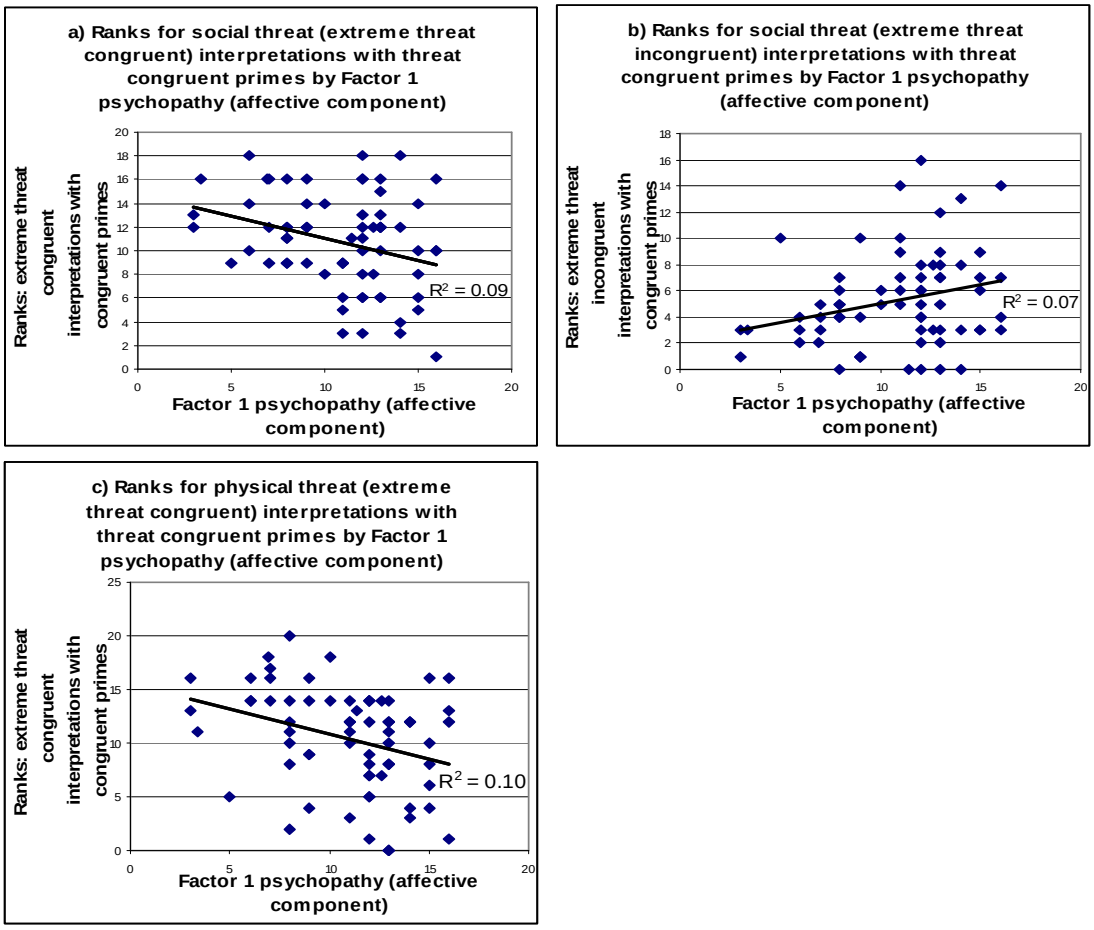
As before, the other variables associated with these rank scores were examined, to guide the choice of appropriate predictors to enter in regression analyses. No additional significant relationships were found therefore only those variables associated with psychopathy (already mentioned above) were entered into the regression. Analyses were conducted as described earlier and results are presented in Table 5.

Psychopathy Factor 1 score was the strongest predictor of ranking for extreme physical threat congruent interpretations when congruent primes were used and the only one to meet entry criteria ($p < .05$) for the model accounting for 10% of its variance (See Figure 5c). Those high in Factor 1 psychopathy were less likely to be influenced by physical threat priming when interpreting potentially physically threatening situations. Specifically, threat congruent primes did not persuade them to interpret these situations as extremely threatening.

Factor 1 was the strongest predictor of ranks for extreme social threat congruent and incongruent interpretations when congruent primes were used ($p = .01$ and $p = .03$ respectively) (see Figure 5a and b). These were the only predictors to meet criteria for entry into their particular models ($p < .05$) and accounted for 9% and 7% of the variance respectively. Those with high Factor

1 scores were less likely to be influenced by threat congruent primes when interpreting emotionally ambiguous social situations. When encouraged to view social situations as threatening (embarrassing, humiliating, rejecting, disappointing) high Factor 1 participants were less prone to make extremely negative, but more likely to make extremely benign interpretations (i.e. in the opposite direction to the prime). This suggests priming became less effective as Factor 1 scores increased.

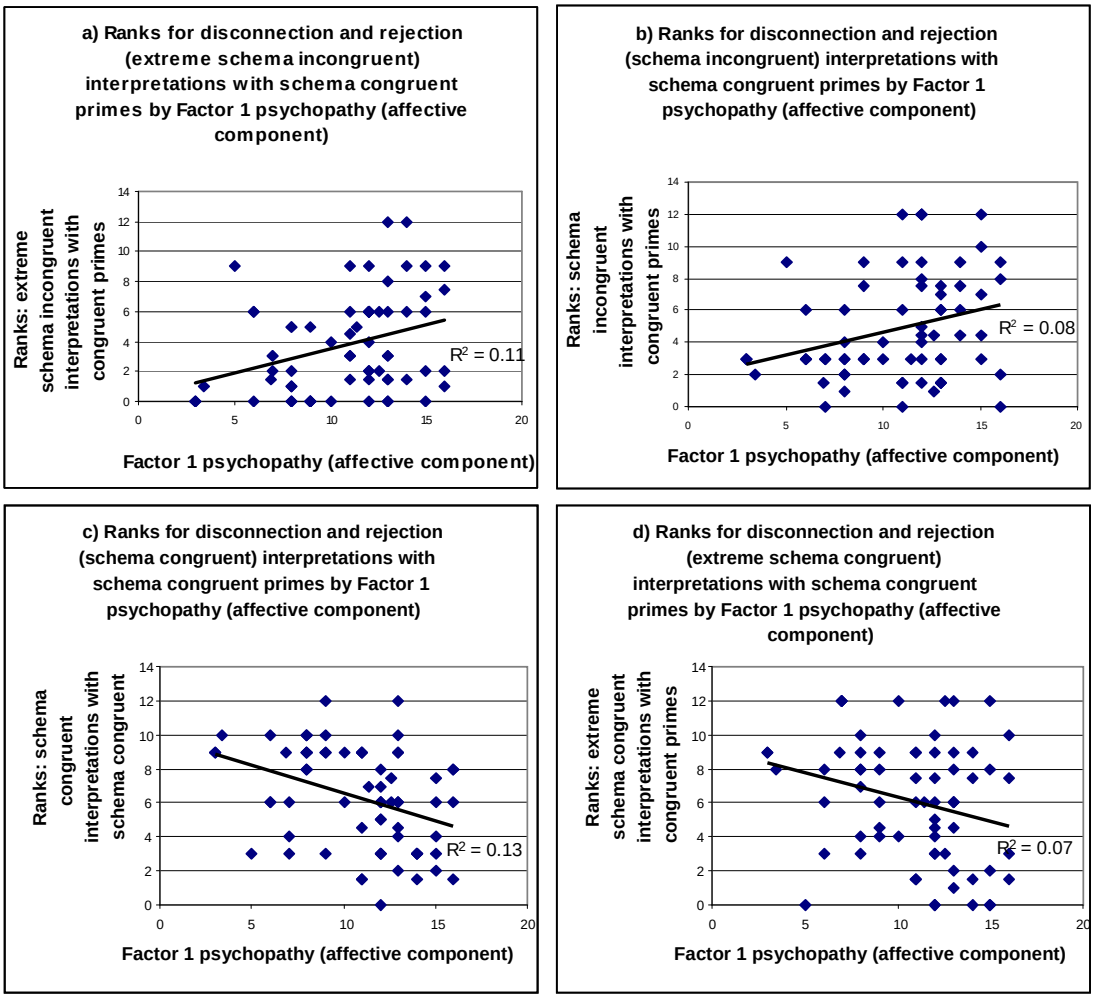
Figure 5 Those higher in the affective component of psychopathy were less affected by threat congruent priming for social and physical threat



Psychopathy Factor 1 score was the strongest predictor of ranking for disconnection and rejection interpretations across directions and levels of severity when congruent primes were presented. This was the only predictor

to meet entry criteria ($p < .05$) for the four models and accounted for between 13% and 7% of the variance (see Figures 6a to d). Those high in Factor 1 psychopathy were less likely to be influenced by schema congruent priming when ranking disconnection and rejection schema interpretations. They were less liable to make interpretations suggesting abandonment, mistrust, emotional deprivation, shame or social isolation ignoring information provided by the prime. This was the case regardless of interpretation severity.

Figure 6 Congruent priming was less effective for those higher in the affective components of psychopathy



Finally, Factor 1 score was the strongest predictor of ranking for meeting other directedness schema interpretations (extreme schema incongruent)

when schema congruent primes were used (p = .04). This was the only predictor to meet entry criteria (p <.05) for the model accounting for 6% of its variance. Again, congruent primes were less effective for those with high Factor 1 scores. Specifically those with callous unemotional traits were more likely to ignore primes encouraging them to endorse extreme self-sacrifice, subjugation or approval seeking.

7.5.2. Summary of Results for IBT2

Table 5 Summary of regression results for IBT2, summed ranks for interpretations by scenario Content, Direction, Severity and Prime

Outcome	Predictor	R^2	F	β	t	p
Endorsement of extreme physical threat congruent interpretations following threat congruent prime	**Psychopathy Factor 1**	.10	7.81	-.32	-2.80	.001
	HCR20			-.10	-.88	.38
	EPQ Neuroticism			-.06	.49	.63
	Psychopathy Total			.05	.22	.82
	Years in Education			-.02	.18	.86
	Psychopathy Factor 2			.01	.11	.91
Endorsement of extreme social threat congruent interpretations following threat congruent prime	**Psychopathy Factor 1**	.09	6.55	-.30	-2.56	.01
	EPQ Neuroticism			-.13	-1.11	.27
	Years in Education			.13	1.08	.28
	Psychopathy Total			.17	.83	.41
	Psychopathy Factor 2			.04	.33	.75
	HCR20			-.02	-.20	.84
Endorsement of extreme social threat incongruent interpretations following threat congruent prime	**Psychopathy Factor 1**	.07	4.82	.26	2.20	.03
	HCR20			.12	1.00	.32
	EPQ Neuroticism			.12	.99	.33
	Years in Education			.08	.67	.50
	Psychopathy Factor 2			.01	.11	.91
	Psychopathy Total			-.02	-.07	.94
Endorsement of disconnection / rejection extreme schema incongruent interpretations following schema congruent prime	**Psychopathy Factor 1**	.11	8.05	.33	2.84	.001
	Years in Education			.13	1.10	.27
	Psychopathy Total			.10	.52	.60
	Psychopathy Factor 2			.08	.61	.54
	EPQ Neuroticism			.05	.45	.65
	HCR20			-.01	-.06	.95
Endorsement of disconnection / rejection schema incongruent interpretations following schema congruent prime	**Psychopathy Factor 1**	.08	5.67	.28	2.38	.02
	Psychopathy Total			-.19	-1.42	.16
	Psychopathy Factor 2			-.17	-1.42	.16
	EPQ Neuroticism			-.13	-1.09	.28
	Years in Education			.04	.33	.74
	HCR20			.02	.18	.86
Endorsement of disconnection / rejection schema congruent interpretations following schema congruent prime	**Psychopathy Factor 1**	.13	9.98	-.36	-3.15	.001
	HCR20			.08	.67	.51
	Years in Education			-.07	-.60	.55
	EPQ Neuroticism			.05	.43	.67
	Psychopathy Factor 2			-.02	-.16	.87
	Psychopathy Total			-.02	-.12	.91
Endorsement of disconnection / rejection extreme schema congruent interpretations following schema congruent prime	**Psychopathy Factor 1**	.07	4.77	-.26	-2.19	.03
	Psychopathy Total			.20	1.00	.33
	Psychopathy Factor 2			.11	.87	.39
	Years in Education			-.10	-.80	.43
	HCR20			.06	.46	.65
	EPQ Neuroticism			.03	.25	.80
Endorsement of other directedness extreme schema incongruent interpretations following schema congruent primes	**Psychopathy Factor 1**	.06	4.57	.25	2.14	.04
	Psychopathy Total			-.22	-1.06	.29
	Years in Education			-.10	-.80	.43
	Psychopathy Factor 2			-.09	-.69	.49
	HCR20			.05	.42	.68
	EPQ Neuroticism			.01	.06	.95

Overall, negative priming was less effective for Factor 1 psychopathy. Specifically those higher in callous unemotional traits were less likely to be influenced by primes that encouraged subjugation to others or self-sacrifice. In addition, they were less prone to influence from social or physical threat primes or those that suggested abandonment or rejection (see Table 5).

7.6. Overall Summary of Regression Results

Regression analyses revealed a number of significant differences in emotion processing ability dependent on psychopathy factor. First, the AAT showed those higher in Factor 2 psychopathy traits were quicker to approach crowds expressing extreme levels of negativity but more avoidant of extremely positive crowds. Second, the ERT demonstrated those higher in Factor 1 traits were less able to experience negative emotion when directed to do so. This was indicated by slower heart rate when instructed to get into the feeling of aversive images and was not reflected in self-report. Specifically, individuals reported having experienced the images in a manner that suggested increased rather than decreased heart rate. Third, the IBT1 suggested higher Factor 1 traits were associated with making healthy interpretations of emotionally ambiguous situations. In particular, those in the sample who were more callous and unemotional were less likely to consider situations as socially threatening. In addition, they were less apt to expect rejection, inhibit emotion, or subjugate to others. In the case of social threat and rejection, rank data was corroborated by faster word completions for benign but not negative words. Conversely, those with higher Factor 2 scores showed some support for negative interpretations. Specifically, those with

elevated anti-social traits were more prone to depend on others and to suppose they were susceptible to harm, failure or illness. Finally, the IBT2 implied negative priming was less effective for Factor 1 psychopathy. In particular, participants with more callous unemotional traits were less affected by priming that encouraged self-sacrifice, or suggested abandonment, social or physical threat. This suggests they were more fixed in their beliefs especially when taken together with findings for IBT1.

7.7. Differences between Group Comparison and Regression Results

7.7.1. Summary of Differences between Group Comparison and Regression Results

As Table 6 illustrates, group comparison and regression approaches reported in this and the previous chapter yielded results that were similar but also differed. Results differed for each of the tasks to some extent. For example, AAT group comparisons found the high psychopathy group (PCL-R total score ≥ 30) were quicker to approach crowds expressing moderate levels of affect than were the lower group (PCL-R total score < 30). This behavioural finding was supported by rating data that showed the same group rated moderate levels of affect as more approving than did the low group. Conversely, differences relating to level of psychopathy total score were not found for the regression analysis. Rather two phenomena of interest were found for Factor 2. Greater anti-social traits were associated with faster approach to crowds expressing high levels of negative emotion but increased avoidance of high levels of positive emotion. Unlike the group comparisons there were no significant relationships between the rating data and level of psychopathy.

Finally, neither approach found significant differences in LEAS scores for psychopathy.

In addition, the ERT group comparison showed higher levels of psychopathy (PCL-R ≥ 30) involved *faster* heart rate during negative picture processing but effects of condition (look, increase, decrease) were non-significant. Conversely, regression found *slower* heart rate for higher Factor 1 but this was evident only when participants were instructed to experience (increase) negative emotion.

Both approaches to IBT1 found those with higher levels of psychopathy were less likely to interpret information negatively particularly if it was extreme. However, only regression detected these differences for Factor 1 rather than total psychopathy. In contrast, regression found Factor 2 showed some support for negative interpretations. Moreover, regression analyses found many more psychopathy dependent differences in interpretation that were specific to scenario content than did the group comparisons. Finally, results for rank data were reflected by RT findings for the regression but not the group comparisons approach (see Table 6).

Both approaches to IBT2 found schema congruent priming was less effective for higher levels of psychopathy. This was particularly true when the prime encouraged subjugation or self-sacrifice. As with the other tasks regression detected differences for Factor 1 but not total psychopathy. In addition, only the regression approach detected ineffective negative priming for social and physical threat as well as materials related to disconnection or rejection (see Table 6).

Table 6 Summary of group comparison and regression results by task

		Group Comparisons		
Task	***Interaction term***	***Result***	***p***	***Interpretation***
AAT	Group x Emotion x Ratio x Direction	$F(1,66) = 6.08$	.001	High psychopathy group showed faster approach to positive crowds (ratio 6:6)
RAAT	Group x Emotion x Ratio	$F(1,66) = 6.50$	.01	High psychopathy group rated positive crowds (ratio 6:6) as more approving than did low group reflecting approach behaviour demonstrated in AAT
ERT	Group x Picture	$F(1,54) = 5.77$	.02	High psychopathy group showed increased heart rate when viewing negative compared to positive pictures
IBT1	Group x Direction x Severity	$F(1,62) = 4.52$	.05	High psychopathy group gave less endorsement to extreme schema congruent interpretations
IBT2	Group x Content x Direction x Prime	$F(4,248) = 2.38$	.05	High psychopathy group ignored schema congruent priming across content generally and specifically when encouraged to subjugate to others
		Regression		
Task	***Predictor***	***Result***	***p***	***Interpretation***
AAT	Psychopathy Factor 2	$R^2 = .07$, $F(1,67) = 4.08$	.03	Higher Factor 2 scores predicted faster approach to crowds expressing high levels of negative emotion (ratio 10:2)
		$R^2 = .08$, $F(1,67) = 5.78$	.02	Higher Factor 2 predicted quicker avoidance of high levels of positive emotion (ratio 10:2)
RAAT		No significant results		
ERT	Psychopathy Factor 1	$R^2 = .26$, $F(1,35) = 12.42$	.001	Higher Factor 1 scores predicted slower heart rate when instructed to increase experience of negative emotion
IBT1	Psychopathy Factor 1	$R^2 = .06$, $F(1,68) = 6.71$	.04	Higher Factor 1 predicted less endorsement of extreme social threat congruent interpretations
		$R^2 = .06$, $F(1,68) = 4.18$	.04	Higher Factor 1 predicted less endorsement of extreme schema congruent interpretations related to over vigilance / inhibition
		$R^2 = .06$, $F(1,68) = 4.65$	.04	Higher Factor 1 predicted less endorsement of disconnection / rejection schema congruent interpretations
		$R^2 = .09$, $F(1,68) = 6.73$	.01	Higher Factor 1 predicted greater endorsement of other directedness extreme schema incongruent interpretations
		$R^2 = .08$, $F(1,68) = 6.55$	.02	Higher Factor 1 predicted faster word completions matching disconnection / rejection schema incongruent interpretations
		$R^2 = .07$, $F(1,68) = 5.64$	.02	Higher Factor 1 predicted faster word completion matching social threat incongruent interpretations
	Psychopathy Factor 2	$R^2 = .08$, $F(1,68) = 5.54$	.02	Higher Factor 2 predicted endorsement of impaired autonomy / performance extreme schema incongruent interpretations
IBT2	Psychopathy Factor 1			Higher Factor 1 predicted less influence of priming suggesting:
		$R^2 = .10$, $F(1,68) = 7.81$	.001	physical threat
		$R^2 = .09$, $F(1,68) = 6.55$	.01	social threat
		$R^2 = .13$, $F(1,68) = 8.05$	.001	abandonment or rejection
		$R^2 = .06$, $F(1,68) = 4.57$	.04	self sacrifice or subjugation

7.7.2. Possible Reasons for the Difference in Results between Group Comparison and Regression Results

The differing findings between the group comparison and regression approaches are likely due to at least three main issues. First, a number of the regression analyses may have been underpowered to detect effects for psychopathy total score. This did not appear to affect the group comparisons

to the same degree and could have been expected as calculations indicated greater power for this approach all be it marginally. As discussed in chapter 6, group comparisons involving within subject factors allow greater control of the error variance so have increased sensitivity and power to detect true differences (Shaugnessy, Zechmeister, & Zechmeister, 2011). In the current study, the group comparisons had slightly greater power than the regression. For example, AAT power calculations indicated f^2 = .12 and .15 for the group comparisons compared to f^2 = .17 for regressions. Therefore, the regression may have missed differences in psychopathy total score detected by the group comparison. However, this does not appear to explain the differences in IBT2 findings for psychopathy total score. As reported above, bivariate correlations demonstrated a number of significant findings for psychopathy total score, suggesting the analysis was not underpowered. However, these became non-significant when entered into the regression model alongside Factor 1 suggesting resistance to priming is driven by the specific aspects of psychopathy reflected in this factor.

Second, psychopathy was treated differently between the approaches. Only the regression treated psychopathy Factor 1, 2 and total score separately. This meant that any associations driven by one of the factors independently would only be evident for the regression. These findings reflect results from previous studies discussed in chapters 1 and 2 that illustrated the two factors of psychopathy differ in relation to emotion processing deficits (e.g. Blair et al., 2004; Lobbestael, Arntz, Cima, & Chakhssi, 2009; Verona, Patrick, Curtin, Bradley, Lang, 2004).

Third, for the ERT, different indices of emotion regulation were used for each approach. The group comparisons examined mean HR (bpm) by condition whereas indices for up-regulation (increase) and down-regulation (decrease) were used in the regressions. For this the ‘just look’ condition acted as a baseline which was subtracted from the ‘increase’ and ‘decrease’ conditions respectively (Increase Index = Increase - Look; Decrease Index = Decrease - Look). Finally, as discussed in chapter 6 regression but not group comparison is very sensitive to outliers, which is another possible reason for the differing results. However, scrutiny of the data for each task did not indicate that this was a problem.

This chapter reported the results of the whole sample task-by-task regression analysis; the next chapter presents the results for the mediation analysis. The chapter begins with the analysis design, including a discussion of the different methods for testing mediation models. Data preparation will be described including how variables (mediator and dependent variables) were selected for inclusion in the mediation model. Finally, the bias corrected (BC) bootstrap analysis used to examine the study’s multiple mediation model will be described. The chapter concludes with a summary of the mediation results.

CHAPTER 8:
MEDIATION ANALYSIS

Chapter 8

8. MEDIATION ANALYSIS DESIGN AND RESULTS

The previous chapter presented the results of the task-by-task regression analysis. This chapter reports the results for the mediation analysis which examined the study's main hypotheses. First an assessment of the debates concerning appropriate methods for testing mediation models, including multiple mediation models, is given, followed by an outline of the current analysis design. Next, the data preparation process is described including how task-by-task regression results were used to inform the choice of mediator variables. Finally, results of the mediation model are presented. The mediation analysis draws on Preacher and Hayes bias corrected bootstrap method for establishing mediation (Preacher & Hayes, 2008). The chapter concludes with a summary of the mediation results.

8.1. Introduction

Mediator models abound in the social science research literature and most use Baron and Kenny's (1986) model as their reference point. Baron and Kenny state 'the central idea in the [mediator] model is that the effects of the stimuli on behaviour are mediated by various transformation processes internal to the organism' (p. 1176). Inclusion of a mediator in a relational model improves the explanation of the model by demonstrating how one variable of interest influences another (James & Brett, 1984; Preacher & Hayes, 2004). For example, if it has been demonstrated that a significant

relationship exists between *X* and *Y*, the aim of future research may be to examine putative intervening mechanisms believed to convey the influence from *X* onto *Y* (Hoyt, Imel, & Chang, 2008).

8.2. Simple Mediator Models

8.2.1. Basic Principles of the Simple Mediator Model

The simplest form of the mediation model is shown in Figures 1a and b.

Figure 1 Baron and Kenny's path diagram

a) Path diagram of total effect

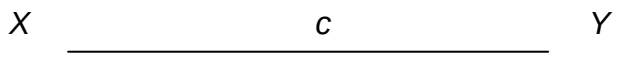


Figure 1a represents the total effect of *X* on *Y*. In this relationship, *c* represents the coefficient. When only *X* and *Y* are considered a unit change in *X* is related to a change of *c* units in *Y*.

b) Path diagram of mediated effect of X on Y

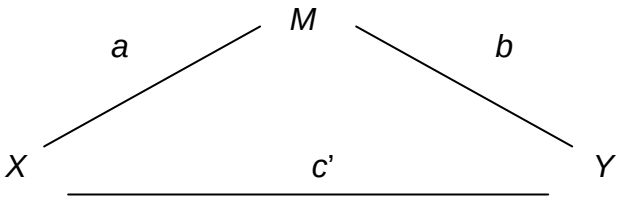


Figure 1b represents the mediated effect of *X* on *Y* when a third variable (*M)* is considered. Here *a* and *b* are the coefficients of the relationship between *X* and *Y* through the influence of *M.* A unit change in *X* is related to a change of *a* units in *M*, likewise a unit change in *M* is associated with a change of *b* units in *Y* when *X* is held constant. We can use *a* to predict the value of *M* from knowledge of *X,* whilst *Y* can be predicted through the value of *b* and

knowledge of *M.* Finally, *c'* is the coefficient of *X* on *Y* and predicts Y from knowledge of X.

Whilst *a* and *b* quantify the indirect effect of *X* on *Y* through *M*, c' quantifies the direct effect of *X* on *Y* independent of *M*. The size of the indirect effect is the product of the *X* to *M* and *M* to *Y* effects (*ab*). When all 3 variables are observed *c' = c - ab*. Some approaches determine mediation by inferring the indirect effect from tests of the component pathways of the model. However, new analytical approaches prefer to quantify expressly the indirect effect itself (MacKinnon & Fairchild, 2009).

James and Brett (1984) note *M* does not have to explain all of the influence of *X* on *Y* to support a mediation effect as unmeasured variables and lack of self-containment of *M* can attenuate the indirect effect . Therefore, support for a mediation effect can be either complete or partial. Complete mediation is when *ab = c*, that is when there is no direct effect of *X* on *Y* and *c'* = 0. Partial mediation is when *ab* is smaller than *c* and *c'* is not 0 but is less than *c*.

8.2.2. Baron and Kenny's Causal Steps Approach

Baron and Kenny's model, sometimes referred to as the causal steps approach (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), is usually measured in four steps by applying three regression equations:

i. regressing the mediator (*M*) on the independent variable (*X*)
ii. regressing the outcome variable (*Y*) on the independent variable (*X*)
iii. regressing the outcome variable (*Y*) on both the independent variable (*X*) and the mediator (*M*)

iv. estimating and testing separate coefficients for each equation.

Baron and Kenny recommend simultaneous entry of variables as opposed to hierarchical entry of variables in the third regression so that the influence of *b* on *c'* is tested after *a* is controlled and the affect of *a* on *c'* is examined after *b* is controlled (Holmbeck, 1997). To establish mediation four conditions must be met:

i. the independent variable (*X*) must influence the mediator (*M*)

ii. the independent variable (*X*) must influence the outcome variable (*Y*)

iii. the mediator (*M*) must influence the outcome variable (*Y*)

iv. the influence of the independent variable (*X*) on the outcome variable (*Y*) must be less in the third equation than in the second

Baron and Kenny acknowledge that in the behavioural sciences it is unlikely for full mediation to be established, therefore, a significant reduction of the influence of *X* on *Y* in step four is sufficient to support a mediation hypothesis (Baron & Kenny, 1986).

8.2.3. Criticism of the Causal Steps Approach

Recent developments in the computation abilities of statistical packages have meant that calculations, which were too cumbersome to undertake previously, are now possible with relative ease. As a result new methods for analysing mediation models have been developed. A crucial stage in this development process has been to run simulation studies comparing the efficacy of the new analytical approach to more established approaches including the causal steps approach. Findings suggest that compared to other types of tests, the causal steps approach was less likely to detect a true mediation effect (MacKinnon et al., 2002). Whilst Baron and Kenny's model remains popular,

because of simulation studies, their methods for testing mediation have received some criticism and an increasing number of studies have abandoned their analytical approach in favour of more powerful methods.

MacKinnon et al., (2002) carried out a Monte Carlo study comparing 14 methods for testing mediation. The study intended to help researchers decide on the analysis which best suited their research design. In particular, the study assessed which methods yielded maximum statistical performance and were best able to balance Type I and Type II errors with power, dependent on sample size. Sample sizes of 25, 50, 100 and 200 were examined. The authors identified three main types of mediation tests:

i. the causal steps approach advocated by Baron and Kenny and outlined above
ii. the difference in coefficients test which measures the significance in change of *X* on *Y* with and without the mediator included in the regression
iii. the product of coefficients test which examines the significance of the product of the paths that form the indirect effect (relationship *ab* in Figure 1b)

Findings suggested the causal steps approach produced too many Type II errors, and yielded very low power unless the effect or sample size was large. The Sobel test, a product of coefficients test, has often been included alongside the causal steps approach as an additional test of the indirect effect. However, the study found that it was only effective for studies with sample sizes $N > 200$. Conversely, bootstrapping, a nonparametric product of

coefficients test, which uses a resampling with replacement method, outperformed the casual steps approach across all sample sizes. Specifically the method demonstrated greater power and better Type II error control than either the causal steps approach or Sobel test.

Both the causal steps approach and the Sobel test have been criticised because they assume the normal distribution of *ab*, however a number of studies have shown that this is rarely the case except in very large sample sizes. The distribution of *ab* is more likely to be skewed therefore tests which do not consider this often miss true mediation effects (MacKinnon et al., 2002; Shrout & Bolger, 2002; Preacher & Hayes, 2004; Beaujean, 2008, Hoyt et al., 2008). Methods that take into account the non-normal distribution of *ab* and test the confidence limits of this distribution increase power because they are more likely to capture any existent mediated effect (MacKinnon & Fairchild, 2009).

Objections to the causal steps approach have also been made because the indirect effect is inferred not measured directly (Hayes, 2009; MacKinnon & Fairchild, 2009). Hayes (2009) argues that the mechanism of interest, the indirect effect, is quantified as *ab* therefore, tests of the significance of *ab* should be the main objective of any study of mediation.

Finally, Shrout and Bolger (2002) encourage the use of bootstrapping methods in mediation analyses including those with multiple mediators. In particular, the authors recommend bootstrapping methods for mediation studies with moderate or small samples (N = 20 to N = 80) stating ‘small samples yield shades of gray rather than black-and-white results’ which

bootstrapping methods are more likely to detect (Shrout & Bolger, 2002 p. 437).

8.2.4. Bias Corrected Bootstrapping

Bootstrapping is a widely used resampling with replacement method, which establishes confidence intervals for testing the significance of the indirect effect (Mallinckrodt, Abraham, Wei, & Russell, 2006). It is a non-parametric test, which does not assume the normal distribution of *ab.* In recent years, there has been an increased use of the method so that it has become the preferred approach for testing mediation (Beaujean, 2008; Hayes, 2009; Hoyt et al., 2008; Kenny, 2008; MacKinnon et al., 2002; MacKinnon & Fairchild, 2009; Mallinckrodt et al., 2006; Preacher & Hayes, 2004; Preacher & Hayes 2008; Shrout & Bolger, 2002). Kenny argues that bootstrapping provides the most powerful test of the indirect effect in both simple and multiple mediation models (Kenny, 2008). Occasionally bootstrapping is reported as a supplementary test to the causal steps approach but Hayes (2009) argues for using it as the main test for mediation effects. In any case Preacher and Hayes' bootstrap macro for SPSS tests for the significance of the indirect effect parametrically and nonparametrically and simultaneously provides an output of Baron and Kenny's causal steps (Preacher & Hayes, 2004).

Bias corrected bootstrapping, involves using an observed sample as a reservoir from which to generate *k* samples of *n.* Therefore, the method involves generating a number of datasets similar to those that would occur if the study were duplicated *k* times. By randomly sampling with replacement from the reservoir sample a case has a 1/*n* chance of being chosen, therefore

an equal chance of being drawn once or more, or omitted. For example in a sample with cases of 32, 20, 34, 56, 44, 21…. the first bootstrap resample could consist of 20, 56, 32, 44, 44, 21…. A second could be 56, 32, 21, 21, 44, 32… and so on. In this way, large numbers of unique samples can be generated from the original data set. It is recommended that at least 1,000 bootstrap samples are generated (Preacher & Hayes, 2008) and some studies use up to 20,000 bootstrap samples (Mallinckrodt et al., 2006).

As each of the *k* samples are drawn their mediator effect is estimated and arranged from low to high to form a distribution of all estimated mediator effects. Next, the confidence limits are found for this distribution at the 2.5th and 97.5th percentiles. If the value 0 is not contained within the percentiles, a mediation effect is supported.

Mallinckrodt et al., (2006) compared the efficacy of the causal steps approach to bootstrapping for detecting mediation effects. The study examined emotional awareness as a mediator between attachment avoidance and psychological distress. The authors used an observed sample $N = 60$ from which they generated 1,000 bootstrap samples. In addition, the variables were examined in accordance with the causal steps approach. The bootstrapping method found a mediation effect which was significant at $p = .03$ whilst the causal steps approach was unable to detect an effect. This further supports the findings of MacKinnon et al. (2002) that the causal steps approach lacks statistical power compared to bootstrapping, especially for small to moderate samples, or when modest effect sizes occur.

8.3. Multiple Mediator Models

Simultaneous multiple mediation models have more than one mediating variable. Testing multiple mediation models involves testing for a total indirect effect as well as determining whether specific indirect effects exist for each of the individual mediators. Most often, the relationship between the mediators is a one of collinearity. As such, the specific indirect effect through a mediator in a multiple mediator model is dependent on its relationship to the other mediators in the model. Therefore, any specific indirect effect found for a given mediator only applies so long as the other mediators in the model are present. This collinearity may attenuate the effect of the mediators on the *X, Y* relationship.

Preacher and Hayes (2008) note that multiple simultaneous mediators have been neglected in the methodological literature. In response, the authors proposed guidelines for testing multiple mediator models using bootstrapping methods (see Figure 2). Four reasons are given to support testing one single multiple mediation model rather than a series of simple mediation models:

i. if an overall mediation effect is found one can say the set of *j* variables mediates *X* on Y
ii. it can determine how much specific mediator variables mediate the relationship between *X* and *Y* whenever the other mediators in the model are present
iii. the likelihood of parameter bias because of omitted variables is reduced (the converse is true for separate single mediator analyses)

iv. it can determine the relative sizes of specific indirect effects associated with all mediators and allow assessment of competing theories within one model

Preacher and Hayes (2008) suggest analysis for multiple mediator models should be done in two parts:

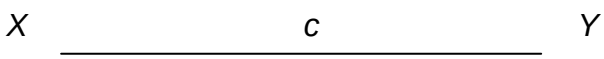
i. investigate the total indirect effect

ii. test hypotheses concerning individual mediators within the model

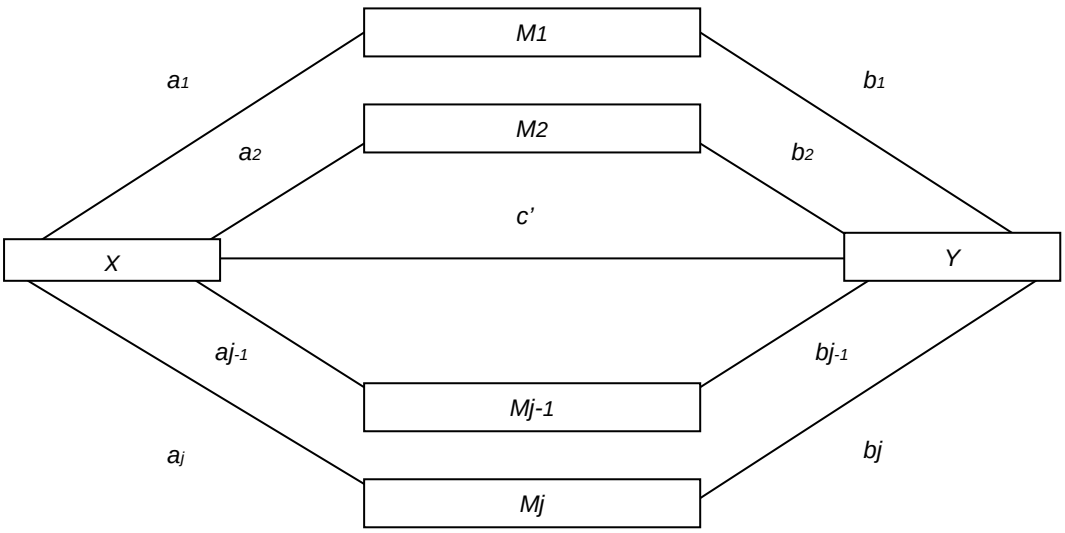
However, they stress that acquiring a significant total indirect effect is not a requirement for going on to examine specific indirect effects.

Figure 2 Illustration of Preacher and Hayes' multiple mediation model with j mediators

a) The total effect of X on Y



b) X is believed to influence Y indirectly through M_1, M_2, to M_j



In Figure 2b the specific indirect effect of *X* on *Y* through M_1 is a_1b_1. The total indirect effect of *X* on *Y* is the sum of the specific indirect effects, $\Sigma_i (a_ib_i)$, $i = 1$ to *j*. The total effect of *X* on *Y* is the sum of the direct effect plus all *j* of the specific indirect effects, $c = c' + \Sigma_i (a_ib_i)$, $i = 1$ to *j*.

Preacher and Hayes have developed a macro for SPSS which allows researchers to test multiple mediation models with relative ease. In addition, it allows comparison of different scales so there is no need for standardization or transformation. The macro conducts the following actions:

i. generates a sample size of *n* cases with replacement from the observed dataset
ii. uses new sample of size *n* to reestimate all *j* values of a_i and b_i
iii. calculates $a_ib_i^*$ and $\Sigma (a_ib_i^*)$ ('*' denotes the estimate indirect effects derived from the resampled data set)
iv. repeats this process *k* times to produce a distribution of *k* estimates (estimated total and specific indirect effects of X on Y)

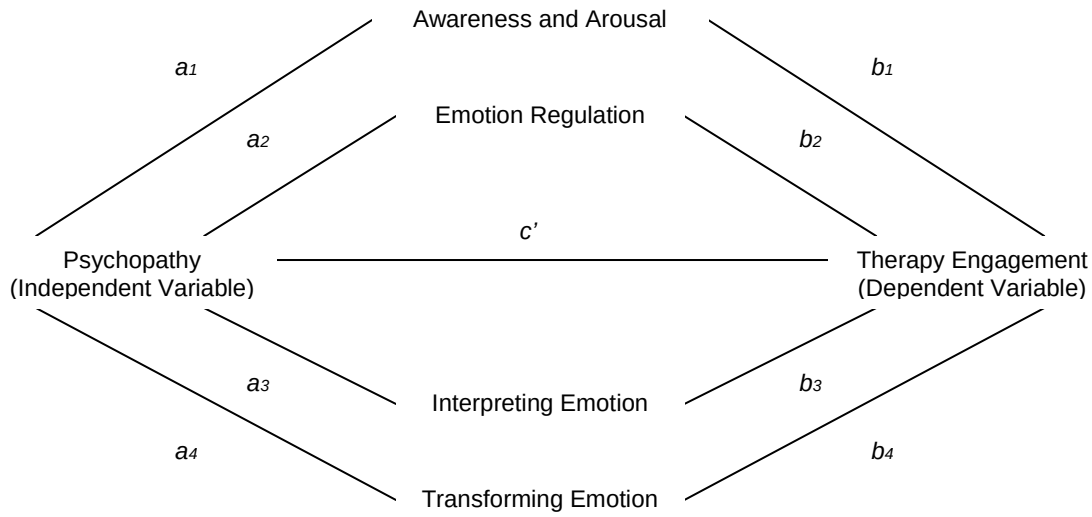
To test for the specific indirect effects of *X* on Y, *k* values of $a_ib_i^*$ are sorted from low to high so that the 95% CIs can be estimated. To assess the total indirect effects $a_ib_i^*$ is replaced with $\Sigma (a_ib_i^*)$ in the process.

8.3.1. Applying Preacher and Hayes' Multiple Mediation Model to the Current Study

The current study proposed a multiple mediation model consisting of one independent variable (psychopathy), one dependent variable (therapy engagement) and four mediators representing different emotion processing mechanisms (awareness and arousal of emotion, emotion regulation,

interpretation of emotion, transformation of emotion). Figure 3 shows Preacher and Hayes' design applied to the present study.

Figure 3 A single-step multiple mediator model applied to the current study



The specific indirect effect of psychopathy on therapy engagement through awareness and arousal is a_1b_1. The total indirect effect of psychopathy on therapy engagement is the sum of the specific indirect effects of all four emotion processing mediators. Finally, the total effect of psychopathy on therapy engagement is the sum of the direct effect and all four of the specific indirect effects.

8.4. Analysis of Multiple Mediation Model in the Current Study

A multiple mediation analysis was conducted to investigate whether the emotion processing indicators described above mediated the relationship between level of psychopathy and quality of therapy engagement.

Specifically, whether awareness and arousal of emotion, emotion regulation ability, interpretation bias and ability to transform emotion:

i. jointly mediated the relationship between psychopathy and therapy engagement
ii. each uniquely mediated the relationship between psychopathy and therapy engagement

As discussed above research findings suggest that bias corrected bootstrapping is the most effective method for testing multiple mediator models with small to moderate samples (*N* = 20 to 80). Specifically, this approach has been shown to have better control of Type II errors and increases power for smaller sample sizes such as the current one (MacKinnon et al., 2002). Consequently, bootstrapping was undertaken using the SPSS version of Preacher and Hayes' Indirect macro (Preacher & Hayes 2008). Therapy engagement was measured using the Group Emotional Engagement Questionnaire (GEEQ). Composite scores were calculated for each of the indicators as described below and used in the analyses. These scores were entered into the model simultaneously. Results of the mediation analyses are now presented.

8.4.1. Analysis Design

As described above, the multiple mediator model consisted of one independent variable (level of psychopathy), one dependent variable (level of therapy engagement) and four mediators (four emotion processing indicators) (see Figure 3 above).

The relationships between psychopathy as measured by the Psychopathy Check List-Revised (PCL-R; Hare, 2003) (Factor 1, Factor 2, total) and the three therapy engagement measures (Group Engagement Measure [GEM; MacGowan, 1997], Experience Scale [EXP; Klein, Mathieu, Gendlin, & Keiser, 1969], GEEQ [described in chapter 5]) were examined to determine which variables to include as the independent and dependent variables. Bivariate correlations revealed Factor 1 psychopathy was significantly negatively associated with GEEQ total scores, $r(68)$ -.27, p = .02. No further significant relationships were found between any of the other psychopathy scores and therapy engagement scores (ps all > 2) (see Table 1). Therefore, Factor 1 psychopathy and GEEQ total scores were used as the independent and dependent variables respectively. Composite scores were calculated for each of the four emotion processing indicators and used as proposed mediators in the analysis.

Table 1 Correlations for therapy engagement with psychopathy (PCL-R)

	Psychopathy		
	Factor 1	Factor 2	Total
GEEQ Total	**-.27***	-.06	-.15
GEM Total	-.10	.01	-.02
EXP Peak	-.04	.12	.10
EXP Mode	-.12	.10	.06

* Significant at the .05 level (two-tailed)

8.4.2. Mediation Data

8.4.2.1. Emotion Processing Indicators

8.4.2.1.1. Calculating emotion processing composite scores

As described above Factor 1 psychopathy was significantly associated with several emotional processing measures. Therefore, to promote parsimony a composite score was calculated for each emotion processing indicator. Inclusion criteria for the composite scores were:

i. Significant correlation with Factor 1 psychopathy and / or GEEQ scores

ii. Correlation with other variables for the same indicator at ≥ .4

The variables that met criteria (see Table 2) were then z transformed before forming the composite. The composite was calculated by adding the z scores together or subtracting them if the measure was reverse scored.

Table 2 Emotion processing variables included in composite scores: correlations with Factor 1 psychopathy and GEEQ Total

	Emotion Processing Measure	Psychopathy Factor 1	GEEQ Total
Variables for Awareness Arousal composite	**Approach / Avoidance Task**		
	Approach to Neutral crowds		-.29*
	Approach to Happy crowds (6:6) relative to Neutral		.28*
	Approach to Disgust crowds (10:2) relative to Neutral		.35**
Variables for Emotion Regulation composite	**Emotion Regulation Task**		
	HR Increase minus Look for Negative pictures	-.31**	
	Self-Report Questionnaire		
	Negative Mood Regulation Scale		.39**
Variables for Interpretation of Emotion composite	**Interpretation Bias Task 1 (Rank data)**		
	Disconnection and rejection schema congruent interpretations	-.26*	
	Impaired limits schema congruent interpretations		-.26*
	Over-vigilance and inhibition extreme schema congruent interpretations	-.24*	
	Social threat extreme threat congruent interpretations	-.25*	
	Interpretation Bias Task 1 (Word completion data)		
	Social threat congruent	-.30**	
Variables for Transformation of Emotion composite	**Interpretation Bias Task 2 (Schema congruent primes only)**		
	Disconnection and rejection extreme schema congruent interpretations	-.26*	
	Disconnection and rejection schema congruent interpretations	-.36**	
	Social threat extreme threat congruent interpretations	-.30**	
	Physical threat extreme threat congruent interpretation	-.32**	

* Significant at the .05 level (two-tailed)
**Significant at the .01 level (two-tailed)

8.4.2.1.2. Inter-correlations of the emotion processing composites

Bivariate correlations were conducted to examine to what extent the four emotion processing composites were inter-related. Relationships were non-

significant (all *p*s > .6) except for the interpretation of emotion composite with the transformation composite, $r(68) = .29$, $p = .01$, (see Table 3). These two composites were not highly correlated. In addition, the significant relationship may have been expected because the two tasks are more similar than the others are (i.e. used some of the same stimuli). Arguably, Greenberg and Pascual-Leone's principles of interpretation and transformation of emotion may be more closely related than the other two principles (see chapter 1, 2 and 5 for discussions). Regardless, as discussed above, mediators in a multiple mediator model may not function independently of each other. Moreover, it may be closer to reality for multiple factors to function simultaneously as mediators of a broader relationship (Preacher & Hayes, 2008).

Table 3 Inter-correlations of the four emotion process composites used in the mediation analysis

	Awareness and Arousal composite	**Emotion Regulation composite**	**Interpretation composite**	**Transformation composite**
Awareness and Arousal composite	1.00			
Emotion Regulation composite	-.01	1.00		
Interpretation composite	.01	-.04	1.00	
Transformation composite	.03	.06	**.29***	1.00

* Significant at the .01 level (two-tailed)

8.4.2.2. Therapy Engagement Measure

Scores were calculated for the GEEQ as described in chapter 5. The GEEQ was scored on a 5-point Likert scale (1 = never to 5 = most or all of the time) with higher scores indicating better therapy engagement.

8.4.3. Bias Corrected Bootstrap

A bias corrected bootstrap was conducted using 10,000 bootstrap samples and 95% confidence intervals. The following variables were entered into the model:

i. independent variable (Factor 1 psychopathy)
ii. mediator variables (composite scores for awareness and arousal, emotion regulation, interpretation of emotion, transformation of emotion)
iii. dependent variable (GEEQ total score)

As previously, I examined what other variables were associated with these variables in our sample, to guide the choice of appropriate covariates. Associations between Factor 1 psychopathy with scores for the Historical Clinical Risk Management scales (HCR-20; Webster, Douglas, Eaves, & Hart, 1997), Eysenck Personality Questionnaire Neuroticism (EPQ; Eysenck & Eysenck, 1975) and years in education have been described extensively in chapter 7. Additionally the interpretation of emotion composite was significantly negatively related to EPQ Neuroticism, $r(66) = .31$, $p = .01$, and GEEQ total score was significantly positively related to length of time in treatment, $r(68) = .29$, $p = .03$. These variables were entered into the model as covariates.

Results of the bootstrap are presented in Table 4. Taken together awareness and arousal, emotion regulation, interpreting emotion and transforming emotion did not mediate the effect of Factor 1 psychopathy on therapy engagement. The total indirect effects were found to have a point estimate of .4069 and a 95% bias corrected bootstrap CI of -.3158 to 1.3053 therefore not

significant from zero. However, examination of the specific indirect effects revealed the *ab* paths for interpreting emotion and transforming emotion were both significant with point estimates of .3350 and .2763 and 95% CIs of .0371 to .9934 and .0067 to .7783 respectively. Neither awareness and arousal, nor emotion regulation contributed significantly to the model. Furthermore examination of the pairwise contrasts of the indirect effects revealed that the specific indirect effects of interpreting emotion and transforming emotion were each significantly greater than the specific indirect effect through emotion regulation (bias corrected 95% CIs of -1.2108 to -.1447 and -1.0951 to -.1106 respectively).

Table 4 Bootstrapping results for the effect of Factor 1 psychopathy on therapy engagement through emotion processing ability

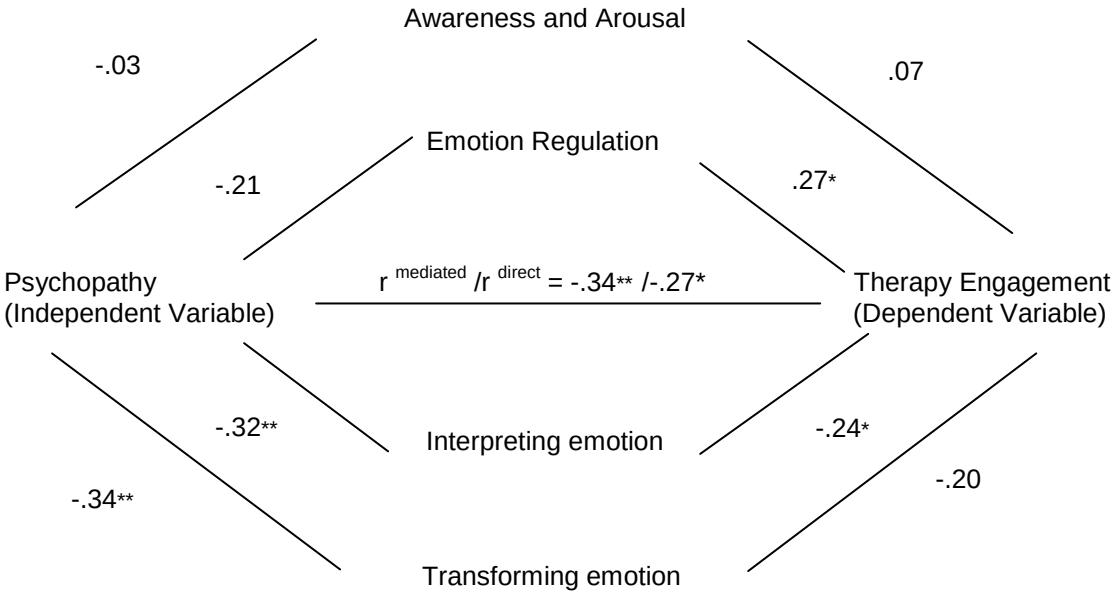
	Product of Coefficients			**Bootstrapping*** **Bias corrected 95% CI**	
	Point Estimate	SE	Z	Lower	Upper
Indirect effects					
Awareness & Arousal	.0182	.0642	.3474	-.0631	.1984
Emotion Regulation Ability	-.2225	.1970	-1.4364	-.7641	.0034
Interpreting Emotion	.3350	.2264	1.7529	**.0371**	**.9934**
Transforming Emotion	.2763	.1831	1.5091	**.0067**	**.7783**
TOTAL Indirect Effects	.4069	.3159	1.2904	-.3158	1.3053
Pairwise Contrasts					
Awareness & Arousal vs. Emotion Regulation	.2407	.1627	1.4791	-.0128	.7840
Awareness & Arousal vs. Interpretation	-.3168	.1972	-1.6068	-.9184	.0156
Awareness & Arousal vs. Transformation	-.2582	.1883	-1.3707	-.7381	.0274
Emotion Regulation vs. Interpretation	-.5575	.2318	-2.4053	**-1.2108**	**-.1447**
Emotion Regulation vs. Transformation	-.4989	.2402	-2.0772	**-1.0951**	**-.1106**
Interpretation vs. Transformation	.0586	.2754	.2129	-.4567	.6880

*Based on 10,000 bootstraps

As Figure 4 shows, examination of the total and direct effects of Factor 1 psychopathy on therapy engagement revealed the relationship was *strengthened* (rather than weakened) following introduction of the mediators, $r(66) = -.27$, $p = .02$ vs. $r(66) = -.34$, $p <. 01$. This was because the sign of the indirect effects (a_3b_3 and a_4b_4) were positive and therefore differed from that of the total effect (c) indicating that interpreting emotion and transforming

emotion acted as *suppressors* rather than mediators (Preacher & Hayes, 2008; MacKinnon, 2000; Rucker, Preacher, Tormala, & Petty, 2011; Shrout & Bolger, 2002). The higher the Factor 1 psychopathy score the less engaged the patient was with treatment, but once emotion processing was taken into account this relationship became even stronger. Thus, higher Factor 1 psychopathy was related to less endorsement of schema congruent interpretations and reduced schema congruent priming as was better therapy engagement. However, counter to this picture high levels of Factor 1 psychopathy were associated with worse therapy engagement. As such, interpreting and transforming emotion masked the effect of Factor 1 psychopathy on therapy engagement. When these suppressors were omitted, high Factor 1 psychopaths appeared to be better engaged than they were.

Figure 4 Interpreting emotion and transforming emotion suppress the relationship between Factor 1 psychopathy and therapy engagement



* Significant at the .05 level

**Significant at the .01 level

This chapter presented the results of the mediation analysis, which did not establish any mediators for the relationship between psychopathy and therapy engagement but did show interpreting and transforming emotion acted as suppressors on this relationship. A number of authors argue that suppressors are important and can be used to inform theory and practice (MacKinnon et al., 2000; Preacher & Hayes, 2008; Rucker et al., 2011; Shrout & Bolger, 2002). By identifying suppression effects interventions can be better understood and improved (Rucker et al., 2011).

The final chapter will discuss the mediation analysis results presented above and the task-by-task analyses set out in chapters 6 and 7. The results will be discussed with reference to theories of psychopathy, emotion processing and therapy engagement presented in the introduction. The clinical implications of the findings will be considered, specifically concerns for effectively engaging psychopaths in treatment and by extension, treatment efficacy for this group.

CHAPTER 9: DISCUSSSION

Chapter 9

9. THESIS DISCUSSION

This final chapter discusses the results set out in the three preceding chapters. The chapter is arranged in seven sections. Sections two to five discuss the results task-by-task and section six considers the mediation analysis. Each section begins with a summary and interpretation of the results followed by a discussion of the theoretical and clinical implications of the findings. Results are considered with reference to the theories outlined in the introductory chapter. Particular reference will be made to Greenberg and Pascual-Leone's (2006) principles for working with emotion in therapy as well as emotion processing in psychopathy. Similarly, clinical implications will be discussed paying specific attention to engaging psychopaths in treatment and treatment efficacy for this group. Each section accounts for the study limitations and suggests improvements for future research. This chapter concludes with an overall summary of the main findings, outline of the study limitations and suggestions for future research and practice.

9.1. Introduction

The study examined whether emotion processing ability mediated the relationship between psychopathy as measured by the Psychopathy Check List-Revised (PCL-R; Hare, 2003) and group therapy engagement. To my knowledge, this relationship has not been investigated before. The design was enhanced by using Greenberg and Pascual Leone's (2006) four

principles for working with emotion in therapy as a theoretical framework. As described in chapters 1 and 2 these principles outline the emotion processing abilities associated with therapeutic progress and consist of:

i. awareness and arousal of emotion, seen as an initial and general goal
ii. enhancing emotion regulation, described as gaining psychological distance from overwhelming feelings
iii. reflecting on emotion, explained as making meaning of
iv. emotion transformation of emotion, clarified as changing emotion with emotion.

As described in chapters 2 and 5 tasks were chosen specifically to measure each of these processes. In addition, a new measure of emotional engagement in group therapy was developed for use as the study's dependent measure (described in chapters 3 and 4). This measure was designed specifically for use in forensic settings with personality disordered patients.

The analytical approach allowed detailed examination of the relationship of psychopathy with each of the emotion processing mechanisms. This was accomplished by undertaking group comparison (high versus lower psychopathy) and whole sample regression analyses for each task. In addition, mediation analysis allowed investigation of the specific and total indirect effects of psychopathy on therapy engagement through each of the four emotion processing mechanisms (separately and together).

Many of the predicted differences for the five tasks were not found. This may have been due to a number of factors. First, power calculations for the task-

by-task analyses indicated ability to detect medium or larger effects. Therefore, they would have been underpowered to detect small effects. Second, the range of psychopathy scores, which mainly lay in the upper regions, may have been too restricted. Third, stimuli used in the interpretation bias tasks were developed for the current study and have not been tested for validity. Therefore, they may not have adequately matched schema concerns. However, threat materials that have been validated with other patient groups yielded similar findings therefore it may be more likely that the non-significant results arose from restricted range or low power. Fourth, the mediation analysis did not find relationships for awareness and arousal or emotion regulation in contrast to Greenberg and Pascual-Leone's theory. This may have been because the tasks chosen did not map onto their principles as well as intended. Or, that the range of psychopathy scores was too limited to allow detection of Factor 1 differences for these emotion processing indicators. Alternatively, it may be that Greenberg and Pascual-Leone's theory as it relates to these two mechanisms does not apply to psychopathy. A task-by-task discussion of the results is now presented followed by a discussion of the mediation results.

9.2. Awareness and Arousal of Emotion

9.2.1. Summary of Results: Awareness and Arousal

Awareness and arousal was examined using the Approach / Avoidance Task (AAT) and the Ratings for Approach / Avoidance Task (RAAT). Approach / avoidance behaviour and self-report responses to crowds expressing positive and negative emotion in psychopathy were investigated. This may be the first

time a cognitive task has been used as a proxy for behaviour towards social groups in psychopathy. The task design had two particular strengths. First, it contrasted a reaction time (RT) measure of approach behaviour with self-report perceptions of crowd approval as suggested in the literature (Douilliez, Yzerbyt, Gilboa-Schechtman, & Philippot, 2012). Second, the stimuli were designed to be analogous to real group therapy situations with male and female faces expressing positive and negative emotions. There were three main findings of interest. First, clinical levels of psychopathy (PCL-R ≥ 30) involved faster approach to crowds expressing moderate levels of positive emotion. In addition, this group rated these crowds as more approving than did the lower group. Finally, the antisocial component of psychopathy (Factor 2) was related to greater avoidance of crowds expressing high levels of positive affect but greater approach to those expressing high levels of negative affect. These differences were not reflected in self-report ratings of crowd approval.

9.2.2. Interpretation of Results: Awareness and Arousal

9.2.2.1. Clinical Levels of Psychopathy and Approach to Moderate Levels of Positive Emotion

At first glance, these results suggest high psychopathy is associated with greater pro-social behaviour, however, a closer examination reveals a somewhat different but more plausible explanation. Clinical levels of psychopathy involve high levels of conning and manipulation as well as superficial charm and parasitic lifestyles. Book, Quinsey and Langford (2007) suggest psychopaths read others' affect in order to manipulate, deceive and con. Therefore, it may be that expressions of positive emotion are attractive

because they signify approval and therefore an opportunity to profit in some way from interacting. This may explain their propensity for crimes involving fraud and deception. In addition, psychopathy is associated with active splitting within groups to manipulate situations for personal gain (Murphy & McVey, 2010). The ambiguity of the moderately positive groups (50% neutral) may signify greater opportunity for splitting (positive against neutral individuals) in a 'divide and conquer' manner.

9.2.2.2. Factor 2 Psychopathy and Approach / Avoidance for Extreme Levels of Emotion

The dimensional analyses revealed a specific pattern of approach / avoidance behaviour for the anti-social component of psychopathy (Factor 2). As stated in the introductory chapter, studies have found differences in emotion processing between Factor 1 and Factor 2 psychopathy as well as Factor 1 and ASPD (more closely related to Factor 2) (Hare 1996b; Kosson, Lorenz, & Newman, 2006). While factor scores are correlated, they are also dissociable (Verona, Patrick, Curtin, Bradley, & Lang, 2004). Therefore, it is important to consider them separately when examining emotion processing ability in psychopathy. Evidence from previous studies suggests differences in performance can be expected (Blair et al., 2004; Verona et al., 2004). Factor 2 psychopathy is characterised by poor behavioural controls and a need for stimulation (Hare, 2003). Therefore it may be that those high in this factor are attracted by high levels of negative affect because it promises excitement (e.g. from aggressive encounters). This may explain their propensity for interpersonal violence and the senseless nature of it as described by Cleckley (1982).

Avoidance of high levels of positive affect observed for Factor 2 may be explained with reference to the conceptualisation of psychopathy. In particular, the distinctions made between primary and secondary psychopathy (Blackburn, 1998; Karpman, 1941; Lykken, 1995; Porter, 1996) which inform the PCL-R two factor structure (primary and secondary psychopathy relating to Factor 1 and 2 respectively). Poythress and Skeem (2007) note that secondary psychopaths have a desire for social acceptance which is absent in primary psychopathy. The avoidance behaviour (away from highly positive crowds) observed in the current study would appear counter to this suggestion. However, an explanation may be taken from the anxiety literature, which suggests patterns of avoidance observed in social phobia may arise from a fear of social disapproval despite a wish to be socially accepted (Douilliez et al., 2012; Lange, Keijsers, Becker, & Rinck, 2008; Philippot & Douilliez, 2005). This same mechanism may explain why the most anti-social men in the sample exhibited greater avoidance of high levels of positive emotional expression. Especially since, they may have experienced rejection in the past from more pro-social peers due to their criminal activities. A desire for social acceptance may be over-ridden by a fear of rejection thus resulting in avoidance of high levels of positive affect. Importantly this pattern of behaviour may be cyclical in nature. Those more likely to be anti-social are less likely to experience positive interactions with others as they avoid them in favour of interactions involving negativity. This may serve to confirm a belief that the world is a hostile place where anti-social behaviour is justified.

9.2.3. Implications for Theory: Awareness and Arousal

The findings from the AAT and RAAT combined have implications for the facial affect recognition literature. First, group analysis revealed the sample (all relatively high in psychopathy) rated positive crowds as more approving and negative crowds as more disapproving implying that they were able to distinguish positive from negative emotional expressions. Moreover, they rated high levels of emotional expression as more approving (positive) and more disapproving (negative) indicating that they could also determine the degree of affect expressed. Specifically high scoring psychopaths perceived crowds expressing moderate levels of positive affect as more approving than did the lower group. This tentatively contradicts earlier findings of a significant overall correlation between impaired facial affect recognition and increased psychopathy scores (Hastings, Tangney, & Stuewig, 2008). As such, the current study did not find evidence to support the view that psychopaths are characterised by a general paucity of affect recognition (not uniquely linked to Factor 1 or 2 psychopathy). It did however find some support for the assertion that psychopaths are able to detect emotion intensity in others and that they may rely on this ability to judge the vulnerability of those they con and manipulate (Book et al., 2007).

The current study combined measures of implicit (AAT) as well as explicit (RAAT) responses to affective facial expressions. The AAT required quick response while the RAAT allowed response at the individuals own pace. Clinical levels of psychopathy demonstrated faster implicit (quick) response to positive crowds than did the lower group. In the case of high Factor 2 psychopathy, this was true for responses to high levels of positive *and*

negative affect. Therefore, the study did not find support for the observation that high psychopaths do not use quick visceral linked mechanisms to appraise facial affect in others (Munro et al., 2007).

It was not possible to assess whether the current participants would perform more poorly compared to non-psychopaths because the study did not have a truly low psychopathy comparator group. Therefore, the above theoretical implications are suggested tentatively. Nevertheless, there were differences in performance between the high and lower psychopathy groups in a direction that raises questions about previous findings for facial affect recognition in psychopathy (for a review see Willmott, Casey, Rogers, & Yiend, 2009). In addition, experimental design, including the precise nature of the task used, is an important consideration for assessing facial affect recognition in psychopathy. It may be particularly significant to include intensity ratings (as in the present study) alongside emotion categorisations in future investigations.

9.2.4. Clinical implications: Awareness and Arousal

Greenberg (2008) acknowledges that humans are predisposed to avoid painful emotion. In order to overcome the tendency to avoid negative emotion patients are encouraged to attend to their (and in group therapy, others') emotional experience while simultaneously altering thought patterns related to emotion avoidance. Consistent with exposure therapy, this process is followed by periods of promoting increased tolerance of emotion (Foa, Riggs, Massie, & Yarczower, 1995) and leads to good therapy outcomes (Whelton, 2004). However, findings of the current study suggest psychopaths may have

anomalous patterns of approach / avoidance behaviour to group displays of emotion, which may influence their treatment in group settings. Specifically, clinical levels of psychopathy favoured approach to positive crowds only (in keeping with Greenberg's first observation) but the anti-social component of psychopathy displayed approach / avoidance behaviour in reverse to Greenberg's ideal.

As discussed earlier, those with clinical levels of psychopathy may prefer ambiguous displays of emotion because it indicates opportunities for manipulation. Therefore, those higher in psychopathy may strive to maintain reasonable levels of positive emotion in group therapy settings to maximise potential for manipulation. Although counter to meaningful therapy engagement this approach may serve to control levels of negative affect within the group therefore affording higher psychopathic patients the opportunity to portray themselves in a good light. Thus maintaining levels of superficial positive emotion may be an effective strategy especially in forensic settings where good behaviour can be rewarded with progression towards release. In turn, this may explain why psychopaths have a reputation for impression management in daily interactions and during clinical assessment (Hare, 1999b).

Effective treatment for those who meet the clinical threshold for psychopathy may include encouraging patients' tolerance of negative affect. As Yalom and Lesczc (2005) observe, within group therapy one of the roles performed by the facilitator is to generate greater authenticity between members of the group. In this respect, the most beneficial therapy for high psychopathy may

be when the therapist is able to encourage greater tolerance of negative affect in self and others. It may be equally important to practice vigilance towards superficial displays of congeniality, especially as they may be experienced (by design) as seductive (Murphy & McVey, 2010). The latter becomes particularly important within the context of risk assessments, which may rely on in-session accounts of behaviour for use in parole hearings (e.g. Violent Risk Scale [VRS; Wong & Gordon, 2000], Violent Risk Scale-Sex Offenders [VRS-SO; Wong, Olver, Nicholaichuk, & Gordon, 2003], Historical, Clinical, Risk Management scales [HCR-20; Webster, Douglas, Eaves & Hart, 1997]).

I now want to turn to the finding that the anti-social component in psychopathy is related to approach to high negative affect but avoidance of high positive affect. As Greenberg (2008) notes ability to tolerate negative affect is advantageous in therapy settings, however attraction to *high* levels of negativity may be counter productive. This may be particularly true when combined with avoidance of high levels of positive emotion. It may be this pattern of interpersonal interaction, which drives the disruptive behaviour observed for psychopaths in therapy settings. For example, some authors have noted psychopaths are prone to disrupt therapy sessions making them less likely to benefit from session participation (Howells & Tennant, 2007; Seto & Quinsey, 2006; Wong & Hare, 2005). Alternatively, it may be this more direct style of relating which makes Factor 2 psychopathy (akin to secondary psychopathy) more amenable to treatment as suggested by Karpman (1941) and Blackburn (1998). For example, it may be easier to address obvious problematic attraction to high levels of negativity within interpersonal interactions (in group and elsewhere) than to successfully challenge what

appears to be pro-social behaviour (i.e. maintaining positive / ambiguous affect in groups) displayed by the high psychopathy group.

Effectively treating those with high levels of Factor 2 traits may involve dissuading them from seeking out high levels of negativity but persuading them to tolerate greater positive emotion within group settings. In this way, the patient may be able to confront misconceptions about the inevitability of hostile interactions with others and the efficacy of anti-social behaviour. Part of the challenge may be convincing the patient that they no longer need the stimulation offered by interacting with high levels of negativity.

9.2.5. Limits of the study: Awareness and Arousal

There were many limitations to the examination of awareness and arousal in psychopathy, however four particular weaknesses are perhaps the most important. First, the study lacked a truly low psychopathic comparator group. Due to the population from which the sample was taken (incarcerated male prisoners from a high secure prison including those from the UK Dangerous and Severe Personality Disorder [DSPD] programme), the entire sample scored in the upper ranges of the PCL-R. This was the case even though prisoners were recruited from beyond the DSPD unit in order to maximise the range of PCL-R scores. It is therefore possible that the effects reported here apply only to the upper ranges of the psychopathy distribution. A second related limitation was the lack of normative data to compare to my findings. Therefore, it was not possible to assess to what extent the current sample differed from the normal population. These first two limitations apply to all tasks used for the thesis. Third, I have suggested clinical levels of

psychopathy may be attracted to the ambiguity of moderately positive groups (50% neutral) because they signal an opportunity to manipulate or split members for maximum personal gain. Increasing the ambiguity of the stimuli may help gauge whether the present interpretation is convincing. This could have been achieved by presenting stimuli with positive and negative expressions (ratio 6:6) together to see whether this augments the approach behaviour for high psychopathy. Fourth, the stimuli was mixed gender to reflect the composition of the therapy group, however it may be appropriate to investigate differences in approach behaviour to crowds exclusively male or female. In this way investigation of how gender may impact on interactions within therapy groups could be used to inform effective use of facilitator gender. This may be particularly important for groups where participants' victims are gender specific.

9.2.6. Conclusion: Awareness and Arousal

In conclusion, the current investigation of approach / avoidance behaviour in psychopathy revealed greater approach to ambiguous expressions of positive emotion for high psychopathy. This was supported by them perceiving ambiguously positive crowds as more approving than did the lower group. This preference for ambiguous displays of emotion may signify a propensity for impression management, manipulation and splitting within therapy groups. In addition, the anti-social component of psychopathy was associated with greater approach to high levels of negative emotion and greater avoidance of high levels of positive emotion. This suggests an anomalously rewarding aspect of high negativity in group settings for Factor 2 psychopathy; possibly

linked to a need for stimulation. Overall this suggests that while psychopaths may be more attracted to interactions involving ambiguous levels of positive affect, the subset who are higher on the Factor 2 scale are more comfortable with definite negativity and least comfortable with definite positivity. These results could be used to inform clinical strategies for enhancing awareness and arousal of emotion (self and others) in psychopathic offenders. In this way, the study may help to inform and improve treatment outcome, thereby reducing risk amongst this client group. For example, effective approaches to clinical levels of psychopathy may include encouraging greater tolerance of negative affect as well as being vigilant towards and challenging superficial displays of amiability. Those with high levels of anti-social traits may benefit from experiencing positive interactions within group sessions so that associated affect can be explored and labelled. As discussed in chapters 1 and 2, raised awareness of avoided emotion and ability to place it in context is associated with therapeutic change in personality disorder (Monsen, Odland, Faugli, Daae, & Eilersten, 1995). In forensic settings it may also be useful to foster these experiences between sessions as part of the therapeutic milieu. This may help confront misconceptions that hostile exchanges with others are unavoidable or of value.

9.3. Emotion Regulation

9.3.1. Summary of Results: Emotion Regulation

Emotion regulation ability was assessed using the Emotion Regulation Task. The ERT allowed examination of psychophysiological (heart rate) and subjective self-report responses to positive and negative images in

psychopathy. To my knowledge, the current investigation is possibly the first to examine emotion regulation in psychopathy using an instructed encoding technique with both measures of subjective experience and psychophysiology. The design had the added strength of contrasting responses to differently valenced stimuli (positive as well as negative) matched for arousal, as called for by other researchers in this field (Arnett, 1997). The data reflect three main phenomena of interest. First, there was clear evidence of psychopathy related psychophysiological differences, *in the absence of* corresponding differences in subjective self-report experience. Second, clinical levels of psychopathy (PCL-R ≥ 30) involved faster heart rate during negative picture processing. Third, the affective component of psychopathy (Factor 1) was associated with specific deficits in the ability to up-regulate (experience) negative emotion.

9.3.2. Interpretation of Results: Emotion Regulation

9.3.2.1. High Psychopathy Showed Stronger Cardiovascular Output when Viewing Negative Pictures

Clinical levels of psychopathy were related to increased heart rate when viewing negative pictures. This indicated a *stronger* cardiovascular output which requires explanation, especially in the light of contrasting electrodermal data in which psychopaths show *attenuated* responses to emotional information (e.g. Dvorak-Bertsch, Curtin, Rubinstein, & Newman 2009; Lorber 2004; Patrick, Bradley, & Lang, 1993). The best account to date remains that of Hare (1978), although this is not without critics (Fowles & Missel, 1994; Siddle & Trasler, 1981). Hare suggests a gating hypothesis in which heart rate is used to tag and subsequently filter out negative cues, while electrodermal

attenuation reflects the extent to which this gating has been successfully achieved. However, an alternative explanation suggests itself. In the sample the more callous and unemotional the participant, the more responsive was his cardiovascular system when processing negative compared to positive information. In the wider literature heart rate acceleration is the usual response to processing *pleasant* visual stimuli (e.g. Lang, Bradley, Drobes, & Cuthbert, 1990). This raises the possibility that the response of high psychopaths to negative images may reflect a rewarding emotional response to material that would normally be experienced negatively (Kirsch & Becker, 2007). Thus, psychopaths may process the emotions that victims are most likely to express as rewarding and this may contribute to explaining their crimes (Marshall, Hudson, Jones, & Fernandez, 1995).

9.3.2.2. Higher Factor 1 Psychopaths Exhibited Smaller Increases in Heart Rate when Up-Regulating Negative Emotion

One of the most interesting findings of the study was that dimensional analyses revealed a specific relationship between Factor 1 (affective component) psychopathy scores and the up-regulation of emotional responses to negative pictures. More callous / unemotional individuals exhibited smaller increases in heart rate when trying to ‘get into the feeling of’ negative pictures. This result suggests that the up-regulation of negative emotion is more impaired at higher levels of Factor 1 psychopathy. High Factor 1 psychopaths fail to experience the physiological signals that those lower on Factor 1 experience when fully engaging in negative emotional processing. Again, it is possible that high Factor 1 psychopaths merely appeared unable to up-regulate physiological response to negative material,

but in fact were simply less compliant with instructions to do so. However, the absence of a similar pattern in affective rating data renders this an unlikely explanation. If high Factor 1 psychopaths were less compliant in regulating their emotions as instructed, one would expect this to be at least, if not more, apparent when directly asked to report how they were feeling under different regulation conditions. That rating data showed no differences in Factor 1 psychopathy level mitigates this explanation.

9.3.3. Implications for Theory: Emotion Regulation

Failure to up-regulate emotional response to negative material will inevitably lead to a relatively reduced appreciation and understanding of that negativity, which in turn could form the basis for the absence of empathy that characterises Factor 1 psychopathy. Despite lack of empathy being core to the construct of psychopathy (especially Factor 1) very little research has directly examined the relationship (Blair, 2007; Blair, Jones, Clark, & Smith, 1997; Kirsch & Becker, 2007). Objective measures of empathy are required and the ability to 'get into the feeling' of emotional information using paradigms such as that reported here could provide one possible starting point.

9.3.4. Clinical Implications: Emotion Regulation

The importance of addressing deficits in emotion processing for a good therapy outcome is well documented (Greenberg & Pascual-Leone, 2006; Pos, Greenberg, Goldman, & Korman, 2003; Whelton, 2004). Moreover, some of the latest treatments for psychopathy in the UK specifically target emotion

regulation (Burns et al., 2011a, 2011b; Murphy & McVey, 2010). The present data suggest that effective treatment for psychopathy may need to focus on reducing the dissociation between subjective and physiological response reported here. One way to do this might be to raise individuals' awareness of their physiological responses to aversive information. Mindfulness approaches that use biofeedback exercises to enhance emotion regulation may be particularly effective. This would seem possible given the findings of Steinberg and Schwartz (1976) that psychopaths were able to influence their skin conductance responsivity as well as controls using biofeedback during an emotion regulation exercise. In addition, incorporating experimental measures alongside more traditional assessments of therapeutic outcome would be one potential translational application of the paradigm described here. The data further suggest that although both patient and clinician may believe they are engaging with the emotions targeted by therapy, the higher the Factor 1 score of the patient the less likely this is to be true. Investigating emotion regulation ability in psychopathy may be essential not only for understanding its relationship to violent offending, but also for the appropriate allocation of scarce therapeutic resources. For example, it may be necessary to spend time early in therapy enhancing up-regulation of emotion to maximise treatment benefit. As discussed in chapters 1 and 2, ability to experience emotion is associated with good therapy outcome (Greenberg, 2002; Greenberg & Angus, 2004; Mergenthaler, 1996; Samoilov & Goldfried, 2000; Warwar, 2003) especially when this occurs early in therapy (Foa et al., 1995; Jaycox, Foa, & Moral, 1998; Paivio, Hall, Holowaty, Jellis, & Tran, 2001).

9.3.5. Limits of the Study: Emotion Regulation

There were many limitations to the investigation of emotion regulation in psychopathy, however the following weaknesses are perhaps the most important. First, practical constraints meant that only one physiological measure (heart rate) was taken. Future studies should consider using other measures of autonomic responsivity in addition to heart rate. In particular polyvagal theory, which refers to the parasympathetic regulation of cardiac activity (Porges, 2007), may be a useful framework for understanding emotion regulation in psychopathy in the future (cf. Beauchaine, Gatzke-Kopp, & Mead, 2007). It has been used as a framework to investigate emotion regulation problems in conduct disordered children (Beauchaine et al., 2007; Hastings et al., 2008) and has been shown to predict spontaneous regulation of negative emotional expression in healthy adults (Pu, Schmeichel, & Demaree, 2009). This would require measuring respiratory sinus arrhythmia (the natural variation in heart rate occurring during the breathing cycle) in psychopathy during emotion regulation tasks of the sort used here and would be one useful way to validate and extend the present work.

Second, the design did not include a neutral picture viewing condition, meaning that conclusions must necessarily be limited to differences in valence alone. This does not therefore permit conclusions about general emotional responsivity in psychopathy, which may have been either attenuated or enhanced.

9.3.6. Conclusion: Emotion Regulation

In conclusion, the current investigation of emotion regulation in psychopathy revealed an amplified cardiovascular response when processing negative emotional images in high psychopaths. It is possible that this reflects an anomalously rewarding aspect of normally unpleasant material in the case of high psychopathic individuals. In addition when attempting to up-regulate emotional response, by 'getting into the feeling' of the emotion conveyed by the image, higher Factor 1 psychopaths showed reduced responsiveness, suggesting that they were less able to do this. Overall this suggests that while psychopaths may be more cardiovascularly responsive to negative material, the subset who are higher on the Factor 1 scale are less able to intentionally regulate this response. These results could be used to inform clinical strategies for targeting emotion regulation in psychopathic offenders. In this way the study may help to inform and improve treatment outcome, thereby reducing risk amongst this client group.

9.4. Interpretation of Emotion

9.4.1. Summary of Results: Interpretation of Emotion

Interpretation of emotion in psychopathy was investigated using the Interpretation Bias Task 1 (IBT1), which measured interpretation bias for emotionally ambiguous written material. To my knowledge, this has not been investigated before using word completions and ranked preferences for resolutions to emotionally ambiguous schema and threat related materials. As described in chapters 2 and 5, the study benefited from including materials designed to trigger schema responses thought to be particularly pertinent to

personality disorder including psychopathy (Young, 1999; Young & Klosko, 1994; Young, Klosko, & Weishaar, 2003). In addition, inclusion of word completions alongside ranking allowed a contrast of RT and ranking measures of interpretation bias; the former being less susceptible to conscious manipulation (see Appendix K for the stimuli used).

At the group level, PCL-R scores above the clinical threshold (PCL-R ≥ 30) were related to less negative bias for extreme interpretations. Dimensional analyses revealed those with higher Factor 1 traits (affective component) demonstrated less negative bias. In particular, Factor 1 was associated with processing information in a way that *did not* suggest fear of social threat, abandonment or rejection. Rank data corresponded with RTs for the same materials. In addition, this factor was related to less agreement with interpretations promoting over-vigilance and emotional inhibition, as well as self-sacrifice and subjugation to others. In contrast, the anti-social component (Factor 2) showed some negative bias when interpretations promoted dependence on others and vulnerability to harm or failure.

9.4.2. Interpretation of Results: Interpretation of Emotion

Perhaps the most important finding was that both clinical levels of psychopathy and high levels of Factor 1 psychopathy (affective component) were associated with less negative bias. In the case of the affective component, this finding was true for both ranking and RT data at least for social threat and interpersonal attachment related materials. Moreover, materials relating to attachment to others, subjugation to others, impaired limits (impulsivity, entitlement) and social threat (humiliation, embarrassment,

guilt) were interpreted by those higher in Factor 1 psychopathy in a way that suggested healthy responses. This pattern of results is counter to what might have been expected. Specifically, a number of studies have demonstrated a relationship between psychopathy and family characteristics such as punitive and inconsistent parenting styles (Farrington, 2007), parental psychopathology and familial violence and aggression (Webster-Stratton, 1990). In addition, 81% of the current sample had experienced some form of childhood abuse. As described in chapter 2, these experiences are associated theoretically with development of maladaptive schemata (Bernstein, Arntz, & de Vos, 2007; Young et al., 2003), in particular, those schema domains related to attachment (disconnection and rejection) and punitive parenting (over-vigilance). Moreover Young et al. (2003) advocate using schemata as a framework to understand and treat personality disorder including psychopathy. Therefore, the expectation was for those higher in psychopathy to interpret ambiguous schema related materials in a schema congruent direction.

A number of explanations present themselves. First that those scoring most highly for pathological lying, conning and manipulation were more likely to manage impressions during assessment. Especially since negative interpretations were endorsed less frequently. However, Cooke, Michie and Hart (2007) note there is no clear evidence that psychopaths are more likely to impression manage when undertaking self-report assessments. Regardless, two features of the present study mitigate the likelihood of impression management. First, there were no significant relationship between any of the variables of interest and the Eysenck Personality Questionnaire

(EPQ; Eysenck & Eysenck, 1975) Lie scale. Moreover, in the case of social threat and attachment related materials, ranking data corresponded with the RT data, which is much less susceptible to manipulation. Therefore two, possibly more plausible explanations present themselves.

First, those with high levels of psychopathy, and Factor 1 in particular, may lack insight into their condition (Cleckley, 1982; Hare 1999b, 2003; Lilienfield 1994; Saradjian, Murphy, & McVey, 2010), and use overcompensation as a coping mechanism in situations likely to trigger schemata (Beckley, 2011; Bernstein et al., 2007). As discussed in chapter 2, overcompensation means the individual behaves in the opposite manner to the schema to avoid any associated psychological discomfort. This can include denying the schema is apt and masking unpleasant feelings related to it with opposite feelings, for example, experiencing pride instead of humiliation (Young & Kloskos, 1994; Young et al., 2003). This may also apply to social threat materials, which are closely related to many of the schema items.

Second, those with clinical levels of psychopathy and those higher on Factor 1 traits may have processed their traumatic experiences differently, or experienced less severe or more infrequent trauma. While the vast majority of the sample had experienced childhood trauma (81%) differences in severity, frequency, age of onset or duration were unknown. These aspects may influence schema development and future studies of interpretation bias in psychopathy could benefit from a more detailed measurement of childhood trauma. An appropriate measure may be the Childhood Experience of Care and Abuse Interview (CECA; Bifulco, Brown, & Harris, 1994) which assesses

type, severity, frequency, age of onset and duration of childhood abuse as well as details of abuser gender and relationship to the child. Contemporaneous corroborative evidence would also need to be collected, for example from social services file data. This may help disentangle the complex relationship between experiences of childhood trauma, schema development and coping styles, and psychopathy.

Finally, a cautionary note is needed with respect to the RT findings. Negative word fragments may have matched concerns therefore prompting negative processing. This may have slowed rather than speeded responses to and engagement with the task. However, this is contrary to other findings in the interpretation bias literature where faster RTs are found for the process being triggered (e.g. depressed individuals complete depression congruent word fragments quicker than non-depressed) (Fox, 2008). In any case, if true, this could still support the idea that overcompensation was being used. Overcompensation is likely an automatic response that occurs early in the process to prevent contact with negative affect. Therefore, it may interfere with responses to negative materials thereby slowing RTs.

In contrast to findings for clinical levels of psychopathy and high Factor 1, the anti-social component (Factor 2) was associated with greater negative bias. In particular, Factor 2 psychopathy was associated with fewer endorsements for interpretations promoting autonomy from others. This interpretation was in the direction expected and it makes sense that those who live parasitic lifestyles (one of the Factor 2 traits) would prefer dependency to autonomy. It also suggests those with high anti-social traits are less inclined to

overcompensate. Certainly, with respect to living parasitically it may be advantageous to promote dependency on others. As such, the material gain from securing dependent relationships outweighs the discomfort of being perceived as, or feeling less capable than others.

9.4.3. Implications for Theory: Interpretation of Emotion

The results of the IBT1 have implications for understanding schema processes in psychopathy. In particular, high psychopathy individuals and the subset that are higher on the Factor 1 scale, may lack insight and be more prone to overcompensate as a schema defence. Initially, it may appear that those who overcompensate are behaving healthily; however, this strategy often serves to maintain rather than challenge the schema (Bernstein et al. 2007; Young et al. 2003). For example, an individual with an abandonment schema might overcompensate by presenting himself as self-reliant to avoid rejection in close relationships. Unfortunately, this may lead others to distance themselves, thereby confirming the individual's belief that they will be abandoned. Further investigation into schema processes in psychopathy is required. One possible starting point may be to develop further objective measures of schema processes such as that reported here. This could be achieved by adopting approaches well established in emotion processing research for other psychopathologies (for reviews see Fox, 2008 and Yiend, 2010). Interrogation of the different components of schema processing in psychopathy (e.g. perception, attention) would afford us a better understanding of how schema related materials are perceived and attended to and how this affects memory, decision-making and problem solving. This

could then inform strategies for effectively working with schemata in therapy for this group.

9.4.4. Clinical Implications: Interpretation of Emotion

Therapeutic change is said to occur when maladaptive emotions, memories and beliefs are triggered then reassessed using new information (Coombs, Coleman, & Jones, 2002; Greenberg, 2002; Greenberg & Angus, 2004; Watson, 1996; Samoilov & Goldfried, 2000). Reflecting and making sense of emotion in this way allows patients to bring new meaning and understanding to situations. Creating new narratives to explain experiences, especially traumatic experiences, is an important part of therapy. When problematic emotions are placed within a new narrative they can be reconsidered and the process can be experienced as therapeutic. In addition, therapeutic changes achieved in this way have been found to endure over time (Greenberg, 2002). However, the present data suggests psychopathic patients and especially those with many Factor 1 traits may not have normal access to their personal emotional narrative. Effective treatment may require a preliminary psycho-educational phase to raise awareness of the patient's personal emotional narrative so that schema overcompensation can be addressed. In this way, authentic narratives could be developed which reflect the patient's experiences more realistically. Research that examines where in the schema process overcompensation occurs may be important for developing interventions that challenge it effectively. Experiments that examine the way schema materials are attended to may be a useful approach. Especially since attentional deficits are implicated for psychopathy (Baskin-Sommers, Wallace,

MacCoon, Curtin, & Newman, 2010; Glass & Newman, 2006; Newman, 1998; Newman, Curtin, Bertsch, & Baskin-Sommers, 2010; Patterson & Newman, 1993).

The data suggests the anti-social component of psychopathy may be less prone to schema overcompensation (at least in relation to dependence on others and belief in their own defectiveness). Because they are less defended, they may find it easier to recognise the need for change and that such changes may be beneficial to them. As such, those high in Factor 2 traits may be more treatment ready at the beginning of therapy compared to those with many callous unemotional traits.

9.4.5. Limits of the Study: Interpretation of Emotion

The IBT1 was a first assessment of interpretation bias in psychopathy using threat and schema-focused materials. The investigation had a number of limitations. First, the present design did not allow us to establish fully if those with clinical levels of psychopathy and high Factor 1 traits are more likely to use overcompensation to cope with schema activation. Future studies would benefit from inclusion of implicit and explicit measures of levels of insight alongside materials more focussed on schema processes such as overcompensation (e.g. The Young Compensation Inventory (YQS; Young, 2003). In addition, a measure of impression management such as the Paulhus Deception Scales of the (PDS; Paulhus, 1998) would help to assess the impact of impression management and self-deception on future findings. The PDS is a 40-item sub-scale of the Balanced Inventory of Desirable Responding to identify individuals who distort their self-report responses and

is administered concurrently with other instruments. It has an impression management scale as well as a self-deception scale; the latter could help to determine whether psychopathy is associated with employing schema overcompensation strategies. Second, as discussed earlier, that there were non-significant findings for some of the schema materials may mean they failed to represent schema driven situations adequately. However, similar findings were reported for threat materials that have been validated (Eysenck, Mogg, May, Richards, & Mathews, 1991; MacLeod & Cohen, 1993), which are comparable in content to the schema materials. Nevertheless, the validity and reliability of materials developed for this study require investigation.

9.4.6. Conclusion: Interpretation of Emotion

In conclusion, the current investigation of interpretation bias in psychopathy, revealed less negative bias for clinical levels of psychopathy including the subset that are higher on the Factor 1 scale. In the case of Factor 1 psychopathy, this was supported by RT data that followed the same pattern (quicker RTs for schema / threat incongruent word completions). These results may indicate a lack of psychological insight and propensity for schema overcompensation in high psychopathy (including Factor 1). Especially since the great majority of participants had childhood experiences associated with schema development (See chapter 6, Table 2) and psychopathy has been shown to be related to childhood trauma (Farrington, 2007; Webster-Stratton, 1990). Conversely, the anti-social component of psychopathy (Factor 2) was associated with negative bias. Specifically those with many anti-social traits were less likely to support interpretations that promoted autonomy. Overall,

this suggests that while high psychopathy (including Factor 1) may be prone to overcompensation and lack of insight, those high in Factor 2 may have more awareness of their own schema processes, (at least in the case of over-reliance on others) which may mean they are more treatment ready. These results could be used to inform clinical strategies for enhancing interpretation of emotion in psychopathic offenders. For example, high psychopathy and Factor 1 traits in particular may be ameliorated by focusing on psycho-educational approaches to raise individuals' awareness of their own schema driven narratives early in therapy. Once more authentic narratives have emerged challenges to associated cognitive distortions may be more effective. This process is likely to be more effective if it generates avoided negative affect associated with individuals' vulnerability (Greenberg, 2008; Murphy & McVey, 2010; Saradjian, Murphy, & McVey, 2010). In this way, the study may help to inform and improve treatment outcome, thereby reducing risk amongst this group.

9.5. Transformation of Emotion

9.5.1. Summary of Results: Transformation of Emotion

Transformation of emotion was measured using the Interpretation Bias Task 2 (IBT2). The effect of priming on interpretation of emotionally ambiguous material in psychopathy was investigated. To my knowledge, the influence of priming on interpretation has not been investigated in psychopathy using ambiguous schema and threat materials with preceding congruent / incongruent primes. As described in chapter 5, ecological validity was enhanced by including prime words designed to present information

analogous to contextual information provided in a therapy session (see Appendix K). Ability to use such information in therapy to guide interpretation of situations and trigger new emotional experiences is believed to be important for good treatment outcome (Greenberg, 2008; Greenberg & Pedersen, 2001; MacKay, Barkham, & Stiles, 1998; Whelton & Greenberg, 2005). Outcomes achieved in this way are associated with long-term recovery (Greenberg & Pedersen, 2001).

Clinical levels of psychopathy (PCL-R ≥ 30) and its affective component (Factor 1) were associated with ineffective negative priming. Specifically, high level of both psychopathy and Factor 1 were associated with resistance to endorse schema or threat congruent interpretations even when primed to do so. This effect was particularly evident when priming encouraged physical and social threat interpretations or supported subjugation, self-sacrifice or seeking other's approval. Factor 1 psychopathy (independent of high psychopathy) was also associated with resisting primes that suggested abandonment or rejection.

9.5.2. Interpretation of Results: Transformation of Emotion

Clinical levels of psychopathy were associated with ineffective congruent priming indicating reluctance to be influenced by negative contextual information. This may mirror this group's unresponsiveness to treatment. As Hare (1999b) observes, psychopaths may do poorly in treatment because they do not think they have anything to change. The same effect was observed for the affective component of psychopathy (Factor 1). Moreover, taken together with the findings of IBT1, this lends further support to the idea

there may be a propensity in psychopathy for schema overcompensation (as described in chapter 5 and above). High psychopathy (and Factor 1) was associated with positive interpretations even when permission was given to endorse the negative ones. Results for this second task indicate that schema processes such as overcompensation may be particularly difficult to shift in high psychopathy generally and Factor 1 particularly. However, it should not be surprising that those with a grandiose sense of self worth (pertinent to Factor 1) would resist outside persuasion to change their perspectives, especially if they could not relate their experiences or any benefit to the new interpretation.

Finally, it cannot be ruled out that the observed effects were due to impression management. However, the task instructions emphasised the requirement to ‘use the [prime] word to help make sense of the description’. Therefore, it is reasonable to suggest that in order to impression manage participants may be as likely to give the correct answer, half of which were in a negative direction, as they are to answer in a positive direction only. Especially since the assessment was not related to any personal gain for the participant (e.g. for use in parole or progress reports). There may have been an element of paranoia which led the high psychopathic participants to respond in a pro-social manner. However, that there were non-significant associations between the EPQ Psychoticism scale and priming effects mitigates against this view.

9.5.3. Implications for Theory: Transformation of Emotion

The results of the IBT2 have implications for understanding priming in psychopathy. In particular, high psychopathy individuals and the subset that are higher on the Factor 1 scale may be more resistant to negative but not positive priming. This suggests contextual information is processed differently depending on its valence. Glass and Newman (2006) suggest that psychopaths will only notice those cues that are part of their focus of attentional set for reward. They further note that psychopaths demonstrate poor performance on affective tasks, or parts of affective tasks, where the affective information to be processed is incongruent or secondary to their deliberate focus of attention (Glass & Newman, 2006). Possibly the high psychopaths only used primes that enabled them to avoid schema congruent interpretations thus allowing them to maintain their positive self-perception. Future examinations of schema processes could benefit from using paradigms from the anxiety and depression literature to observe attention to schema materials and assess how these biases might be retrained. Cognitive bias modification paradigms may be one useful approach (Beard, Sawyer, & Hoffman, 2012; Hoppitt, Matthews, Yiend, & Mckintosh, 2010a; Hoppitt, Mathews, Yiend, & Mckintosh, 2010b; Lester, Matthews, Davison, Burgess, & Yiend, 2011; Mathews & MacLeod, 2002).

9.5.4. Clinical Implications: Transformation of Emotion

Greenberg (2002) describes transforming emotion as ‘changing emotion with emotion’ and concerns those primary maladaptive emotions, which are particularly resistant to change. A new feeling is used to undo the problematic

one. For example, maladaptive anger is aroused in-session and transformed by evoking disgust or disappointment (Greenberg, 2008). The original state is undone and replaced by a new state once a different emotion has been accessed. The current data suggest those with psychopathy levels above the clinical threshold or with many Factor 1 traits may be entrenched in defensive strategies (e.g. schema overcompensation). Moreover, these strategies appear resistant to shift. As such, the ability to move between recognising problematic responses and transforming them may be impaired. Effective treatment may involve approaches such as empty chair exercises (Adams & Greenberg, 1996; de Zulueta, 2006; Greenberg & Malcolm, 2002; Young et al., 2003) or schema re-scripting imagery work (Smucker, Dancu, Foa, & Niederee, 1995; Smucker & Dancu, 2005; Smucker & Niederee, 1995; Young et al., 2003). These could help to raise awareness of, challenge and change schema driven defences and the beliefs and behaviours behind them (Smucker & Dancu, 2005; Young et al., 2003).

It should be noted that the task was cognitive in nature and it may be that given more genuine affect (i.e. the type that might be generated in-session) the desired change in response would have occurred. Nevertheless, the data suggests the high psychopathy men and those with callous unemotional traits performed less well on the task than did the lower men when required to interpret ambiguous situations negatively.

9.5.5. Limits of the Study: Transformation of Emotion

Practical constraints meant that it was not possible to incorporate tasks other than the ones administered. Existing theory outlines deficits in attention to

affective information for psychopathy. Therefore, future research may benefit from assessing the role of attention in schema processing. In particular how attention to or away from schema materials may affect the way they are processed (including changed). This was in addition to the limitations discussed above and below as overarching limits of the thesis.

9.5.6. Conclusion: Transformation of Emotion

In conclusion, the current study investigated the effect of priming on interpretation bias in psychopathy. Findings revealed high psychopathy and the affective component of psychopathy (Factor 1) were associated with ineffective negative priming. Taken together with findings for IBT1, they may be prone to overcompensation and that this coping strategy is likely resistant to change. Effective treatments may include consistent direct challenges to unrealistic positive interpretations of situations, as they are explored in-session. This could be done in the same way that depressed patients would be challenged on negative biases. Finally, it is possible that the high psychopaths did not attend to primes that were in the opposite direction to their over-compensatory strategies, thereby allowing them to maintain a positive self-perception. This could explain why congruent priming, rather than incongruent priming, was ineffective. Future examinations of schema processes would benefit from examining the role of attention in schema processing. If salient, this could then be used to inform effective interventions.

9.6. Mediation Analysis: Psychopathy, Emotion Processing Ability and Therapy Engagement

9.6.1. Summary of Results: Mediation Analysis

The main analysis of the study examined whether emotion processing ability mediated the relationship between psychopathy and group therapy engagement. To my knowledge, this relationship has not been investigated before. The design was enhanced by using Greenberg' and Pascual Leone's (2006) four principles for working with emotion in therapy as a theoretical framework (described in chapters 1 and 2). The main hypotheses of the study were related to the mediation analysis, namely that higher levels of psychopathy would be associated with lower levels of therapy engagement; but that this relationship would be mediated by four emotion processing indicators. Specifically, awareness and arousal of emotion, emotion regulation ability, interpretation bias and ability to transform emotion would:

i. jointly mediate the relationship between psychopathy and therapy engagement
ii. each uniquely mediate the relationship between psychopathy and therapy engagement

Levels of engagement were measured using a new measure, the Group Emotional Engagement Questionnaire (GEEQ) and emotion processing was measured using the five computerised tasks discussed above.

The first hypothesis was met as higher levels of Factor 1 psychopathy (the affective component) were related to poorer therapy engagement. However, the four emotion processing indicators did not jointly mediate this effect. Moreover, interpreting emotion and transforming emotion acted as

suppressors rather than mediators (MacKinnon, Krull, & Lockwood, 2000; Preacher & Hayes, 2008; Rucker, Preacher, Tormala, & Petty, 2011). This meant the two indicators masked the effect of Factor 1 psychopathy on therapy engagement. Without inclusion of these suppressors, high Factor 1 psychopaths appeared to be better engaged than they were.

9.6.2. Interpretation of Results: Mediation Analysis

The affective component of psychopathy was associated with poor therapy engagement. As such manipulation, lying, denying responsibility whilst blaming others, callousness and shallow affect were inversely related to therapy engagement. However, the four emotion processing mechanisms believed to be related to good treatment outcome did not mediate this relationship (neither together nor alone). Instead, two of the indicators, interpreting emotion and transforming emotion, acted as suppressors in this relationship (MacKinnon et al., 2000; Preacher & Hayes 2008; Rucker et al., 2011). Inclusion of these variables *strengthened* rather than weakened the relationship between psychopathy and engagement. Therefore, patients with many Factor 1 traits appeared be better engaged than they were because of their tendency to interpret situations in a positive manner even when primed to think negatively.

9.6.2.1. Emotion Processing and Therapy Engagement

Therapy engagement was negatively related to the composite for interpreting emotion. This composite was comprised of one threat and three schema congruent interpretation types (i.e. four negative interpretation types) (see chapter 8, Table 2). Therefore, those who were better engaged were less

negatively biased. As such, they were less likely to interpret situations in a schema or threat congruent direction. Therefore, this relationship was in the expected direction.

Therapy engagement was also negatively associated with the transforming emotion composite. This composite consisted of two schema congruent and two threat congruent interpretation types all with congruent primes (i.e. four negative interpretation types with negative primes) (see chapter 8Table 2). Better engagement was related to rejecting negative interpretations even when encouraged to do otherwise by a negative prime. This finding was not in the expected direction. It was believed that good therapy engagement would be associated with interpreting information in the *same* direction as the prime (i.e. analogous to implementing information received during therapy). Therapy often involves reappraising seemingly benign situations (Greenberg, 2008). However, those who were better engaged ignored negative contextual information in favour of making more interpretations that were positive. This may indicate the extent to which therapy has influenced the way situations are interpreted. For example, those who were better engaged in therapy may have been more likely to reappraise negative information in order to favour a more positive interpretation. Therapy engagement was associated with better mood regulation in every day situations and greater use of reappraisal to regulate emotions, which lends some support to this view.

As discussed above, significant relationships were not found for awareness and arousal or emotion regulation in contrast to Greenberg and Pascual-Leone's theory. Three explanations present themselves. First, the chosen

tasks may not have adequately mapped onto their principles. Second, the range of psychopathy scores may have been too limited to reveal differences. Third, Greenberg and Pascual-Leone's theory as it relates to these two mechanisms may not apply to psychopathy.

Unfortunately, this model has not been tested on a non-psychopathic clinical sample therefore, it is not possible to say whether it is particular to personality disordered prisoners who are better engaged in therapy or if it occurs with other clinical populations. However, future research with other clinical populations would help clarify whether the results can be generalized beyond psychopathy.

9.6.2.2. Emotion processing, psychopathy and therapy engagement

The results for the mediation analysis may suggest further that the affective component of psychopathy was associated with schema overcompensation. As described above, when overcompensation is used as a coping mechanism, the schema is pertinent for the individual but they will hold beliefs and act in a way that runs counter to it, giving the appearance of thinking and behaving healthily (Young et al., 2003). In the current study, those with higher Factor 1 scores may have overcompensated for schemata that were triggered and in doing so gave healthy responses. These responses mirrored those of the participants who were well engaged which obscured the true extent of therapy engagement deficits for those high in Factor 1 traits.

9.6.3. Implications for Theory: Mediation Analysis

The present study did not establish mediation effects for any of the emotion processing indicators. However, it did establish poorer engagement for Factor 1 psychopathy. In addition, it revealed suppression effects for interpreting emotion (as measured by interpretation bias) and transforming emotion (as measured by the effects of priming on interpretation bias). Here the suppressor variables obscured the effect of Factor 1 psychopathy on therapy engagement. When the suppressors were omitted high Factor 1 psychopaths appeared to be better engaged than they were. As stated earlier, the finding supports schema overcompensation in psychopathy, which may be a feature of this disorder that requires further investigation. Because impression management in this group may be more accurately described with reference to overcompensation (at least part of the time) future research should consider ways of distinguishing the two concepts. Young's description of overcompensation is similar to the concept of self-deception as set out by Paulhus in the development of the PDS therefore use of the PDS and YCI in future research may be an appropriate next step. In this way, effective methods for assessing overcompensation could be developed and used to inform interventions.

Finally, neither awareness and arousal nor emotion regulation as measured in the current study were found to mediate the relationship between psychopathy and therapy engagement. It may be that the tasks used did not replicate these two emotion processing mechanisms closely enough. Similarly, the Group Emotional Engagement Questionnaire (GEEQ) may not have captured aspects of engagement pertinent to awareness and arousal or

emotion regulation. However, this seems less likely for emotion regulation as it was significantly related to scores on the GEEQ. Alternatively, it may be that Greenberg and Pascual-Leone's theory does not apply to psychopathy at least with regard to awareness and arousal, and emotion regulation. Further examination into the role of these two mechanisms and their relationship with therapy engagement is needed involving a sample with a wider range of psychopathy scores and using alternative measures.

9.6.4. Clinical Implications: Mediation Analysis

The GEEQ was developed specifically for use in this study. In addition, it was designed for use with personality disordered patients in forensic settings, either for research or practice. In the current study, it was the only engagement measure significantly associated with psychopathy, which suggests it was more sensitive for use with a psychopathic population than existing measures. These results are promising and suggest the GEEQ may be a useful tool for use in future research and may be helpful in practice settings as an assessment tool.

The current study suggests those that were better engaged were more resistant to negative priming. Therefore, benefits may be gained from further examination of the relationship between negative priming and therapy engagement and by extension treatment efficacy. It may be that those better engaged with therapy are more likely to ignore negative priming in favour of more healthy interpretations of information. Future investigation would need to establish whether this effect is an idiosyncrasy of personality disordered offenders or whether it can be generalized to other patient populations. If it

can be established that resistance to negative priming is associated with good therapy outcome, tests of interpretation bias using negative primes could be used to assess treatment progress.

The suppression effect that was observed for interpreting emotion and transforming emotion raises concerns for how psychopaths high in Factor 1 traits may be viewed by group facilitators. The high Factor 1 psychopaths in the current sample were rated as poorly engaged but the extent of this was masked by a positive interpretation bias that was resistant to change (which mimicked good therapy engagement). The raters in this study all had extensive experience of working therapeutically with psychopathic prisoners; group facilitators of therapy programmes in mainstream prison settings will not have the same level of expertise. Therefore, psychologists in mainstream prison may benefit from specific training on assessing treatment progress for psychopathic prisoners.

9.6.5. Limits of the Study: Mediation Analysis

The measure used for the dependent variable (GEEQ) was new and although it demonstrated good psychometric properties as part of the current study (see chapter 4) it requires wider testing to establish its validity and reliability further. This may have limited the study. However, it was the only engagement measure significantly associated with psychopathy, which may indicate that it is particularly sensitive for use with a psychopathic population. In addition, the study was explorative and the affective cognitive tasks used in the mediation analysis may not have mapped onto Greenberg and Pascual-Leone's theoretical framework as well as might have been expected. Each

task yielded interesting findings alone however they were less effective at establishing mediation effects. Further, it was not possible to conclude whether emotion processing ability as described by Greenberg and Pascual-Leone mediates the relationship between psychopathy and therapy engagement. However, the study suggested interpretation bias and ineffective negative priming as suppressors in this relationship. This is important because it gives a deeper understanding of the relationship amongst these variables (Cheung & Lau, 2008; Rucker et al., 2011). Moreover, any future theories would need to take into account these suppressors as they may offer a more complete theory than considering mediators alone (Rucker et al., 2011).

9.6.6. Conclusion: Mediation analysis

In conclusion, the current mediation study demonstrated that the affective component of psychopathy was associated with poorer therapy engagement. In addition, interpretation of emotion (as measured by interpretation bias) and transforming emotion (as measured by priming effects on interpretation bias) acted as suppressors on this relationship. As such, when these variables were taken into account the negative relationship between psychopathy and therapy engagement was strengthened. Better therapy engagement and high Factor 1 psychopathy were each associated with making fewer schema congruent interpretations and resistance to negative priming. Whilst these associations make sense for good therapy engagement, they run counter to the literature on psychopathy (especially expectations of the schema literature). This is possibly due to schema overcompensation which may be

misunderstood in psychopathy as impression management. Research to distinguish the two concepts in psychopathy would benefit theory and practice. In addition, the findings raise concerns that high Factor 1 psychopaths may be considered as being better engaged in therapy than they actually are. As such, it may be important for those facilitating therapy programmes in mainstream prisons to be aware of the peculiarities of therapy engagement in psychopathy. This will help practitioners to make accurate assessments of therapy engagement.

9.7. Overall Thesis Limitations

Before moving on to the thesis conclusion, I will briefly outline the overall thesis limitations. The thesis was cross-sectional in design so was unable to say anything meaningful about changes in therapy over time. The sample size was relatively small but was sufficient to allow detection of medium effects for the task-by-task analysis. In addition, bias corrected bootstrapping was specifically chosen to boost power for the mediation analysis. Although none of the effects reported here were attributable to any confounding characteristics that were measured, unmeasured confounders cannot be ruled out. A further limitation of my data was the absence of a truly low psychopathic comparator group. Due to the population from which my sample was taken (incarcerated male offenders in a high secure prison), the entire sample scored in the upper ranges of the PCL-R. It is therefore possible that the effects reported here apply only to those upper ranges of the psychopathy distribution. Similarly, the task-by-task group comparisons used a PCL-R ≥ 30 cut-off therefore the results may not be generalized to other European

patients who have been diagnosed using a 25 cut-off. In addition Cooke and Michie (2010) found PCL-R scores around the diagnostic cut-off of 30 were particularly unreliable which may have influenced the accuracy of the group comparison findings. Further limitations arise because the sample was male only therefore results may not be generalized to female psychopaths. In addition, practical constraints meant that it was only possible to use a two dimensional model of psychopathy (Factor 1, Factor 2). However, more complex models of the construct are increasingly being favoured (e.g. Cooke & Michie, 2001; Cooke et al., 2007). Finally, the tasks used lacked normative data; therefore, it was not possible to compare our results to the normal population to determine to what extent findings for the current sample differed. For example, a number of the findings indicated psychopaths may have processed emotional information in a way that might have been expected in the normal population. It would however be unusual for experimental tasks to have normative data because the factors of interest to the investigation are usually inherent in the task design (e.g. response to emotional versus neutral information) and only of interest in relation to the comparator group. The approach is quite distinct from the more general tests of cognition (such as IQ or working memory performance) where one might usefully refer to percentile performance within the population at large.

9.8. Thesis Conclusion

In conclusion, the thesis examined whether emotion processing ability mediated the relationship between psychopathy and therapy engagement. Emotion processing ability was assessed using five computerised tasks

designed to assess the four emotion processing mechanisms believed to be associated with good therapy outcome. Each task yielded interesting results, which give new insights into emotion processing in psychopathy. As predicted the mediation analysis revealed poor engagement for higher levels of psychopathy (Factor 1, affective component). In addition, two of the emotion processing indicators, interpreting and transforming emotion, were found to act as suppressors on this relationship. The clinical threshold for psychopathy (PCL-R ≥ 30) proved a useful cut-off point for detecting differences in emotion processing ability, suggesting greater deficits for those above the threshold. In addition, the two PCL-R factors demonstrated differences in emotion processing ability suggesting specificity of deficits related to affective / interpersonal traits and anti-social behaviour (Factor 1 and 2 respectively). These results could be used to inform clinical strategies for targeting emotion processing in psychopathic offenders, thereby reducing risk amongst this client group.

9.8.1. Awareness and Arousal

The investigation of approach / avoidance behaviour in psychopathy revealed a preference for crowds expressing ambiguous positive emotion for clinical levels of psychopathy. These crowds were also viewed as approving. To those higher in psychopathy the ambiguity of the group may signify an opportunity to manipulate or con others. Splitting in groups is well documented for psychopathy (Murphy & McVey, 2010). In addition, the anti-social component of psychopathy was associated with preference for high levels of negative emotion and aversion to high levels of positive emotion.

This suggests an anomalously rewarding aspect of high negativity in group settings for Factor 2 psychopathy; possibly linked to a need for stimulation. High positive affect may signify potential rejection for this group resulting in more avoidant behaviour. This implies that while psychopaths may prefer interactions involving ambiguous positivity, the subset that are higher on the Factor 2 scale favour definite negativity and are least comfortable with definite positivity.

9.8.2. Emotion Regulation

The current investigation of emotion regulation in psychopathy revealed an amplified cardiovascular response when processing negative emotional images in high psychopaths. It is possible that this reflects an anomalously rewarding aspect of normally unpleasant material in the case of high psychopathic individuals. In addition when attempting to up-regulate emotional response, by ‘getting into the feeling’ of the emotion conveyed by the image, higher Factor 1 psychopaths showed reduced responsiveness, suggesting that they were less able to do this. Overall this suggests that while psychopaths may be more cardiovascularly responsive to negative material, the subset who are higher on the Factor 1 scale are less able to intentionally regulate this response. These results could be used to inform clinical strategies for targeting emotion regulation in psychopathic offenders, thereby reducing risk amongst this client group. As discussed above, Mindfulness approaches that use biofeedback may be particularly useful for improving up-regulation of aversive emotion.

9.8.3. Interpretation and Transformation of Emotion

The investigation of interpretation bias (and priming) in psychopathy, revealed less negative bias for clinical levels of psychopathy including the subset that are higher on the Factor 1 scale. This was supported by RT data that followed the same pattern, and priming data that indicated resistance to negative but not positive priming. Together these findings indicate a possible lack of psychological insight in psychopathy and a propensity to overcompensate if schemas are triggered. In contrast, the anti-social component of psychopathy (Factor 2) demonstrated less endorsement of schema incongruent interpretations. Overall, this suggests that while high psychopathy (including Factor 1) may be predisposed to overcompensation and lack of insight, those high in Factor 2 may not. This could mean they are more treatment ready when they start therapy.

9.8.4. Mediation Analysis

The current mediation study demonstrated that the affective component of psychopathy was associated with poorer therapy engagement. In addition, interpretation of emotion and transforming emotion acted as suppressors on this relationship. This may be further evidence of schema overcompensation (cf. Beckley, 2011; Bernstein et al., 2007). Moreover, it may be that schema overcompensation in psychopathy is misread as impression management. Therefore, research which distinguishes the two concepts would further our understanding and could be used to develop more effective interventions. The results raise the possibility that high Factor 1 psychopathy may appear to have exaggerated levels of therapy engagement. Those facilitating therapy

programmes for psychopathic offenders need to be aware of these peculiarities so that more accurate judgements about engagement (and by extension progress), can be made.

9.8.5. Overarching Clinical Implications of the Thesis

Findings of the current study suggest psychopaths may have anomalous patterns of emotion processing and therapy engagement that are factor specific. For example, greater Factor 1 psychopathy was associated with, deficits in up-regulation of negative affect without corresponding awareness, schema overcompensation that appeared resistant to shift and poor therapy engagement. Moreover, schema overcompensation and its fixed character appeared to mask the true paucity of therapy engagement for those with high Factor 1 scores. In contrast, higher Factor 2 traits were associated with attraction to extreme negative affect, avoidance of extreme positive affect and negative interpretation bias. Therefore, treatment approaches may be most effective if they take into consideration the factor composition of individuals' PCL-R scores.

9.8.5.1. Treatment Approaches for Factor 1 Traits

As discussed above, callous unemotional traits (Factor 1) might be treated most effectively by reducing the dissociation between subjective and physiological response. This would involve raising individuals' awareness of their physiological responses to aversive information. Mindfulness approaches that use biofeedback exercises to enhance emotion up-regulation may be particularly effective. This may need to occur early in therapy to maximise treatment benefit (Foa et al., 1995; Gilbao-Schechtman & Foa, 2001; Jaycox

et al., 1998; Paivio et al., 2001) and may be better practiced in individual therapy rather than a group setting.

For those with many Factor 1 traits, schema overcompensation may obscure normal access to personal emotional narratives. This would be evident in cases when interpersonal relationships are characterised by disrupted attachments, punishment, humiliation or subjugation without corresponding acknowledgement of their detrimental impact. Effective treatment might require an extensive psycho-educational phase to raise individuals' awareness of their own schema driven narratives. Approaches to augment up-regulation of negative affect suggested above may enhance access to and appreciation of personal emotional narratives, especially those high in negative affect. Authentic narratives could then be developed which reflect the patient's experiences more realistically. Related cognitive distortions might then be highlighted and challenged effectively rather than remaining concealed behind over-compensatory strategies.

Defence mechanisms such as those just described appear to be resistant to change in Factor 1 psychopathy. The ability to move between recognising problematic interpretations and transforming them with new perspectives may be compromised, especially if the associated affect is negative. Approaches such as empty chair exercises (Adams & Greenberg, 1996; de Zulueta, 2006; Greenberg & Malcolm, 2009; Young et al., 2003) or schema re-scripting imagery work (Smucker, Dancu, Foa, & Niederee, 1995; Young et al., 2003) may be particularly effective at raising awareness of schema driven beliefs, behaviours and defences whilst simultaneously challenging and shifting them

(Young et al., 2003). This could occur following the psycho-educational phase. Each of the approaches suggested could be taken within group settings.

Finally, higher Factor 1 psychopaths were rated as poorly engaged but the extent of this was disguised by their tendency to interpret situations positively even when encouraged not to. Therefore, the approaches described above may help to improve therapy engagement. However, it would be important to remain vigilant to overcompensation and fixed styles of interpretation, especially if excessively positive, so that accurate assessments of group therapy engagement can be made. The raters in the current study all had extensive experience of working therapeutically with psychopathic prisoners more so than facilitators of therapy programmes in mainstream prison settings. Mainstream programmes are likely to include psychopathic prisoners especially (but not exclusively) in the higher security prisons. Therefore, forensic psychologists generally may benefit from specific training on assessing treatment engagement and progress for prisoners with high Factor 1 scores.

9.8.5.2. Treatment Approaches for Factor 2Traits

Those scoring highly on the anti-social component of psychopathy (Factor 2) may be more treatment ready at the onset of therapy. Evidence for this is found in their more direct styles of relating to others and less reliance on overcompensation as a schema defence (at least in relation to dependence on others and belief in their own defectiveness). As suggested above, attraction to high levels of negativity within interpersonal interactions may be

easier to begin to address early in therapy because of its visibility. Similarly, schema driven beliefs and behaviours may be easier to challenge if patients are less defended against recognising them. As such, those high in Factor 2 traits may present less covertly and so need less preparatory work on schema defences so that cognitive distortions can begin to be challenged earlier in the therapy process. Finally, compared to Factor 1, this may better fit existing models of bias modification in therapy where negative rather than positive biases often underlie patients' difficulties (e.g. anxiety, depression). While Factor 2 psychopathy may benefit from modification of negative bias Factor 1 may require the opposite.

A word of caution, high psychopathy patients (those above the clinical threshold) are likely to score highly on both Factor 1 and 2 traits. Therefore, it may be better to think of factors as sets of symptoms to be addressed in terms of what may be most problematic and to what extent each is related historically and currently to problematic behaviours including crime. In addition, use of treatment readiness measures may help to select those more likely to benefit from treatment or highlight areas that require preparatory work (Howells & Tennant, 2007). For example, The Corrections Victoria Treatment Readiness Questionnaire (CVTRQ; Casey, Day, Howells, & Ward, 2007) designed specifically for use within forensic settings and used with personality disordered offenders (Howells, Krishnan, & Daffern, 2007) may be particularly useful. Finally, Yalom and Lesczcz (2005) caution against including too many schizoid personalities in one group as it risks dampening the overall affect of the group. Similarly, when determining group membership it may be important to ensure they do not consist of too many individuals with high Factor 1 traits

as this may result in groups that are over-reliant on cognition at the expense of affect.

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THESIS APPENDICES

APPENDIX A

UNIVERSITY OF OXFORD

DEPARTMENT OF PSYCHIATRY

WARNEFORD HOSPITAL
OXFORD
OX3 7JX

Monday 24th March 2008

Supplementary Information Sheet
Amendment v3.3

Processing of Emotional Information

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

The aim of the study is to find out how people process emotional information and how this is related to the way they engage in psychotherapy. We hope that by understanding more about how people process the information around them, we may gain a better insight into clinical disorders. This knowledge may eventually help us to develop new treatments, based on adapting the way people process information.

Why have I been chosen?

Everyone who resides on the DSPD unit on D Wing is given the opportunity to take part in the study. We include everyone on the unit because that way we get a better understanding about the many ways different people process emotional information.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and will have a chance to ask any questions you still have. When you are sure you want to take part, we will ask you to sign a Consent Form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

You may decide to take part, not to take part, or pull out once you have started.
None of these decisions will affect things in any way. They will not affect your treatment, your sentence plan, your parole or probationary arrangements, the jobs you are allowed to do, or any aspect of your life on the unit.

What will happen to me if I take part?

You would be asked to complete 3 computerised tasks and 2 questionnaires. This would last around 1½ hrs.

The computer tasks are simple. The first task asks you to respond to pictures by pushing or pulling a joystick. The second task involves viewing pictures and rating them. The third task involves completing unfinished sentences. The questionnaires will ask you about the way you and other people deal with daily situations. The researcher will be available to help if necessary at any time. Your name will not be recorded on any of the materials we use.

What do I have to do?
There are no special restrictions or requirements if you take part. We only ask that you answer our questions as honestly as possible.

What are the possible disadvantages and risks of taking part?
There are no risks associated with any of the procedures involved in the experiment. If you take part some questions in the clinical interview will involve discussing your past illnesses, personality difficulties and criminal behaviours. The researchers are trained to ask these questions sensitively. If you feel upset by any of the questions please tell us. You may choose not to answer any question, if you wish. In the unlikely event that the clinical interview uncovers new areas of difficulty that might benefit from clinical help then we will seek your agreement to advise a member of the team who care for you. If we discover that you are at risk of harming yourself or others, then we have a duty to inform staff.

What happens when the research study stops?
You will continue on your programme of treatment and activities as usual. Nothing will be changed by taking part in this study.

What if I have a complaint?
If you have a complaint about the research or the research staff, you should initially raise this with the researchers at your unit and, if not resolved, contact one of the senior team members (see details below). For treatment matters you should ask advice at your unit.

Will my taking part in this study be kept confidential?
All information which is collected about you during the course of the research will be kept strictly confidential. All the data will be stored in locked cabinets according to the Data Protection Act. Any information about you that leaves the unit will have your name removed so that you cannot be recognised from it. The only time when this would not apply is if you tell us that you intend to harm yourself, harm someone else or escape from your unit. In that case we are duty bound to inform staff or other authorities.

This work is entirely independent of the clinical staff on your ward. However there may be occasions where their having access to our data would avoid you having to do the same assessment again. Unit staff may ask you and, if you agree, provide a consent form to sign giving them access to this data. We will not hand over any data to staff without having your explicit written consent.

What will happen to the results of the research study?
Eventually we expect to publish articles about our findings, present our results at meetings (including ‘service user’ group meetings), but you will not be identifiable.

Who is organising and funding the research?
The research is being funded by the National Health Service's Research & Development Programme on Forensic Mental Health, through the 'DSPD Programme'.

Who has reviewed the study?
The South East Multi-Centre Research Ethics Committee has reviewed and approved this study (05/MRE01/94).

Contact for Further Information

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If you take part you will be given a copy of this information sheet and your signed consent form to keep.

THANK YOU FOR TAKING PART IN THIS RESEARCH

APPENDIX B

UNIVERSITY OF OXFORD
DEPARTMENT OF PSYCHIATRY

WARNEFORD HOSPITAL
OXFORD
OX3 7JX

TEL: (01865) 223785
FAX: (01865) 793101

PATIENT/PRISONER CONSENT FORM

Title of Project: Inclusion for DSPD: Evaluating Assessment and treatment (IDEA)
Name of Researcher: Professor Tom Burns

Please initial box

1. I confirm that I have read and understand the information sheet dated ..... (version .....) for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐

3. I understand that sections of any of my prison and medical records may be looked at by responsible individuals from the research team where it is relevant to my taking part in the research. I give permission for these individuals to have access to my records. ☐

4. I agree that research staff may see and use test results collected when I arrived. ☐

5. I agree to take part in the above study. ☐

6. I am willing to be contacted at a future date about taking part in further research. I understand this does not commit me to taking part again, only being approached. ☐

7. I agree that the data collected during this study can be used in conjunction with subsequent evaluations, but only in a strictly anonymised form. ☐

8. I agree that parts of my interviews may be tape recorded with my knowledge and direct quotations used anonymously in the presentation of results. ☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Person taking consent (if different from researcher)	Date	Signature
_____	_____	_____
Researcher	Date	Signature

1 for participant; 1 for researcher; 1 to be kept with prison notes

APPENDIX C

LEAS

Patient ID: _____ Date: _____ Time: _____

Researcher: _____

INSTRUCTIONS

Please describe what you would feel in the following situations. The only requirement is that you use the word “feel” in your answers. You may make your answers as brief or as long as necessary to express how you would feel. In each situation there is another person mentioned. Please indicate how you think that other person would feel as well.

1. A neighbour asks you to repair a piece of furniture. As the neighbour looks on, you begin hammering the nail but then miss the nail and hit your finger. How would you feel? How would the neighbour feel?

2. You are walking the desert with a guide. You ran out of water hours ago. The nearest well is two miles away according to the guides’ map. How would you feel? How would the guide feel?

3. A loved one gives you a back rub after you return from a hard days work. How would you feel? How would your partner feel?

4. You are running in a race with a friend with whom you have trained for some time. As you near the finish line, you twist your ankle, fall to the ground, and are unable to continue. How would you feel? How would your friend feel?

5. You are travelling in a foreign country. An acquaintance makes derogatory remarks about your native country. How would you fell? How would your acquaintance feel?

6. As you drive over a suspension bridge you see a person standing on the other side of the guardrail, looking down at the water. How do you feel? How would the person feel?

7. Your sweetheart has gone for several weeks but finally comes home. As your sweetheart opens the door…how do you feel? How would your sweetheart feel?

8. Your boss tells you that your work has been unacceptable and needs to be improved. How would you feel? How would your boss feel?

9. You are standing in a line at the bank. The person in front of you steps up to the window and begins a very complicated transaction. How do you feel? How would the person in front of you feel?

10. You and your spouse are driving home from an evening out with friends. As you turn onto your block you see fire-trucks near your home. How do you feel? How would your spouse feel?

11. You have been working hard on a project for several months. Several days after submitting it, your boss stops to tell you that your work was excellent. How would you feel? How would your boss feel?

12. You receive an unexpected long-distance phone call from a doctor informing you that your mother has died. How would you fell? How would you feel? How would the doctor feel?

13. You tell a friend who is feeling lonely that she/he can tell you whenever she/he needs to talk. One night she/he calls at 4.00 am. How do you feel? How would your friend feel?

14. Your dentist had told you that you have several cavities and schedules you for a return visit. How do you feel? How would the dentist feel?

15. Someone who has been critical of you in the past pays you a compliment. How would you feel? How would the other person feel?

16. Your doctor told you to avoid fatty foods. A new colleague at work calls to say that she/he is going out for pizza and invites you to go along. How would you feel? How would you colleague feel?

17. You and a friend agree to invest money together to begin a new business venture. Several days later you call the friend back only to learn that she/he changed her/his mind. How would you feel? How would your friend feel?

18. You sell a favourite possession of your own in order to buy an expensive gift for your spouse. When you give him/her the gift, he/she asks whether you sold the possession. How would you feel? How would your spouse feel?

19. You fall in love with someone who is both attractive and intelligent. Although this person is not well off financially, this doesn't matter to you – your income is adequate. When you begin to discuss marriage, you learn that she/he is actually from an extremely wealthy family. She/he did not want that known for fear that people would only be interested in her/him for her/his money. How would you fell? How would she/he feel?

20. You and your best friend are in the same line of work. There is a prize given annually to the best performance of the year. The two of you work hard to win the prize. One night the winner is announced: your friend. How would you feel? How would your friend feel?

SCORE TABLE FOR LEAS

PATIENT:_____ DATE: _____

S#												
Q#	S	O	T	S	O	T	S	O	T	S	O	T
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total												

S = Self

O = Other

T = Total score for scenario.

APPENDIX D

ERQ

Patient ID: _____ Date: _____ Time: _____

Researcher: _____

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1----------2----------3----------4----------5----------6----------7
strongly agree **neutral** **strongly disagree**

1. ____When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.

2. ____ I keep my emotions to myself.

3. ____ When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.

4. ____ When I am feeling *positive* emotions, I am careful not to express them.

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

6. ____ I control my emotions by *not expressing them*.

7. ____ When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.

8. ____ I control my emotions by *changing the way I think* about the situation I'm in.

9. ____ When I am feeling *negative* emotions, I make sure not to express them.

10. ____ When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.

APPENDIX E



NMRS

Patient ID: _____ Date: _____ Time: _____

Researcher: _____

This is a questionnaire to find out what people believe they can do about upsetting emotions or feelings. Please answer the statements by giving as true a picture of your own beliefs as possible. Of course, there are no right or wrong answers. Remember, the questionnaire is about what you believe you can do **NOT** about what you actually or usually do. Be sure to read each item carefully and show your beliefs by ticking the appropriate box.

If you strongly disagree with an item, mark box 1. Mark box 2 if you mildly disagree with the item. That is if the item is more generally untrue then true according to your beliefs mark box 2. *Mark box 3 if you feel the item is about equally true as untrue. Mark box 4 if you mildly agree with the item.* That is mark box 4 if you think the item is more true than untrue. *If you strongly agree with an item, mark box 5.*

		1. strongly disagree	2. disagree	3. neither agree nor	4. agree	5. strongly agree
1	When I'm upset I believe I can usually find a way to cheer myself up					
2	When I'm upset I believe I can do something to feel better					
3	When I'm upset I believe wallowing in it is all I can do					
4	When I'm upset I believe I'll feel okay if I think about more pleasant times					
5	When I'm upset I believe being with other people will be a drag					
6	When I'm upset I believe I can feel better by treating myself to something I like					
7	When I'm upset I believe I'll feel better when I understand why I feel bad					
8	When I'm upset I believe I won't be able to get myself to do anything about it					
9	When I'm upset I believe I won't feel much better by trying to find some good in the situation					
10	When I'm upset I believe it won't be long before I can calm myself down					

		1. strongly	2. disagree	3. neither agree	4. agree	5. strongly agree
11	When I'm upset I believe it will be hard to find someone who really understands					
12	When I'm upset I believe telling myself it will pass will help me calm down					
13	When I'm upset I believe doing something nice for someone else will cheer me up					
14	When I'm upset I believe I'll end up feeling really depressed					
15	When I'm upset I believe planning how I'll deal with things will help					
16	When I'm upset I believe I can forget about what's upsetting me pretty easily					
17	When I'm upset I believe catching up with my work will help me calm down					
18	When I'm upset I believe the advice friends give me won't help me feel better					
19	When I'm upset I believe I won't be able to enjoy the things I usually enjoy					
20	When I'm upset I believe I can't find a way to relax					
21	When I'm upset I believe trying to work the problem out in my head will only make it feel worse					
22	When I'm upset I believe seeing a movie won't help me feel better					
23	When I'm upset I believe going out to dinner with friends will help					
24	When I'm upset I believe I'll be upset for a long time					
25	When I'm upset I believe I won't be able to put it out of my mind					
26	When I'm upset I believe I can feel better by doing something creative					
27	When I'm upset I believe I'll start to feel really down about myself					
28	When I'm upset I believe thinking that things will eventually be better won't help me feel any better					

APPENDIX F

EPQ

Patient ID: _____ Date: _____ Time: _____

Researcher: _____

Please answer each question by putting a circle around the 'YES' or NO following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

1. Do you have many different hobbies? Yes / No
2. Do you stop to think things over before doing anything? Yes / No
3. Does your mood often go up and down? Yes / No
4. Have you ever taken the praise for something you knew someone else had really done? Yes / No
5. Do you take much notice of what people think? Yes / No
6. Are you a talkative person? Yes / No
7. Would being in debt worry you? Yes / No
8. Do you ever feel 'just miserable' for no reason? Yes / No
9. Do you give money to charities? Yes / No
10. Were you ever greedy by helping yourself to more than your share of anything? Yes / No
11. Are you rather lively? Yes / No
12. Would it upset you a lot to see a child or an animal suffer? Yes / No
13. Do you often worry about things you should not have done or said? Yes / No
14. Do you dislike people who don't know how to behave themselves? Yes / No
15. If you say you will do something, do you always keep your promise no matter how inconvenient it might be? Yes / No
16. Can you usually let yourself go and enjoy yourself at a lively party? Yes / No
17. Are you an irritable person? Yes / No
18. Should people always respect the law? Yes / No
19. Have you ever blamed someone for doing something you knew was really your fault? Yes / No

20.	Do you enjoy meeting new people?	Yes / No
21.	Are good manners very important?	Yes / No
22.	Are your feelings easily hurt?	Yes / No
23.	Are *all* your habits good and desirable ones?	Yes / No
24.	Do you tend to keep in the background on social occasions?	Yes / No
25.	Would you take drugs which may have strange or dangerous effects?	Yes / No
26.	Do you often feel 'fed-up'?	Yes / No
27.	Have you ever taken anything (even a pin or button) that belonged to someone else?	Yes / No
28.	Do you like going out a lot?	Yes / No
29.	Do you prefer to go your own way rather than act by the rules?	Yes / No
30.	Do you enjoy hurting people you love?	Yes / No
31.	Are you often troubled about feelings of guilt?	Yes / No
32.	Do you sometimes talk about things you know nothing about?	Yes / No
33.	Do you prefer reading to meeting people?	Yes / No
34.	Do you have enemies who want to harm you?	Yes / No
35.	Would you call yourself a nervous person?	Yes / No
36.	Do you have many friends?	Yes / No
37.	Do you enjoy practical jokes that can sometimes really hurt people?	Yes / No
38.	Are you a worrier?	Yes / No
39.	As a child, did you do as you were told immediately and without grumbling?	Yes / No
40.	Would you call yourself happy-go-lucky?	Yes / No
41.	Do good manners and cleanliness matter much to you?	Yes / No
42.	Have you often gone against your parents' wishes	Yes / No
43.	Do you worry about awful things that might happen?	Yes / No
44.	Have you ever broken or lost something belonging to someone else?	Yes / No
45.	Do you usually take the initiative in making new friends?	Yes / No
46.	Would you call yourself tense or 'highly-strung'?	Yes / No
47.	Are you mostly quiet when you are with other people?	Yes / No
48.	Do you think marriage is old-fashioned and should be done away with?	Yes/ No

49. Do you sometimes boast a little? Yes / No
50. Are you more easy-going about right and wrong than most people? Yes / No
51. Can you easily get some life into a rather dull party? Yes / No
52. Do you worry about your health? Yes / No
53. Have you ever said anything bad or nasty about anyone? Yes / No
54. Do you enjoy cooperating with others? Yes / No
55. Do you like telling jokes and funny stories to your friends? Yes / No
56. Do most things taste the same to you? Yes / No
57. As a child, were you ever cheeky to your parents? Yes / No
58. Do you like mixing with people? Yes / No
59. Does it worry you if you know there are mistakes in your work? Yes / No
60. Do you suffer from sleeplessness? Yes / No
61. Have people said that you sometimes act too rashly? Yes / No
62. Do you always wash before a meal? Yes / No
63. Do you nearly always have a 'ready answer' when people talk to you? Yes / No
64. Do you like to arrive at appointments in plenty of time? Yes / No
65. Have you often felt listless and tired for no reason? Yes / No
66. Have you ever cheated at a game? Yes / No
67. Do you like doing things in which you have to act quickly? Yes / No
68. Is (or was) your mother a good woman? Yes / No
69. Do you often make decisions on the spur of the moment? Yes / No
70. Do you often feel life is very dull? Yes / No
71. Have you ever taken advantage of someone? Yes / No
72. Do you often take on more activities than you have time for? Yes / No
73. Are there several people who keep trying to avoid you? Yes / No
74. Do you worry a lot about your looks? Yes / No
75. Do you think people spend too much time safeguarding their future with savings and insurance? Yes / No
76. Have you ever wished that you were dead? Yes / No
77. Would you dodge paying taxes if you were sure you could never be found out? Yes / No

78. Can you get a party going? Yes / No
79. Do you try not to be rude to people? Yes / No
80. Do you worry too long after an embarrassing experience? Yes / No
81. Do you generally 'look before you leap'? Yes / No
82. Have you ever insisted on having your own way? Yes / No
83. Do you suffer from 'nerves'? Yes / No
84. Do you often feel lonely? Yes / No
85. Can you on the whole trust people to tell the truth? Yes / No
86. Do you always practise what you preach? Yes / No
87. Are you easily hurt when people find fault with you or the work you do? Yes / No
88. Is it better to follow society's rules than go your own way? Yes / No
89. Have you ever been late for an appointment or work? Yes / No
90. Do you like plenty of bustle and excitement around you? Yes / No
91. Would you like other people to be afraid of you? Yes / No
92. Are you sometimes bubbling over with energy and sometimes very sluggish? Yes / No
93. Do you sometimes out off until tomorrow what you ought to do today? Yes / No
94. Do other people think of you as being very lively? Yes / No
95. Do people tell you a lot of lies? Yes / No
96. Do you believe one has special duties to one's family? Yes / No
97. Are you touchy about some things? Yes / No
98. Are you always willing to admit it when you have made a mistake? Yes / No
99. Would you feel sorry for an animal caught in a trap? Yes / No
100. When your temper rises, do you find it difficult to control? Yes / No
101. Do you lock up your house carefully at night? Yes / No
102. Do you believe insurance schemes are a good idea? Yes / No
103. Do people who drive carefully annoy you? Yes / No
104. When you catch a train, do you often arrive at the last minute? Yes / No
105. Do your friendships break up easily without it being your fault? Yes / No
106. Do you sometimes like teasing animals? Yes / No

Check that all the questions have been answered

APPENDIX G

GEM

Patient ID: _____ Date: _____ Time: _____

Researcher: _____

This measure assesses a group member's engagement in group therapy. The measure is to be completed by the group facilitator. This version of the GEM scores engagement over the past few consecutive sessions.

Please rate every statement to the best of your recollection – even if you are unsure of your choice. If you are stuck in a choice between two points in the rating scale, choose the first that comes to mind – it is often the most accurate.

Please use the following scale to rate each statement

1……..2……..3……..4……..5

Rarely or none of the time	**A little of the time**	**Some of the time**	**A good part of the time**	**Most or all of the time**

	Statement	Rating (Circle)				
	I. Attending					
1.	The member arrives at or before start time	1	2	3	4	5
2.	The member stays until the end of sessions or leaves only for important reasons	1	2	3	4	5
3.	The member does not hurry to leave at the end of sessions	1	2	3	4	5
	II. Contributing					
4.	The member contributes his share of talk time (not too much, not too little)	1	2	3	4	5
5.	The member seems to follow and understand what others are saying	1	2	3	4	5
6.	The member responds thoughtfully to what **all** others are saying (not just one or two)	1	2	3	4	5
7.	The member verbally interacts with members on topics related to the group's purpose	1	2	3	4	5
8.	The member participates in group projects/activities	1	2	3	4	5
	III. Relating to facilitator					
9.	The member follows guidance of the facilitator (e.g. discusses what facilitator want group to discuss, is involved in activities suggested by facilitator) [3]	1	2	3	4	5
10.	The member shows enthusiasm about contact with facilitator (e.g. demonstrates interest in the facilitator, is eager to speak with facilitator) [1]	1	2	3	4	5
11.	The member supports work that the facilitator is doing with other members (e.g. by staying on topic or expanding on discussion) [1]	1	2	3	4	5

[3] Members might sometimes challenge the guidance of the facilitator. Thoughtful, constructive challenges are O.K.

Please use the following scale to rate each statement

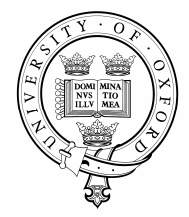
1……..2……..3……..4……..5

Rarely or none of the time **A little of the time** **Some of the time** **A good part of the time** **Most or all of the time**

	Statement	Rating (Circle)
	IV. Relating with members	
12.	The member likes and cares for other members	1 2 3 4 5
13.	The member helps other group members to maintain good relations with each other (e.g. by encouraging members to work out interpersonal problems, by stopping unproductive arguments among members, by cheering up members, and so forth)	1 2 3 4 5
14.	The member helps and encourages other members	1 2 3 4 5
	V. Contracting	
15.	The member expresses continual disapproval of the meeting times [4]	1 2 3 4 5
16.	The member expresses continual disapproval about the number of meetings [2]	1 2 3 4 5
17.	The member expresses continual disapproval about what the group members are doing together [2]	1 2 3 4 5
	VI. Working on own problems	
18.	The member partializes problems and works on their parts	1 2 3 4 5
19.	The member makes an effort to achieve his particular goals	1 2 3 4 5
20.	The member works on solutions to specific problems	1 2 3 4 5
21.	The member tries to understand the things he does	1 2 3 4 5
22.	The member reveals feelings that help in understanding problems	1 2 3 4 5
	VII. Working with others' problems	
23.	The member talks with (encourages) others in ways that help them focus on their problems [5]	1 2 3 4 5
24.	The member talks with (encourages) others in ways that help them partialize or specify their problems [3]	1 2 3 4 5
25.	The member talks with (encourages) others in ways that help them to do constructive work on solving their problems [3]	1 2 3 4 5
26.	The member challenges others constructively in their efforts to sort out their problems [3]	1 2 3 4 5
27.	The members helps others achieve the group's purpose	1 2 3 4 5

[4] The statement refers to expressions of disapproval long after the issue has been resolved by other members.

[5] To score high on this statement, the member's offer of help need not be received. The member is not to be held accountable for the behaviour of other members.



APPENDIX H

Experiencing Scale

Patient _____

Rater _____

Date _____

Below are 7 descriptions designed to evaluate the quality of patient self-involvement in psychotherapy. The descriptions represent 7 stages of experiencing. At the low level a patient's discourse is markedly impersonal or superficial. Moving up the scale, there is a progression from simple, limited, or externalized self-references to inwardly elaborated descriptions of feelings. At higher experiencing levels, feelings are explored and emergent levels of experiencing serve as the basic referents for problem-resolution and self-understanding. Using this scale please rate the degree to which your patient communicates his personal, phenomenological perspective and employs it productively in the therapy session. Think about how your patient presented in his most recent CIG and indicate which of the 7 stages best describes his experiencing style. Rate his overall presentation first and if he exceeded this rating at points (or a given point) during the session then rate that also under 'peak'.

Stage	Stage Description	Rating	
		overall	peak
1	The patient seems distant or remote from his feelings. His reported experiences have an impersonal quality. Feelings are avoided and personal involvement is absent from communication.		
2	The patient does not refer to his feelings directly, but the personal perspective emerges somewhat. Although feelings and personal reactions are characterized as remote external events or are referred to only indirectly or abstractly, there are self-references that indicate an intellectual interest or general but superficial involvement.		
3	The patient's feelings come into clear but limited perspective. The patient refers to feelings and owns them, but bypasses personal aspects or deeper ramifications. Feelings are expressed as thought rooted in external circumstances or are described only in very limited terms, often with reluctance.		
4	The patient's quality of involvement shifts. The patient is no longer concerned exclusively with external or remotely experienced feelings, but draws directly from his experiencing to describe feelings and personal reactions. The patient shifts from looking at outside events or from stewing about things, to quietly holding still and letting the bodily sense of things come through, and developing the felt meaning, that is the words that come from this feeling.		
5	The inner referent is the subject of elaboration and exploration. The patient now can focus on the vague, implicitly meaningful aspects of his experiencing and struggle to see his experiencing more clearly or work to elaborate it. As this exploration takes place, the referent unfolds and becomes, at least potentially, more rich and complex. There is often a sense of more being there than can be captured at once, with even more feelings underneath that could bubble to the surface at any moment.		
6	The patient is able to resolve the exploration undertaken at stage 5. At this point the feelings themselves change or shift. Previously unclear or fragmented sets of experiences are now reconstituted or restructured to so that their experiential effect or impact becomes clear and their meaning is made explicit. Feelings and personal meanings are immediately available as clear and useful referents for action or self-awareness.		
7	The patient extends the growth in self-awareness and the experiential resolution begun at stage 6. The experiential perspective is now a trusted and reliable source of self-awareness, and is steadily carried forward and employed as the primary referent for thought and action. There is constant feedback from new experiencing and adjustment. Complexities, problems, and ambiguities may still arise, but are easily resolved and integrated. Thus self-experiencing is comprehensive, integrated, and cohesive; yet is flexible and open to change.		

APPENDIX I
Group Emotional Engagement Questionnaire (GEEQ)

Patient: _____ Date: _____ Time: _____

Rater: _____

Below is a list of statements that describe some of the ways a patient may behave, think or feel during group therapy. Please think about your patient and how he **usually** presents. For each statement decide which of the 5 categories (never, rarely, sometimes, often, always) best describes how your patient **usually** is.

		Never	Rarely	Sometime	Often	Always
Arousal of emotion						
1	Patient breaks down and cries when talking about past abuse					
2	Patient uses non verbal cues – body language e.g. foot tapping, restlessness, sitting intensely still for long period of time and there is a sense that he is feeling anger					
3	Physical symptoms e.g. voice is elevated					
4	Patient shows overt expression of emotion					
Awareness of emotion						
5	Patient believes other people's needs and the survival of the group are important					
6	Patient says what he is feeling					
7	There is congruence with what patient is saying and showing					
Regulating emotion						
8	Patient overcompensates e.g. increased narcissism, boasting (n)					
9	Patient humiliates others in the group (n)					
10	Patient uses humour or sarcasm to avoid emotion (n)					
11	Patient denigrates or shows contempt for facilitators or group members (n)					
Reflecting on emotion						
12	Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y'					
13	Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past					
14	Patient identifies emotional triggers to their behaviour					
Transforming emotion						
15	Patient reduces parallel offending behaviour					
16	Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations					
17	Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to					
18	Patient has a sense that they will survive and will not be annihilated by emotions					
19	Patient realises presumptions are wrong and can take on someone else's view about a situation					
20	Somatising: patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion					

APPENDIX J

Table A1 Greenberg and Pascual-Leone's review of emotion in psychotherapy (2006)

Author	Year	Participants	Therapeutic approach	Study	Results
Abbass	2002	Severe trauma (N = 89)	Intensive short-term dynamic therapy using techniques to openly challenge patient's resistances to underlying feelings	Repeat measures pre, post- treatment, 12 month follow-up Self-report (BDI, BAI, BSI, IIP) and healthcare and employment data	Mean self-report scores went from abnormal to normal after 17 sessions, this was associated with substantial decrease in use of health care services and increased employment at 12 month follow-up
Adams & Greenberg	1996	Depression	Emotion focused therapy	Repeat measures pre, post-treatment Analysis of in-session empty chair dialogue Observer-rated (EXP, SASB, EAS, CVQ) Self-report (BDI, SCL-90-R, IIP)	Therapists' interventions that were focused on intensifying emotional experience predicted symptom reduction at end of treatment
Anderson, Bein, Pinnell, & Strupp	1999	N/S (N = 32)	Short-term psychodynamic group therapy	In-session analysis of speech using CALAS Repeat measures pre, post-treatment: Observer-rated / self-report (GAS, GOR) Self-report (IDI, SCL-90-R)	For good outcome cases (reduced symptoms, greater independence, better daily functioning) therapists used less cognitive verbs during high affect segments of sessions
Beutler, Clarkin, & Bongar	2000	Sample consisted of >1 diagnosis (N = 284)	Cognitive therapy, psychotherapy	Systematic cross-validation study examining role of therapist directiveness in patient resistance Self-report (EPI, MCMI, MMPI) Observer-rated (STS-CRF) Patient / therapist rating (TRS)	Relationship between higher in-session emotional arousal and good treatment outcome was mediated by working alliance
Beutler et al.	1991	Depression (N = 63)	Group cognitive therapy, group experiential therapy, self-directed psychotherapy	Examination of externalizing / internalizing coping strategies Self-report (MMPI, BDI, BSI) Observer-rated (HRSD) Patient / therapist (WAI, BLRI)	Arousal and expression of emotion was related to development of agency, self-efficacy and self-assertion
Bushman	2002	Students (N = 600)	N/A	Examination of cathartic expression of anger Anger induction task followed by use of punch-bag under 3 conditions (rumination, distraction, control) Measures were force, frequency, time spent and enjoyment of hitting punch-bag Self-report anger (MAAC, PANAS)	Results contradicted catharsis theory Those who thought about the person who had angered them while they punched the bag (rumination group) felt angrier and were more aggressive than distraction and control groups Control group felt least angry and aggressive

Author	Year	Participants	Therapeutic approach	Study	Results
Castonguay, Goldfried, Wiser, Raue, & Hayes	1996	Depression (N = 30)	Cognitive therapy	Repeat measures pre, mid (6 weeks), end (12 weeks) of treatment Self-report (BDI) Observer-rated (GAS, HRSD, CSTF, EXP) Patient / therapist (WAI)	High levels of experiencing and making sense of emotion were associated with reduced symptomatology (BDI).
Coombs, Coleman, & Jones	2002	Depression (N = 239)	Interpersonal therapy, cognitive behavioural therapy	Repeat measures pre, during, post-treatment Self-report (BDI, HSCL-90) Observer-rated (HRSD, GAS) Transcripts of therapy sessions analysed using PQS	Collaborative emotional exploration of patient difficulties was related to reduced depression post treatment across both therapies Greater painful affect was related to higher levels of depression Educative / directive processes had no relation to outcome
Davidson	2000	Sample consisted of >1 diagnosis	N/A	Review (99 studies) Examination of affective neuroscience and psychophysiology	Withdrawal-related emotions can be transformed by approach-related emotions
Davidson & Parker	2001	Post-traumatic stress disorder	Eye movement desensitization and reprocessing therapy, exposure therapy, cognitive therapy, non-specific treatment controls	Meta-analysis (34 studies) Outcome measures included psychometrics (PTSD symptomatology and others), behavioural, psychophysiology	Treatments using exposure / anxiety provoking techniques (eye movement desensitization and reprocessing therapy, exposure therapy) demonstrated equivalent outcomes to cognitive therapies but better outcomes than no treatment and non-specific treatment controls
Dessaulles, Johnson, & Denton	2003	Depression (N = 24)	Emotion focused therapy (14 weeks), psychopharmacology	RCT Repeat measures pre, mid, end of treatment and follow-up (3 and 6 months) Self-report (IDD, DIS, DAS)	Interventions were equally effective at reducing depressive symptoms during therapy but women who received emotion focused therapy experienced greater improvement after termination
Ellison	2003	Depression (N = 43)	Emotion focused therapy (relational approach plus emotion processing techniques including direct arousal of emotion and exposure), client centred therapy (relational approach alone)	RCT Repeat measures at post-treatment 6, 12, 18 month follow-up Self-report (LIFE-II, BDI, SCL-90-R, RSE, IIP)	At 18 month follow-up emotion focused therapy had significantly less depressive relapse, more asymptomatic weeks, improved self-esteem and fewer interpersonal difficulties than client centred group
Foa & Franklin	2000	Obsessive compulsive disorder	Exposure therapy	Review (98 studies) Self-report (BDI, MCMI, YBOCDS)	Poor outcomes were associated with therapist failure to activate fear structure effectively

Author	Year	Participants	Therapeutic approach	Study	Results
Foa, Riggs, Massie, & Yarczower	1995	Post traumatic stress disorder (N = 12)	Exposure therapy	Examination of in-session fear activation Repeat measures pre, post-treatment Self-report (STAI, SCID-R, PSS, ANGER, RAST) In-session measure of fear activation: Observer-rated (FACS) Self-report (SUDS)	Positive therapy outcome predicted by aroused expression of fear while retelling traumatic memories during first exposure session combined with attenuation of distress during exposures over course of therapy Activating fear structure was essential for emotion processing to occur
Foa, Rothbaum, & Furr	2003	Post traumatic stress disorder	Exposure therapy, cognitive behaviour therapy	Meta-analysis	Exposure therapy was the most effective treatment for PTSD Effectiveness was diminished when combined with cognitive / other additional techniques
Fredrickson	2001	Sample consisted of >1 diagnosis	N/A	Review (99 studies) Examination of the role of positive emotions in emotion processing Studies covered cognitive psychology, animal behaviour, neuroscience, clinical psychology	Experiencing of positive emotion is incompatible with negative emotion Positive emotions can be used to 'undo' negative ones
Fredrickson & Levenson	1998	Students (Study 1 N = 60, study 2 N = 72)	N/A	2 studies examining the 'undoing' effect of positive emotion Study 1: fear inducing film followed by film eliciting either contentment, amusement, sadness or neutrality Study 2: observer-ratings of spontaneous smiling while viewing sad film Cardiovascular activity during viewing Self-report level of affect experienced	Experience of amusement and contentment was found to produce faster cardiovascular recovery from negative emotions than neutral experience
Gilbao-Schechtman & Foa	2001	Post traumatic stress disorder (Study 1 N = 110, study 2 N = 108)	Exposure therapy	Analysis of in-session engagement with trauma related material Study 1: repeat measures weekly during treatment self-report (STAI, BDI, IES, assault reaction interview) Study 2: repeat measures monthly during treatment self-report (STAI, BDI, PSS, assault reaction interview)	Higher levels of depression and post traumatic stress disorder were associated with delayed engagement with traumatic material in therapy Long-term recovery was impeded when engagement with traumatic material was delayed

Author	Year	Participants	Therapeutic approach	Study	Results
Goldman, Greenberg, & Pos	2005	Depression (N = 35)	Emotion focused therapy, client centred therapy	Repeat measures early and late sessions Self-report (BDI, SCL-90-R, RSE, IIP, SCM, HAT) Observer-rated (EXP) Patient / therapist (WAI)	Increased levels of in-session emotional processing (i.e. combination of arousal and reflection) predicted reduced depression, increased self-esteem, independent of working alliance
Greenberg	2002	N/S	Emotion focused therapy	Repeat measures pre, post-treatment, 18 month follow-up Analysis of in-session empty chair dialogue Self-report (BDI, SCL-90-R, RSE, IIP, SCM, HAT) Observer-rated (EXP)	Ability to activate and restructure core emotions, memories and responses predicted better outcome at end of therapy and at 18 month follow-up
Greenberg & Angus	2004	Depression	Emotion focused therapy	Review (34 studies) Methods included: Intensive case studies Analysis of audio / videotaped in-session dialogue Measures (NPCS, BDI, SCL-90-R)	Awareness of emotions was related to ability to make new meanings of situations Emotions were used to develop new narratives to explain experiences Awareness of emotion and ability to create new narratives was related to better therapy outcome
Greenberg, Elliot, Watson, & Bohart	2001	Sample consisted of >1 diagnosis	Study examined >1 approach	Meta-analysis (47 studies) Examining relation of empathy to therapeutic outcome Self-report (BLRI) Observer-rated (BLRI, Truax)	Therapists' greater empathic understanding, empathic exploration, empathic evocations, and empathic conjectures predicted better treatment outcome
Greenberg & Foerster	1996	Trauma related to childhood abuse (N = 22)	Experiential therapy	Analysis of in-session empty chair dialogue Observer-rated (EXP, SASB, EAS, CVQ) Repeat measures pre, post-treatment: Self-report (SCL-90-R, IIP) Patient / therapist ratings of resolution of issues (UFBRS)	Arousal during imagined confrontations with significant others facilitated resolution of interpersonal issues from the past Resolution was associated with reduced symptoms and fewer interpersonal difficulties
Greenberg & Malcolm	2002	Trauma related to childhood abuse (N = 26)	Emotion focused therapy using exposure techniques	Analysis of in-session empty chair dialogue Observer-rated (SASB, EXP, CVQ, EAS-R, NEED) Repeat measures pre, post-treatment: Self-report (SCL-90-R, IIP) Patient / therapist (UFBRS, WAI)	Forgiveness and letting go were preceded by arousal and expression of anger, sadness, core personal or interpersonal needs and a shift in perception of the other These components were related to symptom reduction and were present significantly less in unresolved compared to resolved cases

Author	Year	Participants	Therapeutic approach	Study	Results
Greenberg & Pedersen	2001	Depression	Emotion focused therapy	Analysis of in-session empty chair dialogue Observer-rated (SASB, EXP, CVQ, EAS-R, NEED) Repeat measure pre and 18 month post treatment: Self-report (SCL-90-R, IIP)	Individuals able to activate and restructure core emotions, memories and responses were less likely to relapse within 18 month follow-up
Greenberg, Warwar, & Malcolm	2003	Couples where one partner had unresolved emotional injury caused by the other (N = 46)	Emotion focused therapy using exposure techniques, psycho-education	RCT Analysis of in-session empty chair dialogue Observer-rated / self-report (EAS) Repeat measures pre, post-treatment and 3 month follow-up Self-report (EFI, UFBEA, UFBS, TCDS, SCL-90-R, BDI)	Treatment group showed significantly greater improvement on indices of change: forgiveness and letting go, key target complaints and global symptoms For treatment group higher arousal during imagined contact with significant other predicted better outcome
Greenberg & Watson	1998	Depression (N = 34)	Process experiential therapy (relational approach plus exposure and emotion processing techniques), client centred therapy (relational approach alone)	RCT Repeat measures and pre, mid, end of treatment and 6 month follow-up Self-report (BDI, SCL-90-R, RSE, IIP, TCDS) Observer-rated (Truax, LIFE-II) Patient / therapist (WAI, BLPE)	Treatments showed no difference in reduction of depression at termination or follow-up Use of emotion-focused interventions associated with reduced depression mid- treatment and reduced total symptoms, greater self esteem and reduced interpersonal problems at termination
Guidano	1995	N/S	Constructivist psychotherapy	Analysis of narrative change in psychotherapy Observer-rated (EXP, NPCS)	Awareness of emotions was related to ability to make new meanings of situations Emotions were used to develop new narratives to explain experiences
Hellerstein et al.	1994	Cluster C Personality Disorders (N = 49)	Short-term dynamic therapy (emphasis on active confrontation and eliciting affect), brief supportive psychotherapy (emphasis on building self-esteem, anxiety reduction)	RCT Repeat measures pre, mid, post-treatment and 6 month follow-up Self-report (SCL-90-R, IIP, PTC, WAI)	The treatments were equally effective at reducing symptoms Better working alliance predicted good therapy outcome Dynamic therapy but not supportive psychotherapy showed high fluctuations in the therapeutic alliance suggesting treatments may have different pathways to change

Author	Year	Participants	Therapeutic approach	Study	Results
Hunt	1998	Students (N = 107)	N/A	Study 1:negative mood induction task followed by essay writing under 3 conditions (emotion processing, disputation, distraction) Self-report (MAAC, BDI) Study2: content analysis (emotional arousal, cognitive restructuring) of essays from study1	Sustaining attention to painful feelings during a negative mood induction task facilitated quicker mood recovery after the task than using problem solving or avoidance techniques
Iwakabe, Rogan, & Stalikis	2000	N/S (N = 8)	Client centred therapy, cognitive therapy, psychodynamic	Analysis of in-session emotional expression events Observer-rated (WAI-observer version, SFS, QEEE)	Across all treatments good-relationship dyads were characterised by high levels of therapist empathy High arousal predicted good treatment outcome but only in the presence of strong therapeutic alliance
Jaycox, Foa, & Moral	1998	Post traumatic stress disorder (N = 37)	Exposure therapy	Repeated in-session rating of distress during exposure exercises: Self-report (SUDS) Repeat measures pre, post-treatment Self-report (PSS, SCID-II, SAI, BDI, STAI, DES)	Aroused expression of fear during first exposure session and habituation over the course of therapy predicted reduced symptoms for post traumatic stress disorder and normal scores on depression and anxiety scales
Johnson, Hunsley, Greenberg, & Schindler	1999	Couples	Emotion focused therapy, psychopharmacology, other psychological treatments, waiting list	Meta-analysis (4 RCTs) Repeat measures Self-report (DAS, TCDS) Observer-rated (SASB, EXP)	Expression of underlying feelings and needs led to positive shifts in couple's interactions Treatment improved psychological and dyadic adjustment, intimacy and target complaints Mean effect size was large
Kabat-Zinn, Lipworth, Burney, & Sellers	1986	Chronic pain (N = 225)	Mindfulness	Repeat measures pre, post-treatment and at 12 month intervals during 48 month follow-up Self-report (PRI, BPPA, MSCL, SCL-90-R, OA)	Use of meditation-based techniques were associated with large and significant overall changes in psychological and physical functioning post-treatment and at follow-up There was high compliance with techniques over time
Kabat-Zinn et al.	1992	Generalized Anxiety Disorder (N = 22)	Mindfulness	Repeated measures weekly during treatment and monthly during 3 month follow-up Self-report (SCL-90-R, STAI, BDI, MSCL)	Use of meditation-based techniques were associated with reduced anxiety, depression and panic symptoms that were maintained at follow-up
Kozak, Foa, & Steketee	1988	Obsessive compulsive disorder (N = 14)	Exposure therapy	Repeat measures pre, post-treatment Patient / therapist / independent ratings (OCS) Repeat measures in-session (wks 6, 14) Psychophysiological (HR, SCR) Self-report (SUDS)	Greater intensity of fear activation in vivo and imaginal, plus habituation across sessions was related to reduction in fear and avoidance post-treatment

Author	Year	Participants	Therapeutic approach	Study	Results
Leahy	2002	Anxiety, depression (N = 53)	Cognitive behavioural therapy	Cross-sectional self-report (BDI, BAI, LESS)	Higher anxiety and depression scores were related to guilt about emotions Acceptance and validation of emotion resulted in less guilt and rumination, greater understanding and control, less concern with duration of emotions, and a less simplistic view of emotional experience
Lecours, Bouchard, St-Arman, & Perry	2000	Anxiety, depression (N = 1)	Psychodynamic	Case study of prematurely terminated therapy Assessment of in-session affective language for 14 sessions Observer-rated (VEA, GEVA, DMRS)	Premature termination may be characterised by increase in negative affect, greater use of defences and decreases in spontaneity across sessions
Linehan et al	2002	Borderline personality disorder with co-morbid opiate dependency (N = 24)	Dialectical behaviour therapy, comprehensive validation therapy	RCT Repeat measures pre-treatment then 4, 6, 12, 16 month follow-up Self-report (SCID-II, TLFB, PHI, SHI, SAS, LIFE-II, GAS, GAF, BSI)	Emotional validation and soothing were found to be effective in reduction of symptoms and programme retention
MacKay, Barkham, & Stiles	1998	Depression (N = 1)	Psychodynamic	Case study of successful therapy as measured by reduced BDI scores across sessions Repeat measures pre, during and post-treatment Self-report (BDI, SEQ, SIS, HAT, BSR) Observer-rated moment-by-moment measurement protocol	In-session toleration of emotion facilitated reorganisation of client's experience of anger, depression and hopelessness, transforming them into adaptive primary anger
MacKay, Barkham, Stiles, & Goldfried	2002	Depression (N = 18)	Psychodynamic, cognitive behavioural therapy	Analysis of emotion processing In helpful therapy sessions Self-report (BDI, SEQ) Observer-rated moment-by-moment measurement protocol	For psychodynamic therapy arousal of unpleasant emotion followed an inverted-U pattern against time, the opposite was true for cognitive behavioural therapy Higher levels of painful emotion were recorded for psychodynamic therapy Treatments appear to operate by different emotional mechanisms
Maxfield & Myer	2002	Post traumatic stress disorder	Eye movement desensitization and reprocessing therapy, waiting list or standard treatment controls	Meta-analysis (12 RCTs)	Eye movement desensitization and reprocessing therapy demonstrated better outcomes than no treatment and non-specific treatment controls Large effect sizes were found

Author	Year	Participants	Therapeutic approach	Study	Results
Mergenthaler	1996	Sample consisted of >1 diagnosis (N = 20)	Psychodynamic	Repeat measures beginning (2) and end (2) sessions Observer-rated computer-aided text analysis of session transcripts Patient / therapist ratings of session gain	Frequent co-occurrence of emotional arousal and reflection during key moments in therapy were associated with substantial therapeutic shifts
Miller, Fletcher, & Kabat-Zinn,	1992	Generalized anxiety disorder (N = 22)	Mindfulness	Repeat measures recruitment, pre, post-treatment, 3 month, 36 month follow-up Self-report (BAI, BDI, SCL-90-R (Anxiety and GSI subscales), SCID-II, frequency of meditation)	Clinically significant reductions in frequency and severity of panic attacks, anxiety and depression during the intervention period and at both follow-ups. Improvements were independent of anxiolytic medication
Monsen, Odland, Faugli, Daae, & Eilersten	1995	Personality disorder (N = 24)	Psychodynamic therapy with particular focus on patient's awareness of affect especially avoided affect	Repeat measures pre, post-treatment and 60 month follow-up Self-report (MMPI, HSRS, SCL-90-R) Observer-rated videotaped semi-structured interview to determine degree of affect consciousness Level of social adjustment interview	During course of treatment and at 60 month follow-up patients showed significant changes in awareness of affect, defences and symptoms At the end of treatment 75% patients who had met criteria for Axis I & II diagnoses no longer did
Orlinsky & Howard	1986	Sample consisted of >1 diagnosis	Study examined >1 approach	Review of studies examining relation of process to outcome in psychotherapy Observer-rated (EXP)	Experiencing and making sense of emotion was associated with good treatment outcome
Paivio & Greenberg	1995	Unresolved issue with significant other (N = 42)	Experiential therapy using exposure techniques (empty chair dialogue with significant other), psycho-education control group	RCT Repeat measures at pre, post-treatment, 4 and 12 month follow-up Self-report (SCL-90-R, IIP, TCDS, TCCS, UFBRS, SASB, WAI)	Experiential therapy was significantly more effective at reducing symptoms and interpersonal distress, increasing change on target complaints and achieving unfinished business resolution Higher arousal during imaginal dialogue with significant other predicted reduced trauma related symptoms
Paivio, Hall, Holowaty, Jellis, & Tran	2001	Post traumatic stress disorder (N = 44)	Emotion focused therapy including exposure based techniques	Repeat measures pre, post-treatment and 9 month follow-up Self-report (CTQ, PSS, IES, SCL-90-R, TCDS, IIP, RS, SASB, WAI, PSQ) Observer-rated (LES)	Early engagement with traumatic material predicted abuse resolution Higher dosage was associated with reduced global and trauma-related symptomatology and interpersonal problems
Paivio, Holowaty, & Hall	2004	Trauma related to childhood abuse (N = 37) Therapist (n = 10)	Emotion focused therapy using exposure based techniques	Repeat measures pre, mid, post-treatment Self-report (CTQ, PSSI, WAI, SCL-90-R, IES, IIP, RS, SASB) Observer-rated (ADH, LES, TFS)	Better therapist competence predicted better client processing during exposure Better patient engagement in exposure was associated with reduction in symptoms and interpersonal problems This effect was independent of therapeutic alliance

Author	Year	Participants	Therapeutic approach	Study	Results
Paivio & Laurent	2001	Sample consisted of >1 diagnosis	Study examined >1 approach	Literature review (22 publications) Role of empathy and emotion regulation in reprocessing memories of childhood abuse Social, cognitive and affective psychology, psychobiology, clinical psychology	In effective therapy sessions the therapeutic relationship soothed, validated and adaptively regulated in-session emotional activation when patient felt overwhelmed Conversely the therapeutic relationship was empathically evocative if emotion was unproductively low
Paivio & Nieuwenhuis	2001	Trauma related to childhood abuse (N = 32)	Emotion focused therapy using exposure based techniques, delayed treatment control group	RCT Repeat Measures pre, post-treatment and 9 month follow-up Self-report (CTQ, PSS, IES, SCL-90-R, TCDS, IIP, RS, SASB, WAI, PSQ) Observer-rated (LES)	Patients in immediate treatment group showed reduced symptoms at post-treatment Patients in delayed treatment group showed minimal improvements over wait period but comparable symptom reduction after therapy Effects were maintained 9 months after therapy for both groups
Pennebaker	1990	Sample consisted of >1 diagnosis	Study examined >1 approach	Review of outcome and process studies	Self-disclosure about traumatic events improved immune function with long-term physical health benefits Awareness of emotions was related to ability to make new meanings of situations Emotions were used to develop new narratives to explain experiences
Pennebaker	1995	Sample consisted of >1 diagnosis	Study examined >1 approach	Review of outcome and process studies	Writing about traumatic events alleviated stress and improved immune function
Pilerio	2004	Anxiety, depression (N = 111)	Experiential dynamic therapy, short-term dynamic therapy, emotion focused therapy	Repeat measures pre, post-treatment and 12 month follow-up Self-report (BDI, BAI, SCL-90-R, IIP, WAI, TCDS, OA, EAS-R, RSE)	Patient report of high arousal in-session was related to greater satisfaction and reduced depression, anxiety and interpersonal problems Reduced symptoms and improvements in areas of daily living continued after treatment
Pos, Greenberg, Goldman, & Korman	2003	Depression (N = 34)	Process experiential therapy, client-centred therapy	Repeat measures pre, post-treatment Self-report (BDI, SCL-90-R, RSE, IIP, HAT, OA) Observer-rated (EXP) Patient / therapist (WAI)	Patient's capacity for emotion processing early in therapy combined with increased emotion processing late in therapy predicted symptom reduction and increased self-esteem Emotion processing ability improved across treatment This effect was independent of therapeutic alliance
Rime, Finkenhauer, Luminet, Zech & Philippot	1998	Sample consisted of >1 diagnosis	N/A	Review of experimental and social psychology studies examining social sharing of emotion	When emotions were shared in words individuals were able to reflect on their feelings, create new meanings and evaluate their own emotional experience Higher intensity of residual emotion was associated with greater social sharing

Author	Year	Participants	Therapeutic approach	Study	Results
Rothbaum & Schwartz	2002	Post traumatic stress disorder	Exposure therapy	Review of exposure therapy for PTSD	Prolonged and repeated reliving of the traumatic event in a safe, supportive and therapeutic environment reduced anxiety, allowed modification of negative self-evaluations, decreased avoidance and changed generalized constructs about a dangerous world Poor outcomes were related to therapist's failure to activate fear structure effectively
Salovey, Mayer, Goldman, Turvey, & Palfai	1995	Students (N = 78)	N/A	Relationship between emotional intelligence and mood repair Viewing distressing film clips (automobile accidents) Self-report (TMMS, CESDS)	Greater emotional awareness predicted quicker recovery of positive mood and decreases in rumination after the distressing film clip
Samoilov & Goldfried	2000	Sample consisted of >1 diagnosis	Cognitive behavioural therapy	Review (66 studies) Examining role of emotion in cognitive behavioural therapy Studies included: treatment outcome, cognitive science, experimental psychology, cognitive neuroscience	Therapeutic change was achieved through deeper in-session emotional experience involving both focus on bodily felt experience and creation of new meanings
Scott & Stradling	1997	Post traumatic stress disorder (N = 37)	Exposure therapy	Examination of patient's willingness to engage in exposure habituation exercises Repeat measures pre, post treatment: Self-report (PENN, IES, BDI) Repeat measures at each session: Observer-rated (Readiness to complete IHT)	Severity of trauma and depressive symptoms were related to willingness to engage in exposure habituation Those who had been severely traumatized and were more depressed, were less compliant with exposure habituation homework exercises
Shapiro	1999	Post traumatic stress disorder, phobias	Eye movement desensitization and reprocessing therapy	Review (18 studies) Self-report (SUDS) Observer-rated (BAT)	Therapist competency in delivery of exposure techniques and patient better engagement were related to reduced distress
Silberschatz, Fretter, & Curtis	1986	N/S (N = 3)	Brief psychodynamic psychotherapy	Repeat measures pre, post-treatment, 6 and 12 month follow-up Audio-taped transcripts of sessions Patient, therapist, independent observer ratings (OA) Observer-rated (EXP, PCIS)	Silberschatz, Fretter, & Curtis

Author	Year	Participants	Therapeutic approach	Study	Results
Stalikas & Fitzpatrick	1995	N/S (N = 3)	Rational-emotive therapy, client-centred therapy, Gestalt therapy	Cross-sectional analysis of audio-taped in-session moments of change Observer-rated (HCVRCS-R, SFS, EXP)	In-session change was related to greater strength of feeling combined with better reflection on it
Svartberg, Stiles,, & Seltzer	2004	Cluster C personality disorders (N = 50)	Short-term dynamic therapy, cognitive therapy	RCT Repeat measures pre, mid, post-treatment and 6, 12, 24 month follow-up Self-report (SCID-II, SCL-90-R, IIP, MCMI)	Both treatment groups showed significant improvements in symptoms during treatment and at 2 year follow-up Only the brief dynamic therapy group improved on distress during follow-up
Teasdale et al.	2002	Depression Study 1(N = 40), study 2 (N = 148), study 3 (N = 100)	Mindfulness based cognitive therapy, cognitive therapy, treatment as usual (Study 3 only)	Repeat measure pre, during, post-treatment Study 1 self-report (HRSD, BDI) Observer-rated (MACAM) Study 2 measures as study 1 Study 3 RCT measures as study 1 & 2 plus SCID-R (self-report)	Accessibility to meta-cognitive awareness predicted depressive relapse Less meta-cognitive awareness was associated with depressive relapse Where reductions in depressive relapse occurred cognitive and mindfulness-based cognitive therapy increased access to meta-cognitive awareness
Tugade & Fredrickson	2000	Students Study 1 & 2 (N = 57), study 3 (N = 192)	N/A	Study 1 negative emotion induction task Study 2 appraisal induction task under 2 conditions (threat, challenge) Study 3 current problem task Same measures in all 3 studies: Self-report (ERS, PANAS, in vivo depth of emotion and cognitive appraisal) Psychophysiological (HR)	Psychologically resilient individuals coped by recruiting positive emotions to regulate negative emotional experience and returned to cardiovascular baseline more quickly
Van Etten & Taylor	1998	Post traumatic stress disorder	Eye movement desensitization and reprocessing therapy, exposure therapy, relaxation training, hypnotherapy, psychodynamic therapy, psychopharmacology	Meta-analysis of outcome research (61 studies) Controls: pill placebo, wait-lists Self-report (BDI, Covi Anx, DTS, IES, PENN, RAST, SCL-90-R, STAI) Observer-rated (CAPS, HRSA, HRSD)	Eye movement desensitization and reprocessing therapy (EMDR) and exposure therapy achieved similar outcomes and showed superior symptom reduction than other treatments EMDR used 4 sessions to achieve level of change produced by 10 sessions of exposure therapy
Van Velsor & Cox	2001	Trauma related to childhood sexual abuse (N = 2)	N/S	Case studies Observer-rated analysis of in-session arousal and expression of anger over 18 months Self-report journal	Arousal and expression of anger alongside making sense of it was related to development of agency, self-efficacy and self-assertion as well as return to work and reduction in PTSD symptoms

Author	Year	Participants	Therapeutic approach	Study	Results
Warwar	2003	Depression	Emotion focused therapy	Repeat measures early, mid, late sessions In session analysis of empty chair dialogue Self-report (EAS, SCL-90-R) Observer-rated (EXP)	High arousal combined with reflection on aroused emotion was a better predictor of reduction in symptoms than either index alone
Warwar & Greenberg	2000	Depression	Emotion focused therapy	Repeat measures early, mid, late sessions In session analysis of empty chair dialogue Self-report (SCL-90-R) Observer-rated (EXP)	Higher emotional arousal and reflection mid-treatment predicted reduction in symptoms at the end of therapy
Warwar, Greenberg, & Perepeluk	2003	Depression	Emotion focused therapy	Comparison of client and therapist reports of in-session patient arousal Self-report (EAS) Observer-rated videotaped sessions (EAS)	Patient reports of in-session arousal were not related to therapeutic change Discrepancy was found between patient and therapist ratings of arousal: patients reported higher levels of experienced emotion compared to observer ratings
Watson	1996	Anxiety, depression (N = 12)	Brief client-centred therapy	Repeat measure pre, post-treatment Self-report (BDI, IPR, STAI) Observer-rated (DRS, EXP, RARS)	Interaction of vivid descriptions, emotional arousal and reflecting on emotion was associated with symptom reduction
Watson, Gordon, Stermac, Kalogerakos, & Steckley	2003	Depression (N = 66)	Process experiential therapy, cognitive behavioural therapy	RCT Repeat measures pre, post-treatment Self-report (BDI, SCID-IV, IIP, RSE, SCL-90-R, DAS)	No significant differences in outcome of depression between treatment groups Both treatments improved levels of depression, general symptom distress, dysfunctional attitudes and self-esteem Post treatment patients in both groups had developed significantly greater problem solving ability using emotion reflection Process experiential therapy showed significantly more improvement of interpersonal difficulties and self-assertion
Whelton	2004	Sample consisted of >1 diagnosis	Study examined >1 approach	Review of psychotherapy outcome and process studies (N = 108) Designs included RCT, meta-analyses, repeat measures, cross-sectional, experimental Methods included self-report, observer-rated, psyhcophysiology	Usefulness of arousal in therapy depended on emotion expressed, how it was expressed, conditions under which it was expressed, and whether it was followed by reflection or other experiences of emotion

Author	Year	Participants	Therapeutic approach	Study	Results
Whelton & Greenberg	2005	Students (N = 60)	N/A	Comparison high versus low vulnerability to depression Videotaped autobiographical recall of failure episode Self-report (BDI, DEQ, SSES, VAS, VVIQ) Observer-rated (SRS, SPAFF)	High vulnerability group showed more self-contempt and were less resilient to self-criticism Low vulnerability group recruited assertive emotional resources (pride, anger) to combat negative cognitions
Wiborg & Dahl	1996	Panic Disorder (N = 40)	Brief dynamic therapy, anxiolytic medication	RCT Repeat measures pre-treatment then 6, 12, 18 month follow-up Self-report frequency of panic attacks	Dynamic therapy plus anxyolitic medication significantly reduced relapse of panic disorder compared to medication alone
Winston et al.	1991	Personality Disorder (N = 32)	Short-term dynamic therapy (focus on affect), short-term adaptive psychotherapy (focus on cognition), waiting list	RCT Repeat measures pre, post-treatment Self-report (PDQ, SCL-90, SAS, TCS) Observer-rated (VTPC, TAV, PAV)	Dynamic therapy was more effective at reducing co-morbid depressive and psychotic symptoms Adaptive Psychotherapy was better at alleviating co-morbid anxiety Treatment groups significantly improved on target complaints, SCL-90 and SAS measures
Winston et al.	1994	Personality Disorder (N = 81)	Short-term dynamic therapy (focus on affect), short-term adaptive psychotherapy (focus on cognition), waiting list	RCT Repeat measures pre, post-treatment and 18 month follow-up Self-report (SAS, SCL-90-R, TCS) Observer-rated (VTPC, TAV, PAV)	At termination and follow-up patients in the 2 therapy conditions improved significantly on all measures compared to patients on the waiting list

Table A2 Key to abbreviations

Abbreviation	Measure	Abbreviation	Measure
ADH	(Emotion Focused Therapy) Adherence Checklist	HAT	Helpful Aspects of Treatment
ANGER	State-Trait Anger Inventory	HCVRCS-R	Hill Counsellor Verbal Response Category Scale-Revised
BAI	Beck Anxiety Inventory	HR	Heart Rate
BAT	Behaviour Avoidance Task	HRSA	Hamilton Rating Scale for Anxiety
BDI	Beck Depression Inventory	HRSD	Hamilton Rating Scale for Depression
BLPE	Barret-Lennard Perceived Empathy	HSCL-90	Hopkins Symptom Checklist-90
BLRI	Barret-Lennard Relationship Inventory	HSRS	Health Sickness Rating Scale
BPPA	Body Parts Problem Assessment Scale	IDD	Inventory to Diagnose Depression
BSI	Brief Symptom Inventory	IDI	Interpersonal Dependency Inventory
BSR	Brett Structured Recall	IES	Impact of Events Scale
CALAS	Computerised Assisted Language Analysis System	IHT	Image Habituation Training
CAPS	Clinical Administered Post Traumatic Stress Disorder Scale	IIP	Inventory if Interpersonal Problems
CESDS	Centre for Epidemiology Studies Depression Scale	IPR	Interpersonal Process Recall Interview
Covi Anx	Covi Anxiety Inventory	LES	Levels of Engagement Scale
CSTF	Coding System for Therapist Feedback	LESS	Leahy Emotional Schemas Scale
CTQ	Childhood Trauma Questionnaire	LIFE-II	Longitudinal Interval Follow-up Evaluation
CVQ	Client Vocal Analysis Questionnaire	MAAC	Multiple Affect Adjective Check-List
DAS	Dyadic Adjustment Scale	MACAM	Measure of Awareness and Coping in Autobiographical Memory
DEQ	Depressive Experiences Questionnaire	MCMI	Millon Clinical Multi-axial Inventory
DES	Dissociative Experiences Scale	MCMI-III	Millon Clinical Multi-axial Inventory III
DIS	Diagnostic Interview Schedule	MCQ	Meta-cognition Questionnaire
DMRS	Defence Mechanisms Rating Scale	MISS	Mississippi Scale for Post Traumatic Stress Disorder
DRS	Degrees of Resolution Scale	MMPI	Minnesota Multiphasic Personality Inventory
DTS	Davidson Self Rating Trauma Scale	MSCL	Medical Symptom Checklist
EAS	Emotional Arousal Scale	NEED	Needs Scale
EAS-R	Emotional Arousal Scale-Revised	NPCS	Narrative Process Coding System
EFI	Enright Forgiveness Scale	OA	Overall Adjustment
EPI	Eysenck Personality Inventory	OCS	Obsessive Compulsive Symptoms
ERS	Ego Resilience Scale	PANAS	Positive and Negative Affect Schedule
EXP	Experiencing Scale	PAV	Patient Activity Variables
FACS	Fear Action Coding System	PCIS	Plan Compatibility of Interventions Scale
GAF	Global Assessment of Functioning	PDQ	Personality Diagnostic Questionnaire
GAS	Global Assessment Scale	PENN	Penn Inventory for Post Traumatic Stress Disorder
GEVA	Grille de l'Elaboration Verbale de l'Affect	PF-SOC	Problem Focused Style of Coping
GOR	Global Outcome Rating	PHI	Para-suicidal History Interview

Abbreviation	*Measure*	*Abbreviation*	*Measure*
PQS	Psychotherapy Q-Sort	SRRS	Stress Response Rating Scale
PRI	McGill Metzack Pain Rating Index	SRS	Self Reliance Scale
PSQ	Post Session Questionnaire	SSES	State Self Esteem Scale
PSS	Post Traumatic Stress Disorder Symptom Scale	STAI	State-Trait Anxiety Inventory
PSSI	Post Traumatic Stress Disorder Symptom Severity Inventory	STAXI	State-Trait Anger Inventory
PTC	Patient Target Complaints	STS-CRF	Systematic Treatment Selection-Clinician Rating Form
QEEE	Questionnaire for Emotional Expression Events	SUDS	Subjective Units of Distress
RARS	Referential Activity Rating Scale	TAV	Therapist Activity Variables
RAST	Modified Fear Survey	TCCS	Target Complaints Change Scale
RS	Resolution Scale	TCDS	Target Complaints Discomfort Scale
RSE	Rosenberg Self-Esteem Measure	TCS	Target Complaint Scale
SAI	Standardised Assault Interview	TFS	Therapist Facilitation Scale
SAS	Social Adjustment Scale	TLFB	Time Line Follow-back
SASB	Structural Analysis of Social Behaviour	TMMS	Trait Meta-Mood Scale
SCID-II	Structural Clinical Interview for DSM-III-Revised	TRS	Therapeutic Rating Scale
SCID-IV	Structural Clinical Interview for DSM-IV	TRUAX	Truax Accurate Empathy Scale
SCID-R	Structural Clinical Interview for DSM-IV Revised	UFBS	Unfinished Business Scale
SCL-90	Symptom Check List-90	UFBEA	Unfinished Business Empathy and Acceptance Scale
SCL-90-R	Symptoms Check List-90-Revised	UFBFN	Unfinished Business Feelings and Needs Scale
SCL-90-R GSI	Symptoms Check List-90-Revised General Severity Index	UFBRS	Unfinished Business Resolution Scale
SCM	Session Change Measure	VAS	Visual Analogue Scale
SCR	Skin Conductance Response	VEA	Verbal Elaboration of Affect
SEQ	Session Evaluation Questionnaire	VTPC	Videotape Process Coding
SFS	Strength of Feeling Scale	VVIQ	Vividness of Visual Imagery Questionnaire
SHI	Social History Interview	WAI	Working Alliance Inventory
SIS	Session Impact Scale	YBOCDS	Yale-Brown Obsessive Compulsive Disorder Scale
SPAFF	Specific Affect Coding System		

APPENDIX K

STIMULI FOR INTERPRETATION BIAS TASKS 1 AND 2

1. List A

1.1. Schema Scenarios Based on Young's Schema Theory

1.1.1. Disconnection and Rejection

1.1.1.1. Abandonment / instability

Your closest friend invites you to her leaving party. At the end of the night, she promises to send you her new contact details…
Possible interpretations:
Extreme non-schema; you'll be closer than ever and be able to contact each other every day
Non-schema; you will be able to carry on your friendship at a distance
Schema; she can't really mean it else she would have given you them there and then
Extreme Schema; you'll never hear from your friend again, people always leave you
Word completions: schema incongruent = remain,
schema congruent = abandon
Primes: schema incongruent = maintain
schema congruent = rejection

1.1.1.2. Mistrust / abuse

You loan a friend £100 to pay an electricity bill. Some days later, your friend calls to see you and hands you £50…
Possible interpretations:
Extreme non-schema; you're £50 richer, you didn't expect him to start repaying you so quickly
Non-schema; he's lessening the debt and will pay you the rest as soon as he can
Schema; he's trying to delay repaying you for as long as he can
Extreme Schema; he's trying to get away with only paying you back half the amount owed and has no intention of settling the debt
Word completions: schema incongruent = honest
schema congruent = abuse
Primes: schema incongruent = trustworthy
schema congruent = dishonest

1.1.1.3. Emotional deprivation

You are invited to a friend's birthday party and have saved up to buy him a special gift. On arriving at the party, you give your friend the gift; he thanks you and puts the gift to one side on a table…
Possible interpretations:
Extreme non-schema; he's pleased with the gift and can hardly wait to open it when everyone has gone

Non-schema; he'll open your gift later when he's less busy
Schema; your gift is not important to him
Extreme schema; your friend doesn't care about your feelings otherwise he would have opened the gift then and there
Word completions: schema incongruent = value
schema congruent = neglect
Primes: schema incongruent = considerate
schema congruent = heartless

1.1.1.4. Defectiveness / shame

You complete a training course as part of your new job. When you return to work you are asked to carry out a task alongside an experienced team member…
Possible interpretations:
Extreme non-schema; you did well on your course and will now be able to show your colleague what an asset you are to the team
Non-schema; now you've completed your course you are ready to contribute to your team
Schema; you didn't do a well as you might have done on your course and will have to be supervised until you get up to standard
Extreme Schema; you did badly on your course, you are not good enough to work alone and your colleague will soon find this out
Words completions: schema incongruent = success
schema congruent = shame
Primes: schema incongruent = achievement
schema congruent = humiliation

1.1.1.5. Social isolation / undesirability

A colleague invites you to a party at his house. You arrive at the same time as one of the other guests. As you walk into the house the host warmly greets your fellow guest before turning to you…
Possible interpretations:
Extreme non-schema; the host is delighted to see you and you can't wait to meet the other guests
Non-schema; you both arrived together and it was chance that he greeted the other guest first
Schema; the other guest is more popular and the host prefers him to you
Extreme Schema; he host doesn't really want you at his party, you don't fit in
Word completions: schema incongruent = welcome
schema congruent = unwanted
Primes: schema incongruent = acceptance
schema congruent prime = isolated

1.1.2. Impaired Autonomy and Performance

1.1.2.1. Dependence / incompetence

You are alone on a route you usually walk with friends. Looking at your map you decide to take a short cut. You find yourself on an unfamiliar road...
Possible interpretations:

Extreme non-schema; this route is the best one, you will make sure to use it in future
Non-schema; this road will quickly lead to your destination
Schema; you misread the map and must be lost
Extreme schema; you will not be able to find your way back and should never have taken the route alone

Word completions: schema incongruent = capable
schema congruent = useless
Primes: schema incongruent = competent
schema congruent = inadequate

1.1.2.2. Dependence / incompetence

Your flat mate, who ordinarily does all of the household cooking, is visiting friends. You prepare your meal using a new recipe that you have always wanted to try. The first taste reveals an unusual flavour...
Possible interpretations:
Extreme non-schema; the food tastes delicious, you are going to do all of your own cooking from now on
Non-schema; the new recipe is a success and shows you can look after yourself well
Schema; you must have done something wrong and conclude you are no good at cooking
Extreme schema; the meal is a disaster you cannot be trusted to look after yourself

Word completions: schema incongruent = able
schema congruent = dependent
Primes: schema incongruent = independent
schema congruent = needy

1.1.2.3. Vulnerability to harm or illness

You change electricity suppliers and the new company offers you a 25% discount. 3 months later they estimate your first bill for £1000, 5 times higher than your usual amount…
Possible interpretations:
Extreme non-schema; the estimate is wrong the true cost will be almost nothing
Non-schema; the estimate is wrong and the true cost will be much lower
Schema; you have been taken in and should never have changed suppliers
Extreme schema; you will never be able to pay and will be taken to court by the electricity supplier

Word Completions: schema incongruent = secure
schema congruent = harm
Primes: schema incongruent = protected
schema congruent = vulnerable

1.1.2.4. Enmeshment / underdeveloped self

You bump into an acquaintance of your closest friend. The acquaintance brings you news about your friend's new job…
Possible interpretations:

Extreme non-schema; you can't wait to tell the fantastic news with all of your other friends
Non-schema; you must call your friend to congratulate her
Schema; your closest friend has shared important news with an acquaintance before telling you
Extreme schema; your relationship cannot mean very much otherwise your friend would have shared her good news with you before telling anyone else
Word completions: schema incongruent = celebrate
schema congruent = lonely
Primes: schema incongruent prime = endorsement
schema congruent prime = alone

1.1.2.5. Failure

You have just finished a painting and decorating course. Your friend asks you to wallpaper her apartment. The day after you finish the job your friend leaves a message on your answer phone …
Possible interpretations:
Extreme non-schema; the job is such a success all of your friend's family and friends would like you to decorate their houses
Non-schema; your friend is pleased with the job you've done and wants to thank you
Schema; your friend is unhappy with the job you've done and wants to complain
Extreme schema; the job is a total disaster, the wallpaper has fallen off the wall and your friend is furious
Word completions: schema incongruent = excel
schema congruent = failure
Primes: schema incongruent = accomplishment
schema congruent = misfortune

1.1.3. Impaired Limits

1.1.3.1. Entitlement / grandiosity

You have spent most of the day sorting a large pile of outgoing mail. You ask your supervisor if someone else can finish the task so that you can attend an important meeting. Your supervisor says no…
Possible interpretations:
Extreme non-schema; you are happy to continue sorting the mail so that it will catch the evening post
Non-schema; you continue to sort the mail thinking if you finish in time you may be able to join the meeting half way through
Schema; you hurriedly finish sorting the mail and go to the meeting
Extreme schema; you find someone else to finish sorting the mail and go to the meeting
Word completions: schema incongruent = service
schema congruent = entitled
Primes: schema incongruent = oblige
schema congruent = extraordinary

1.1.3.2. Entitlement / grandiosity

You are taking part in a group discussion. The new group facilitator asks you to clarify a point calling you by the wrong name…
Possible interpretations:
Extreme non-schema; you are pleased to be asked to contribute to the group
Non-schema; the facilitator is new and is still getting to know everyone's names
Schema; the facilitator is not doing a very good job; he should have remembered your name
Extreme schema; the facilitator is incompetent; it was very rude of him to call you by the wrong name

Word completions:	schema incongruent = practice
	schema congruent = disrespect
Primes:	schema incongruent = learning
	schema congruent = discourteous

1.1.3.3. Entitlement / grandiosity

You have an appointment at the doctors. You have been driving around looking for a parking space, the only one available close by is set aside for disabled patients…
Possible interpretations:
Extreme non-schema; you drive further away to find a space; and walk the rest of the way to the appointment
Non-schema; you drive around for a little while longer to see if another space becomes free close by
Schema; you are here to see the doctor so you park in the free space close by
Extreme schema; you park in the free space close by because you have as much right as any other patient to see your doctor at the appointed time

Word completions:	schema incongruent = civil
	schema congruent = superior
Primes:	schema incongruent = respectful
	schema congruent = exceptional

1.1.3.4. Insufficient self-control / self-discipline

You are standing in a long queue at the post office waiting to post an important parcel. Your friend waves to you from the front of the queue…
Possible interpretations:
Extreme non-schema; you return your friend's greeting and while you wait you happily think over your plans for the day
Non-schema; you return your friend's greeting and wait your turn in the queue
Schema; you join your friend at the front of the queue and get served more quickly
Extreme schema; you join your friend at the front of the queue and persuade him to let you go next

Word completions:	schema incongruent = tolerate
	schema congruent = impulse
Primes:	schema incongruent = patience
	schema congruent = tedious

1.1.3.5. Insufficient self-control / self-discipline

You are outside your house painting your fence. A neighbour walks by and smiles at you…
Possible interpretations:
Extreme non-schema; you are so busy painting you hardly have time to return a greeting
Non-schema; your neighbour is being friendly so you smile back
Schema; now you can take a break and talk to your neighbour instead
Extreme schema; now you can finish for the day and talk to your neighbour instead
Word completions: schema incongruent = persist
schema congruent = boredom
Primes: schema incongruent = discipline
schema congruent = unbearable

1.1.4. Other Directedness

1.1.4.1. Subjugation

You are asked your opinion during a group discussion. Shortly after the end of the group several group members approach you…
Possible interpretations:
Extreme non-schema; they agree with your opinion and want to congratulate you on the great argument you made
Non-schema; they relate to your opinion and would like to talk a little more
Schema; they disagree with you and now want to challenge you about the opinions you expressed
Extreme Schema; everyone disagrees with you and is angry with you; you should never have expressed your opinion
Word completions: schema incongruent = expressive
schema congruent = conflict
Primes: schema incongruent = interested
schema congruent = dispute

1.1.4.2. Self-sacrifice

A friend who has flu asks if he can borrow some coffee until he has a chance to go to the shop. Unfortunately you ran out of coffee the day before and are unable to help him. Next time you see your friend he is engrossed in conversation with a neighbour…
Possible interpretations:
Extreme non-schema; he has made a full recovery and is throwing himself into neighbourhood activities again
Non-schema; he feels much better and is catching up on neighbourhood news
Schema; he is disappointed with you and is avoiding you
Extreme schema; he is angry with you and will probably never speak to you again
Word completions: schema incongruent = healthy
schema congruent = sacrifice
Primes: schema incongruent = recuperated
schema congruent = dissatisfied

1.1.4.3. Self-sacrifice

Your colleague asks you to do him a favour by carrying out several extra tasks. You put them on your list of things to do. The next day your colleague emails…
Possible interpretations:
Extreme non-schema; to invite you for coffee by way of a thank you
Non-schema; to thank you for agreeing to help him out
Schema; to complain that you didn't do the extra tasks straight away
Extreme schema; he is furious you didn't do the tasks immediately; now he's behind with everything
Word completions: schema incongruent = satisfied
schema congruent = disappoint
Primes: schema incongruent = grateful
schema congruent = displeased

1.1.4.4. Approval seeking / recognition seeking

A new person joins your work group they are to shadow you for their first week. You walk into the canteen and see your supervisor sharing a coffee with your new colleague…
Possible interpretations:
Extreme non-schema; it is good to see your colleague fitting into her new surroundings
Non-schema; your new colleague and supervisor appear to be getting on well together
Schema; you've been excluded; they are unhappy about the way you've undertaken your task
Extreme schema; they disapprove of how you undertook your task; you supervisor will not trust you to undertake similar tasks in the future
Word completions: schema incongruent = mixing
schema congruent = condemn
Primes: schema incongruent = integrating
schema congruent = criticise

1.1.4.5. Approval seeking / recognition seeking

You are responsible for organising the office Christmas party. You book a restaurant which caters for parties and includes entertainment. The day after the party the office is very quiet…
Possible interpretations:
Extreme non-schema; everyone had a fantastic time at the party and are taking it easy while they recover
Non-schema; everyone had a good time and is a little worse for wear following the party
Schema; your colleagues don't approve of the restaurant you chose and aren't speaking to you
Extreme schema; your colleagues hated the restaurant you chose and will never ask you to organise a social event again
Word completions: schema incongruent = enjoy
schema congruent = ignore
Primes: schema incongruent = agreeable
schema congruent = shunned

1.1.5. Over-Vigilance and Inhibition

1.1.5.1. Over-control / emotional inhibition

You are in a pub watching your football team in the cup final. At the end of the game you become very emotional. The pub landlord approaches you…
Possible interpretations:
Extreme non-schema; to bring you a free celebratory drink
Non-schema; to celebrate with you
Schema; to ask you to calm down before things get out of hand
Extreme schema; to warn you if you don't calm down you'll have to leave because you're in danger of hurting someone
Word completions: schema incongruent = rejoice
schema congruent = fight
Primes: schema incongruent = harmony
schema congruent = violence

1.1.5.2. Unrelenting standards / hypocriticalness

You must pass a tough end of year exam to continue your studies. The pass mark is 50 but you've worked hard and just might manage to get over 70 to win a distinction. When you receive your marks you have got 65…
Possible interpretations:
Extreme non-schema; you've done really well and scored way above the pass mark
Non-schema; you've passed your exam and will be able to continue your studies
Schema; your marks were lower than you'd hoped and you should have done better
Extreme schema; you failed to achieve a distinction and will have to work twice as hard in future
Word completions: schema incongruent = thrive
schema congruent = strive
Primes: schema incongruent = triumph
schema congruent prime = second-rate

1.1.5.3. Negativity / vulnerability to error

You go out for a meal with a large group of colleagues. At the end of the meal you are ask to total up the bill and work out how much everyone owes. The next day your answer machine is full of messages from colleagues…
Possible interpretations:
Extreme non-schema; saying it was the best night out the office have ever had
Non-schema; saying what a great time they had yesterday evening
Schema; complaining that you've added up their bills incorrectly
Extreme schema; saying they have been overcharged for their meals and that the evening was a disaster because of your mistakes
Word completions: schema incongruent = nice
schema congruent = mistake
Primes: schema incongruent = enjoyable
schema congruent = blame

1.1.5.4. Negativity / vulnerability to error

A temping agency arranges a position for you in the wages department of a large firm. You are asked to update the records of the firm's employees. Soon after the assignment is completed the temping agency call…
Possible interpretations:
Extreme non-schema; the firm were so pleased with your work they want to offer you a permanent post
Non-schema; to offer you another assignment
Schema; the firm have complained that they were unable to pay their employees on time because you incorrectly updated their records
Extreme schema; you made so many mistakes when you updated the records that you will not be offered anymore assignments

Word completions:	schema incongruent = gain
	schema congruent = wrong
Primes:	schema incongruent = successful
	schema congruent = inaccurate

1.1.5.5. Punitiveness

A gardener has agreed to lay your new patio using your own design. You come home from work to your new patio and notice the design has been changed slightly…
Possible interpretations:
Extreme non-schema; the patio looks great, the changes have added a fantastic new dimension to your design
Non-schema; the gardener has shown his expertise by improving on your original design
Schema; the gardener has made an error in the design so you dock half his fee
Extreme schema; the gardener has made an error in the design so you insist he re-do the patio to your original specifications and dock half his fee for the inconvenience

Word completions:	schema incongruent = enhance
	schema congruent = penalty
Primes:	schema incongruent = faultless
	schema congruent = disobedient

1.2. Social and Physical Threat Scenarios[6]

1.2.1. Social Threat

You are eating lunch with a group a friends you have not seen in a while. Your old friend Sammy, who you have lost touch with, becomes the topic of conversation. Your friend says that being behind bars has given Sammy a different view of life…
Possible interpretations:
Extreme benign; as a bar assistant, Sammy's view of life has changed for the better
Benign; as a bar assistant, Sammy's view of life changed

[6] Social and physical threat scenarios taken from Eysenck, Mogg, May, Richards & Matthews (1991) and MacLeod & Cohen (1993)

Threat; as a prisoner, Sammy's view of life changed
Extreme threat; as a prisoner, Sammy's view of life has changed for the worse
Word completions: benign = drink
threat = convict
Primes: benign = cocktail
threat = offender

1.2.2. Social Threat

Mike and Alan, two renowned mountaineers, attempt to climb Mount Everest. Due to the treacherous weather at the time, their attempt receives significant coverage by the press. It is reported that when returning from the summit Mike was let down by Alan…
Possible interpretations:
Extreme benign; one climber saved the life of the other when he lowered him down the mountain
Benign; one climber was lowered down the mountain by the other
Threat; one climber failed in his responsibility to the other
Extreme threat; one climber almost died because of the recklessness of the other
Word completions benign = lower
threat = thoughtless
Primes: benign = descending
threat = irresponsible

1.2.3. Social Threat

You and your family attend your local church meeting. After discussing the budget for church renovations, more serious matters are attended to. Attention turns to the priest's convictions…
Possible interpretations:
Extreme benign; you talked about how fortunate you were to have such a devout priest
Benign; you talked about the priest's strong beliefs
Threat; you talked about the priest's criminal record
Extreme threat; you talked about the priest's criminal record how he may be embezzling church funds
Word completions: benign = views
threat = thief
Primes: benign = faithful
threat = immoral

1.2.4. Social Threat

When Amy attended her friend's birthday party at a local restaurant she found it hard to disguise her feelings for Rob…
Possible interpretations…
Extreme benign; Amy admired Rob so much she thought he was the best man she'd ever met
Benign; Amy admired Rob

Threat; Amy loathed Rob
Extreme threat; Amy loathed Rob so much she could not bare to look at him
Word completions: benign = liked
threat = hated
Primes: benign = attraction
threat = repulsion

1.2.5. Social Threat

Sharon called her friend to catch up on the latest gossip. Her friend told her that Joseph's exhibition had attracted a lot of attention…
Possible interpretations:
Extreme benign; Joseph's paintings were greatly praised
Benign; lots of people had viewed Joseph's paintings
Threat; lots of people saw Joseph's angry outburst
Extreme threat; everyone was appalled by Joseph's furious outburst
Word completions: benign = artist
threat = shocking
Primes: benign = watercolours
threat = tantrum

1.2.6. Social Threat

Your cousin Dave works on an organic farm. Once, when visiting him there, you see him with the farmer weeding the cabbages together. Shortly after, he gives Dave the sack…
Possible interpretations:
Extreme benign; the farmer handed Dave a bag of free cabbages as a bonus for his hard work
Benign; the farmer handed Dave the bag
Threat; the farmer took away Dave's job
Extreme threat; the farmer took away Dave's job and he lost his home
Word completions: benign = container
threat = dismiss
Primes: benign = holdall
threat = unemployed

1.2.7. Social Threat

You attend your weekly business meeting. The management spends most of the time discussing the poor performance of the sales team, whom you are representing. They agree that you are the most responsible person…
Possible interpretations:
Extreme benign; you are the most competent sale person so they award you a pay rise
Benign; you are the most competent sales person
Threat; you are the least competent sales person
Extreme threat; you are the least competent person so they give you a written warning
Word completions: benign = skilful

threat = unable
Primes: benign = proficient
threat = incapable

1.2.8. Social Threat

After unpacking his school bag the boy settled down to watch the TV. When his mother returned from work he handed her a letter from his teacher…
Possible interpretations:
Extreme benign; informing her that the boy had won a prize for coming top in his class
Benign; informing her of the boys good work in class
Threat; informing her of the boys bad behaviour in class
Extreme threat; informing her that the boy had been suspended for bad behaviour
Word completion: benign = praised
threat = expelled
Primes: benign = aptitude
threat = misconduct

1.2.9. Social Threat

John has a large New Years Eve party every year. This year the party was in full swing when Tom arrived unexpectedly...
Possible interpretations:
Extreme benign; Tom was warmly asked to join the party
Benign; everyone was pleased to see Tom
Threat; nobody was pleased to see Tom
Extreme threat; Tom was turned away from the party
Word completions: benign = embrace
threat = hostile
Primes: benign = greetings
threat = rebuff

1.2.10. Social Threat

Usually at 7pm when Mr Evans arrives from work Mrs Evans is at home to greet him. Last Thursday the house was empty at 7pm and Mrs Evans did not leave a note when she left…
Possible interpretations:
Extreme benign; to say she'd popped out to fetch a special take-away for dinner
Benign; to say she'd decided to go for milk
Threat; to say she'd decided to move out temporarily
Extreme threat; to say she'd decided to move out for good
Word completions: benign = groceries
threat = divorce
Primes: benign = shopping
threat = desertion

1.2.11. Physical Threat

You take your niece Emma to the doctor. She is nervous and does not like going. The doctor examines her growth…
Possible interpretations:
Extreme benign; the doctor examined little Emma's height; she had grown since her last visit
Benign; the doctor examined little Emma's height
Threat; the doctor examined little Emma's tumour
Extreme threat; the doctor examined little Emma's tumour, it was inoperable
Word completions: benign = metre
threat = swelling
Primes: benign = stature
threat = cancer

1.2.12. Physical Threat

Allison attends her first undergraduate social gathering at the college bar. She sips her drink nervously while other students begin to argue and eventually get into a fight. The strength of the punch takes her by surprise...
Possible interpretation:
Extreme benign; Alison had never tasted a more alcoholic drink
Benign; the drink was more alcoholic than Allison expected
Threat; the blow hit her peer harder than Allison expected
Extreme threat; the blow badly injured Alison's peer
Word completions: benign = beverage
threat = strike
Primes: benign = concoction
threat = aggression

1.2.13. Physical Threat

Annie met with friends at a local coffee shop every lunch-time. Throughout this particular lunch-time the conversation kept returning to Annie's feelings when she saw the shots…
Possible interpretations:
Extreme benign; Annie had recently found old photographs of her college graduation
Benign; Annie had recently taken some photographs
Threat; Annie had recently visited a shooting gallery
Extreme threat; Annie had recently witnessed an armed robbery
Word completions: benign = picture
threat = pistol
Prisms: benign = portrait
threat = weapon

1.2.14. Physical Threat

Jan left the house for work at 8am. Approaching the station at high speed she could not miss the train…
Possible interpretations:

Extreme benign; Jan caught her train and was early for work
Benign; Jan caught her train
Threat; Jan collided with the train
Extreme threat; Jan collided with the train and was killed instantly
Word completions: benign = punctual
threat = smash
Primes: benign = promptly
threat = accident

1.2.15. Physical Threat

You take a Christmas holiday with friends. Whilst visiting a beauty spot you watch your friend Pat slide fast along the icy pond…
Possible interpretations:
Extreme benign; Pat skates skilfully on the ice
Benign; Pat skates on the ice
Threat; Pat falls on the ice
Extreme threat; Pat falls on the ice and is badly inured
Word completions: benign = sport
threat = tumble
Primes: benign = exercise
threat = plummet

1.2.16. Physical Threat

You listen to your friend discuss his week over a coffee. He admits to doing everything he could in his power. Despite his best efforts, it was decided that the leg was beyond repair…
Possible interpretations:
Extreme benign; the carpenter replaced the broken leg with a new one
Benign; the carpenter was unable to mend the broken leg
Threat; the surgeon was unable to save the broken leg
Extreme threat; the surgeon was unable to save the broken leg so the patient died
Word completions: benign = joiner
threat = doctor
Primes: benign = woodwork
threat = operation

1.2.17. Physical Threat

You are doing well in your first year of medical school. Your professor is teaching anatomy on a cadaver. Your professor puts a hand on the dissection tray…
Possible interpretations:
Extreme benign; your professor leans on the tray and praises your good work
Benign; your professor uses his hand to steady the tray
Threat; your professor places the amputated section on the tray
Extreme threat; you faint as your professor places the amputated section on the tray

Word completions: benign = stable
threat = sliced
Primes: benign = balance
threat = dismember

1.2.18. Physical Threat

A group of men are out sailing. They are discussing what to do next and come to a decision. All realize that there is nothing else to do and that they will just have to blow up the dingy...
Possible interpretations:
Extreme benign; the sailors inflate the dingy and continue a perfect day sailing and fishing
Benign; the sailors talked about the most efficient way of inflating the boat
Threat; the sailors talked about the most efficient way of destroying the boat
Extreme threat; the sailors destroyed the boat and several people were injured
Word completions: benign = float
threat = dynamite
Primes: benign = pump
threat = detonate

1.2.19. Physical Threat

Sally lay very still. She was listening to the sound of the drill as it droned on and on for what seemed like hours…
Possible interpretations:
Extreme benign; Sally was listening to the sound of builders constructing her beautiful new extension
Benign; Sally was listening to builder repairing the road outside
Threat; Sally was listening to the sound of the dentist drilling her tooth
Extreme threat; Sally was in agony as the dentist drilled her tooth
Word completions: benign = builder
threat = tooth
Primes: benign = engineering
threat = surgery

1.2.20. Physical Threat

Jake finished work early and decided to walk home instead of taking the bus. As he crossed the road he noticed the large building on the corner had been lit…
Possible interpretations:
Extreme benign; the building looked welcoming with all its lights on
Benign; there were many lights on in the building
Threat; the building was on fire
Extreme threat; ambulances were taking the injured from the burning building
Word completions: benign = lamplight
threat = blaze
Primes: benign = illumination

threat = flames

2. List B

2.1. Schema Scenarios Based on Young's Schema Theory

2.1.1. Disconnection and Rejection

2.1.1.1. Abandonment / instability

A close friend who is visiting Australia sends you a post card saying he has met the woman of his dreams…
Possible interpretations:
Extreme non-schema; this is the best thing that could have happened for your friend you can't wait to meet his new girlfriend
Non-schema; you are happy that your friend has met someone he likes
Schema; this means your friend might stay in Australia with their new girlfriend
Extreme schema; you'll never see your friend again people you care about always leave you
Word completions: schema incongruent = joyful
schema congruent = desert
Primes: schema incongruent = congratulations
schema congruent = disappear

2.1.1.2. Mistrust / abuse

You loan a friend a number of CDs from your collection. When they return the CDs you notice that one third of them are missing…
Possible interpretations:
Extreme non-schema; your friend really appreciates your taste in music and wants to listen to the CDs a little longer; he'll return them as soon as he is finished with them
Non-schema; your friend must have not included some of the CDs and will return them when he realises his mistake
Schema; your friend is trying to keep the missing CDs and is unlikely to return them unless you ask
Extreme schema; your friend has stolen the CDs from you, he as taken advantage of you and you should never have trusted him in the first place
Word completions: schema incongruent = forget
schema congruent = suspect
Primes: schema incongruent = honourable
schema congruent = deceitful

2.1.1.3. Emotional deprivation

You are upset and leave a message on your friend's answer phone asking her to contact you as soon as she gets in. It is some time later and she has not returned your call…
Possible interpretations:
Extreme non-schema; your friend is probably on her way around to check on you in person
Non-schema; your friend must not have received your message yet and will call when she does

Schema; your friend must not care about you otherwise she would have called back by now
Extreme schema; your friend doesn't care about you; this is further proof of how no-one ever understands you
Word completions: schema incongruent = kind
schema congruent = hurtful
Primes: schema incongruent = considerate
schema congruent = inconsiderate

2.1.1.4. Defectiveness / shame

During your annual appraisal your supervisor suggests you enrol on one of the courses on offer in your department…
Possible interpretations:
Extreme non-schema; this will be a good opportunity to prove you are ready for promotion
Non-schema; the training course will help you widen your skills
Schema; your supervisor mustn't think you are very good at your job if he thinks you need extra training
Extreme schema; you are not up to scratch and will loose your job if you don't improve
Word completions: schema incongruent = prospect
schema congruent = disgrace
Primes: schema incongruent attainment
schema congruent = hopeless

2.1.1.5. Social isolation / undesirability

You turn up at the restaurant for the Christmas party to find that you are the only one of your colleagues to have arrived…
Possible interpretations:
Extreme non-schema; you must be the first to arrive and look forward to greeting the others once they join you
Non-schema; you must be a little ahead of time and text a colleague to find out how long they will be
Schema; you might as well go home rather than wait to see if the others arrive as you don't really fit in
Extreme schema; your colleagues have gone on with out you proving you aren't very popular
Word completions: schema incongruent = early
schema congruent = lonely
Primes: schema incongruent = liked
schema congruent = friendless

2.1.2. Impaired Autonomy and Performance

2.1.2.1. Dependence / incompetence

Your friend who usually advises you on home furnishings is away on holiday. You decide to order new curtains for your lounge from a catalogue; when they arrive you hang them up and find the lounge looks quite different…
Possible interpretations:

Extreme non-schema; the room has never looked better from now on you'll make all the decisions about your home decor
Non-schema; the room looks good with the new curtains and shows you can make decisions without help from others
Schema; the room looked better without the new curtains
Extreme schema; the curtains look awful, you should never have ordered them without checking with your friend first
Word completions: schema incongruent = gifted
schema congruent = worthless
Primes: schema incongruent = adequate
schema congruent = incompetent

2.1.2.2. Dependence / incompetence

Your friend usually helps you with your garden but he is visiting friends and won't be back for 3 weeks. You decide to spend the weekend gardening alone. Over the following week a number of neighbours comment on how the garden has changed…
Possible interpretations:
Extreme non-schema; your neighbours pay you compliments on the good job you have done which proves you can look after your own garden without help
Non-schema; your neighbours think the garden has changed for the better
Schema; your neighbours think the garden has changed for the worse
Extreme schema; you have made a mess of the garden and you should have waited until your friend returned before tackling it
Word completions: schema incongruent = improved
schema congruent = rely
Primes: schema incongruent = self-sufficient
schema congruent = unskilled

2.1.2.3. Vulnerability to harm or illness

You buy some shares in an electronics company. You notice in recent months that the value of your shares has fallen amid rumours of economic recession…
Possible interpretations:
Extreme non-schema - once the market improves you'll probably make more money than ever
Non-schema; this is all part of the natural economic cycle and your shares will pick up in time
Schema; you blame yourself for your bad decision to invest
Extreme schema; you think you are on the brink of bankruptcy
Word completions: schema incongruent = recover
schema congruent = destroyed
Primes: schema incongruent = regain
schema congruent = helpless

2.1.2.4. Enmeshment / underdeveloped self

You go out for a social evening with your closest friend and their colleagues from work. During the course of the evening your friend's colleagues disclose many things about him that you didn't know before…
Possible interpretations:

Extreme non-schema; this is a great evening you feel you know friend better than ever now
Non-schema; it is good to learn lots of new things about your closest friend
Schema; you are concerned that your closest friend did not share these things with you before now
Extreme schema; your relationship is meaningless otherwise you would have already known all these things about your closest friend
Word completions: schema incongruent = discover
schema congruent = separate
Primes: schema incongruent = knowledge
schema congruent = intensity

2.1.2.5. Failure

You take some golf lessons over the summer. At the end of the summer you enter a tournament and find…
Possible interpretations:
Extreme non-schema; you do very well and look forward to the next tournament
Non-schema; you do well and are encouraged to carry on with your golf
Schema; you do not do well and need further practice
Extreme schema; as expected you come last confirming you are a total failure
Word completions: schema incongruent = winner
schema congruent = worst
Primes: schema incongruent = victorious
schema congruent = defeated

2.1.3. Impaired Limits

2.1.3.1. Entitlement / grandiosity

You enter an art competition and are very proud of the piece of work you've created. Many people comment on how good your work is. The judges award you 3rd place amongst a very impressive field…
Possible interpretations:
Extreme non-schema; you have done very well and are inspired to carry on with your art
Non-schema; you have done well to come 3rd in such an impressive field
Schema; you think your work really warranted a higher position
Extreme schema; your work was quite obviously the best in the competition the judges clearly did not have the expertise to recognise this
Word completions: schema incongruent = motivate
schema congruent = unfair
Primes: schema incongruent = encouraged
schema congruent = injustice

2.1.3.2. Entitlement / grandiosity

There are a lot of people in your team on sick leave because of an outbreak of flu. You are asked to cover the work of a junior colleague…
Possible interpretations:
Extreme non-schema; you are pleased to help out under such difficult circumstances

Non-schema; you carry out the tasks you've been asked to do
Schema; it is inappropriate for you to cover the work of a junior and find another more junior colleague to do it instead
Extreme schema; the work is beneath you so you refuse to do it
Word completions: schema incongruent = support
schema congruent = higher
Primes: schema incongruent = cooperate
schema congruent = unique

2.1.3.3. Entitlement / grandiosity

You have a week's leave booked when your boss announces that all leave is cancelled for the near future so that the firm can meet an increase in orders…
Possible interpretations:
Extreme non-schema; you are pleased to hear about the increase in orders and postpone your leave arrangements
Non-schema; you postpone your leave arrangements until the extra work has been completed
Schema; your own leave should be viewed as a special case so you negotiate a deal with your boss
Extreme schema; your company has no right to deny you the leave you have booked and it is entirely acceptable to ring in sick instead
Word completions: schema incongruent = help
schema congruent = justify
Primes: schema incongruent = assist
schema congruent = privilege

2.1.3.4. Insufficient self-control / self-discipline

You have been working on a filing task all day so that you can meet an important deadline. You have almost completed the task when a colleague pops into the room to say he is leaving to go to the local pub…
Possible interpretations:
Extreme non-schema; you continue with the task in order to meet the deadline
Non-schema; you continue with your task hoping to meet them in the pub later
Schema; you hurriedly rush the task so that you can get to the pub quickly
Extreme schema; you give up on the task immediately and walk down to the pub with your colleague
Word completions: schema incongruent = stay
schema congruent = dreary
Primes: schema incongruent = persevere
schema congruent = monotonous

2.1.3.5. Insufficient self-control / self-discipline

You are waiting for your bus which is overdue by 15 minutes. An inspector informs everyone in the queue that the bus is stuck in traffic but will arrive in 10 minutes…
Possible interpretations:
Extreme non-schema; you are happy to wait for the bus knowing it won't be much longer
Non-schema; you continue to wait for your bus
Schema; you start complaining loudly to the inspector

Extreme schema; you can't possibly wait any longer, you shout at the inspector telling him how lousy his bus company is and then hale a cab
Word completions: schema incongruent = endurance
schema congruent = urgent
Primes: schema incongruent = unwavering
schema congruent = intolerable

2.1.4. Other Directedness

2.1.4.1. Subjugation

It's your birthday and your friend offers to take you away for a weekend break, suggesting Barcelona. You tell your friend you have always wanted to go to Paris. A few days later your friend emails you…
Possible interpretations:
Extreme non-schema; to say they are excited about taking you to Paris
Non-schema; with the flight details of your trip to Paris
Schema; with the flight details for your trip to Barcelona
Extreme schema; to say you were ungrateful and hurt their feelings when you suggested Paris instead of Barcelona; you should never have expressed your wishes
Word completions: schema incongruent = thrilled
schema congruent = offend
Primes: schema incongruent = generous
schema congruent = insulted

2.1.4.2. Self sacrifice

A colleague asks you to swap shifts with them but you are unable to as you have arranged to visit friends. When you next see your colleague he is engrossed in conversation with another worker…
Possible interpretations:
Extreme non-schema; he has found someone to swap shifts and is arranging the details
Non-schema; he is approaching another colleague to arrange a shift swap
Schema; he is disappointed with you and is avoiding you
Extreme schema; he is ignoring you for being selfish and will probably not speak to you again
Word completions: schema incongruent = planning
schema congruent = guilty
Primes: schema incongruent prime = organised
schema congruent prime = displeasure

2.1.4.3. Self sacrifice

A neighbour who recently sprained his ankle asks you if you could drive him to his doctor's appointment. You are unable to help as you have a prior engagement. That evening your neighbour calls…
Possible interpretations:
Extreme non-schema; to say his foot is much better after seeing the doctor
Non-schema; to say how he got on at his doctor's appointment

Schema; to say he is disappointed with you because it was difficult to get to the doctors without your help
Extreme schema; to say his sprain is much worse because you did not give him a lift to his appointment
Word completions: schema incongruent = restored
schema congruent = painful
Primes: schema incongruent = convalesced
schema congruent = discontent

2.1.4.4. Approval seeking / recognition seeking

You are responsible for organising a day of activities for an office team building exercise. The day after the event you find all of your colleagues talking in the coffee area…
Possible interpretations:
Extreme non-schema; the team building exercise was a great success the team are getting along better than ever before
Non-schema; the team are getting on really well together following the team building exercise
Schema; your colleagues are excluding you because they did not like the exercises you organised for the team building day
Extreme schema; your colleagues are discussing how badly you organised the team building day; you will never be asked to organise an event like that again
Word completions: schema incongruent = socialise
schema congruent = dislike
Primes: schema incongruent = communicating
schema congruent = shambles

2.1.4.5. Approval seeking / recognition seeking

Whilst on holiday with friends, you organise a day of trekking in the countryside for everyone. That evening after dinner your friends retire early…
Possible interpretations:
Extreme non-schema; the trek was a great success, your friends put so much into it they are now exhausted
Non-schema; your friends want an early night after their trek in the countryside
Schema; your friends do not want to spend time with you because they did not enjoy the trek you organised
Extreme schema; your friends are ostracising you because they hated the trek; you have lost their respect
Word completions: schema incongruent = tired
schema congruent = avoid
Primes: schema incongruent = satisfied
schema congruent = snubbed

2.1.5. Over-vigilance and nhibition

2.1.5.1. Over-control / emotional inhibition

At a meeting you give a very emotional and impassioned speech about a subject which is very important to you. The chairperson approaches you…
Possible interpretations:
Extreme non-schema; to say your heartfelt argument has won his support
Non-Schema; to thank you for your committed contribution
Schema; to ask you to calm down otherwise you'll have to leave the meeting
Extreme schema; to say you had better calm down before you harm someone
Word completions: schema incongruent = loyal
schema congruent = danger
Primes: schema incongruent = participation
schema congruent = menacing

2.1.5.2. Unrelenting standards / hypocriticalness

Your friend asks you to look after his plants while he is away. You water them everyday and try to keep them alive. You check them just before he returns and notice a few dead leaves…
Possible interpretations:
Extreme non-schema; you have looked after the plant so well it is the healthiest it has ever been
Non-schema; you are capable of caring for plants and are a good friend
Schema; you are incapable of caring for plants and are a bad friend
Extreme Schema; you are incompetent and have killed your friend's plant
Word completions: schema incongruent = talented
schema congruent = pathetic
Primes: schema incongruent = green-fingers
schema congruent = clueless

2.1.5.3. Negativity / vulnerability to error

You are nominated to choose a gift for a team member who is leaving work. You buy the gift, calculate how much each colleague owes you and collect their money. After the leaving party you receive a number of messages from your colleagues…
Possible interpretations:
Extreme non-schema; to compliment you on the splendid gift you chose
Non-schema; to thank you for arranging the gift
Schema; that you have incorrectly calculated their contribution
Extreme schema; you've overcharged them for their contribution, the gift couldn't possibly have cost that much and was not what they would have chosen
Word completions: schema incongruent = approve
schema congruent = fault
Primes: schema incongruent = appreciative
schema congruent = accusations

2.1.5.4. Negativity / vulnerability to error

Your supervisor asks you to work out the overtime allowance for each member of your department and to send out memos informing them of the results. Some days later, you receive an email from your supervisor…
Possible interpretations:
Extreme non-schema; to praise you for doing an error free job
Non-schema; to say you have done a good job
Schema; to say some of your colleagues have complained that their overtime allowance has been calculated inaccurately
Extreme schema; to say you have made a complete mess of everyone's overtime allowance; you should have checked your figures more thoroughly before sending the memos
Word completions: schema incongruent = efficient
schema congruent = blunder
Primes: schema incongruent = professional
schema congruent = incorrect

2.1.5.5. Punitiveness

You arrange to meet your friend in town at 4pm. You arrive on time and wait for him to arrive. At 4.15pm you see your friend running down the street towards you…
Possible interpretations:
Extreme non-schema; you're happy your friend has arrived and you're excited about spending time with them
Non-schema; you're pleased to see your friend, he must have been held up by something
Schema; your friend should not have kept you waiting; you'll make sure you're last to arrive next time you meet
Extreme schema; it's not right that your friend kept you waiting; this is the last time you'll arrange to meet him
Word completions: schema incongruent = delayed
schema congruent = punish
Primes: schema incongruent = hindered
schema congruent = penalise

2.2. Social and Physical Threat Scenarios

2.2.1. Social Threat

You are out to dinner with your partner. You notice that the couple at the table next to you order the very expensive filet mignon. Before finishing their meal, the couple call the chef to their table…
Possible interpretations:
Extreme benign; the couple wanted to tell the chef it was the best meal they'd ever had
Benign; the couple wanted to compliment the chef
Threat; the couple wanted to complain to the chef
Extreme threat; the couple wanted to tell the chef it was the worst meal they'd ever had
Word completions: benign = tribute

threat = disgust
Primes: benign = praise
threat = protest

2.2.2. Social Threat

You attend a play in London. Immediately following the first showing, several reviews are published. In particular, the lead performance was heavily commented on…
Possible interpretations:
Extreme benign; the lead performance was the greatest the critics had seen
Benign; the lead performance was praised
Threat; the lead performance was criticized
Extreme threat; the lead performance was the most terrible the critics had seen
Word completions: benign = admired
threat = rubbish
Primes: benign = acclaimed
threat = dreadful

2.2.3. Social Threat

You are employed as the foreman on a building site. Shortly after you report for work you are asked to report to the office…
Possible interpretations:
Extreme benign; your manager promotes you for your hard work
Benign; your manager praises you for your good work
Threat; your manager reprimands you for your poor work
Extreme threat; your manager dismisses you for your poor performance
Word completions: benign = compliment
threat = complain
Primes: benign = commendation
threat = substandard

2.2.4. Social Threat

You are listening to your favourite radio phone in programme. Many listeners phone in to enquire about Bob's character…
Possible interpretations:
Extreme benign; the listeners have heard about Bob's Oscar winning acting ability
Benign; the listeners have heard about Bob's acting ability
Threat; the listeners have heard about Bob's poor reputation
Extreme threat; the listeners have heard about Bob's disgraceful reputation
Word completions: benign = creative
threat mischief
Primes: benign = performer
threat = scoundrel

2.2.5. Social Threat

Whilst shopping in town, Kim was looking for a gift for her daughter. As Kim entered the department store she saw her daughter with Tom and was filled with emotion…
Possible interpretations:
Extreme benign; it made her extremely happy to see them together
Benign; it made her happy to see them together
Threat; it made her sad to see them together
Extreme threat; it made her extremely sad to see them together
Word completions: benign = glad
threat = gloomy
Primes: benign = delighted
threat = depressing

2.2.6. Social Threat

Peter is a good student who wants to join the school football team. After trials, the final list is posted for second team. Peter is certain that he has been wrongly placed…
Possible interpretations:
Extreme benign; Peter was certain he was the finest player the school had ever had
Benign; Peter was certain that he was too good for the school's second team
Threat; Peter was certain that he was not good enough for the school's second football team
Extreme threat; Peter was certain he was the most terrible player the school had ever had
Word completions: benign = asset
threat = awful
Primes: benign = flair
threat = defective

2.2.7. Social Threat

Sandy gives a speech at her best friend's wedding party. She is nervous but wants to do a good job. During her speech the crowd begins to laugh…
Possible interpretations:
Extreme benign; the speech was a great success
Benign; everyone enjoyed Sandy's speech
Threat; everyone ridiculed Sandy's speech
Extreme threat; the speech was a disaster
Word completions: benign = charming
threat = scoffed
Primes: benign = enchanting
threat = distressing

2.2.8. Social Threat

16-year-old Robert is hired for his first job as a lifeguard at the community swimming pool. He works 40 hours a week and is extremely tired. Upon receiving his first pay check, Robert is astonished…
Possible interpretations:
Extreme benign; Robert's pay check is so large he'll be able to move into a better apartment
Benign; Robert's pay check was larger than he had expected
Threat; Robert's pay check was smaller than he has expected
Extreme threat; Robert's pay check is so small he'll be unable to pay his rent this month
Word completions: benign = greater
threat = poverty
benign = prosperous
threat = shortage

2.2.9. Social Threat

Lindsay was invited to a party at one of her neighbour's houses. At the last minute she decided to go along. By the end of the evening Lindsay's expectations of the party were proven correct…
Possible interpretations:
Extreme benign; Lindsay thought the party would be the highlight of the year
Benign; Lindsay thought the party would be enjoyable
Threat; Lindsay thought the party would be boring
Extreme threat; Lindsay thought the part would be the most dreadful party ever
Word completions: benign = pleasant
threat = dull
Primes: benign = amusing
threat = tiresome

2.2.10. Social Threat

You arrange to meet a friend in town. Whilst sharing gossip over a cup of coffee, you chat about the local artist who was unable to trace the child no matter how hard he tried…
Possible interpretations:
Extreme benign; after several attempts the sketch had to be postponed
Benign; after several attempts the sketch had to be abandoned
Threat; after several attempts the search had to be abandoned
Extreme threat; after a long fruitless search the child was presumed dead
Word completions: benign = drawing
threat = vanish
Primes: benign = illustration
threat = missing

2.2.11. Physical Threat

John's family has a history of high blood pressure. He begins experiencing blurred vision and goes to the doctor. He is amazed at the results…
Possible interpretations:
Extreme benign; the doctor tells him he is one of the fittest patients on his books
Benign; John's results indicate low blood pressure
Threat; John's results indicate high blood pressure
Extreme threat; the doctor tells him he is extremely ill
Word completions: benign = energetic
threat = disease
Primes: benign = vigorous
threat = sickness

2.2.12. Physical Threat

Mary's husband wakes up to shower at 7:30 am every morning before going to work. He is always on time and never skips showering. One morning past eight o'clock, Mary cannot wake her husband…
Possible interpretations:
Extreme benign; Mary's husband has a day off and is enjoying a lie in
Benign; Mary's husband is fast asleep
Threat; Mary's husband is unconscious
Extreme threat; Mary's husband is dead
Word completions: benign = snoozing
threat = lethal
Primes: benign = slumbering
threat = deceased

2.2.13. Physical Threat

Without a car, Lindsay travels to and from work by foot. She is, however, uncomfortable walking home at night by herself. When crossing the street, a man stops her…
Possible interpretations:
Extreme benign; the man is a very good friend of Lindsay's and pauses to chat with her
Benign; the man politely asks Lindsay for directions
Threat; the man aggressively demands money from Lindsay
Extreme threat; the man threatens to kill her if she does not do what he wants
Word completions: benign = harmless
threat = frighten
Primes: benign = innocent
threat = intimidation

2.2.14. Physical Threat

James is supporting his friend who is playing in a football tournament. At half time the players stand in the middle of the pitch fooling around and drinking orange juice. James is surprised when Mike smacked his lips…

Possible interpretations:
Extreme benign; Mike licked his lips in appreciation of the delicious orange juice
Benign; Mike licks his lips after drinking the orange juice
Threat; Mike strikes James
Extreme threat; Mike knocks James out
Word completions: benign = tasty
threat = thump
Primes: benign = appetising
threat = vicious

2.2.15. Physical Threat

Sharon attends her 10-year school reunion. Sharon joins her former classmates on the dance floor. Sharon squealed when she was grabbed…
Possible interpretations:
Extreme benign; Sharon was excited to be hugged by her best friend
Benign; Sharon was hugged on the dance floor
Threat; Sharon was molested on the dance floor
Extreme threat; Sharon was terrified when she was molested
Word completions: benign = cuddle
threat = damage
Primes: benign = affection
threat = mistreated

2.2.16. Physical Threat

Kevin is enjoying a sunny day at the beach with his wife and two children. He is engrossed in a new novel and cannot put the book down. He does not notice his daughter signalling to him in the water…
Possible interpretations:
Extreme benign; Kevin's daughter is showing him the fantastic rock pool she's found
Benign; Kevin's daughter is beckoning him to join her in the water
Threat; Kevin's daughter is in difficulty and needs his help
Extreme threat; Kevin's daughter is drowning
Word completions: benign = playing
threat = struggle
Primes: benign = recreation
threat = trouble

2.2.17. Physical Threat

Beth and her little sister are quietly waiting. They both know that it would be inappropriate to start having a conversation and are silent. The girl and her sister then follow the procession…
Possible interpretations:
Extreme benign; the sisters excitedly follow their brother's wedding
Benign; the sisters follow the wedding
Threat; the sisters follow the funeral

Extreme threat; the sisters sorrowfully follow their brother's funeral
Word completions: benign = marriage
threat = death
Primes: benign = confetti
threat = bereavement

2.2.18. Physical Threat

Whilst attending a demonstration at your local further education college, you looked on as Michael drew the sword…
Possible interpretations:
Extreme benign; Michael is expertly sketching an historical scene
Benign; Michael is an artist
Threat; Michael is giving a fencing demonstration
Extreme threat; Michael has started a fight
Word completions: benign = sketch
threat = stabbed
Primes: benign = artwork
threat = combat

2.2.19. Physical Threat

As you leave for work you notice a man on your neighbour's front path. The man puts a box outside the door and quickly leaves…
Possible interpretations:
Extreme benign; your neighbour discovers a beautiful gift minutes later
Benign; the gift goes unnoticed for several hours
Threat; the bomb goes unnoticed for several hours
Extreme threat; a bomb detonates minutes later killing several people
Word completions: benign = present
threat = blast
Primes: benign = souvenir
threat = explosion

2.2.20. Physical Threat

You are talking with friends about a TV programme you all watched yesterday evening. You discuss the scene where the two men looked on as the chest was opened. The two men noted...
Possible interpretations:
Extreme benign; it was full of pirates' treasure
Benign; there was no sign of woodworm
Threat; there was a small but treatable infection
Extreme threat; the patient had widespread heart disease
Word completions: benign = casket
threat = virus
Primes: benign = strongbox
threat = illness

APPENDIX L

Group Emotional Engagement Questionnaire (GEEQ)

Patient _____ Date: _____ Time: _____

Rater _____

Below is a list of statements that describe some of the ways a patient may behave, think or feel during group therapy. Please think about your patient and how he **usually** presents. For each statement decide which of the 5 categories (never, rarely, sometimes, often, always) best describes how your patient **usually** is.

		Never	Rarely	Sometimes	Often	Always
A. Awareness and arousal of emotion						
1	Patient breaks down and cries when talking about past abuse					
2	Patient demonstrates big expressions of basic emotions e.g. throwing a chair because they are angry					
3	There is an emotional connection and agreement between therapist and patient					
4	Patient shows empathy, care, nurturance when another group member expresses emotion					
5	Patient has genuine understanding of another's perspective					
6	Patient uses non verbal cues – body language e.g. foot tapping, restlessness, sitting intensely still for long period of time and there is a sense that he is feeling anger					
7	Physical symptoms e.g. patient's eyes fill up with tears, voice is elevated					
8	Patient self harms during session e.g. scratching / picking skin					
9	Behavioural signs of avoidance e.g. patient asks to leave the room / leaves the room					
10	Patient shows overt expression of emotion e.g. crying during group					
11	Patient is violent in group					
12	Patient talks incessantly using cruel and hurtful language					
13	Patient expresses emotion which fits with the situation					
14	There is congruence with what patient is saying and showing					
15	Patient says what he is feeling					
16	Patient shows a variety of emotions					
17	Patient is able to demonstrate understanding between behaviour and emotion					
18	Patient identifies emotional triggers to their behaviour					
19	Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y'					
B. Psychological distancing from overwhelming feelings						
20	Patient uses improved coping strategies to their norm					
21	Patient overcompensates e.g. increased narcissism, boasting					
22	Patient becomes more distant from other group members					

		Never	Rarely	Sometimes	Often	Always
23	Patient does not turn up for group session					
24	Patient humiliates others in the group					
25	Patient uses humour or sarcasm to avoid emotion					
26	Patient denigrates or shows contempt for facilitators and/or group members					
27	Patient employs coping strategies when feeling strong emotions e.g. time out, counting to 10					
28	Patient takes part in group process whilst experiencing strong emotion					
29	Patient is able to tolerate emotion					
30	Patient has a sense that they will survive and will not be annihilated by emotions					
31	Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion					
32	Patient is able to feel and reflect					
C. Ability to reflect on emotion and make meaning of emotion						
33	Patient can speak to facilitator concerning a emotional issues					
34	Patient uses the first person 'I' indicating an ability to 'wear the feeling'					
35	Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective					
36	Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards					
37	Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past					
38	Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation					
39	Patient realises presumptions are wrong and can take on someone else's view about a situation					
40	Patient expresses pride when they have understood the emotion and it's meaning within a situation					
41	Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child					
42	Patient makes sense of feelings in terms of what is happening in the hear and now					
43	Patient is beginning to use a greater range of words to describe feelings whilst owning the basic emotion e.g. owning anger and naming frustration					
44	Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger					
45	Patient expresses how things feel physically e.g. how disappointment is experienced in the body					
46	Patient is able to describe and understand a range of emotions and a range of related sensations					
47	Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror					
48	Patient explores the past and experiences it in a more emotionally connected way					

		Never	Rarely	Sometimes	Often	Always
49	Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups					
50	Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't					
51	Patient uses group to explore and check out emotion					
D. Ability to transform emotion: change one emotion with another emotion						
52	Patient's emotions are more context appropriate than on previous occasions					
53	Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first					
54	Patient comes to the group with negative emotion and leaves with positive emotion because of group's influence					
55	Patient reduces parallel offending behaviour					
56	Patient demonstrates changes of emotion following self harm (cutting, burning etc.) e.g. anger to sadness					
57	Patient is willing to hear feedback and accept it e.g. 'normally when you get angry like this it's because you're scared'					
58	Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to					
59	Patient remains connected with new emotions at times of stress					
60	Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations					
61	Patient shares a sense of mutual care in group e.g. feeling guilty about not coming to the group because he will let the others down					
62	Patient believes other people's needs and the survival of the group are important					
63	Patient shows an increasing ability to work with others in the group in a selfless way					

APPENDIX M

Table A1 Results of the Delphi exercise showing medians and inter-quartile ranges for items scored during rounds 2 and 3

Items had to meet 3 criteria to be included in the final questionnaire: Median score = 4-5, inter-quartile range ≤ 1, and ≥ 80% panel members rated item 4-5. Final questionnaire items are highlighted in bold.		Round 2		Round 3		
		Median rating	Interquartile range	Median rating	Interquartile range	% Panel members rated item 4-5 Round 3
A. Awareness and arousal of emotion						
1	**Patient breaks down and cries when talking about past abuse**	**4**	**0.5**	**4**	**1**	**94.1**
2	**Patient demonstrates expressions of basic emotions e.g. throwing a chair because they are angry**	**4**	**0.25**	**4**	**0**	**82.3**
	Emotion being experienced by therapist	4	1.75	4	0.75	76.4
4	**There is an emotional connection and agreement between therapist and patient**	**4**	**1**	**4**	**1**	**88.2**
5	There is an absence of competition within the group	3	1	3	0.75	23.5
6	There is an absence of argumentativeness within the group	3	2	3	0.75	23.5
7	There is an absence of self-centeredness within the group	3	2	3	1	35.3
8	**Patient shows empathy, care, nurturance when another group member expresses emotion**	**5**	**1**	**5**	**1**	**100**
9	**Patient has genuine understating of another's perspective**	**4**	**1**	**4**	**0.75**	**88.2**
10	**Patient uses non verbal cues – body language e.g. foot tapping, restlessness, someone sitting intensely still for long period of time and there is a sense that he is feeling anger**	**4**	**1**	**4**	**1**	**88.2**
11	Patient dissociates during times of high emotion in group e.g. looks out of window	4	1.5	4	1	70.6
12	Behavioural signs of disengagement from group e.g. patient sleeping in the group	4	1	4	1	70.5
13	**Physical symptoms e.g. patient's eyes fill up with tears, voice is elevated**	**4**	**1**	**4**	**1**	**100**
14	**Patient self harms during session e.g. scratching / picking skin**	**4**	**1**	**4**	**0**	**82.4**

		Round 2		Round 3		
		Median rating	Interquartile range	Median rating	Interquartile range	% Panel members rated item 4-5 Round 3
15	**Behavioural signs of avoidance e.g. patient asks to leave the room / leaving the room**	**4**	**0**	**4**	**0**	**94.1**
16	**Patient shows overt expression of emotion e.g. crying during group**	**4**	**1.5**	**4**	**0.5**	**88.2**
17	**Patient is violent in group**	**4**	**1.5**	**4**	**1**	**88.2**
18	**Patient talks incessantly using cruel and hurtful language**	**4**	**1.5**	**4**	**0**	**88.3**
19	**Patient expresses emotion which fits with the situation**	**4**	**1**	**4**	**1**	**94.1**
20	**There is congruence with what patient is saying and showing**	**4**	**1**	**5**	**1**	**94.1**
21	**Patient says what he is feeling**	**4**	**1**	**4**	**0.5**	**100**
22	**Patient shows a variety of emotions**	**4**	**1**	**4**	**0.5**	**94.1**
23	**Patient is able to demonstrate understanding between behaviour and emotion**	**4**	**1**	**4**	**1**	**100**
24	**Patient identifies emotional triggers to their behaviour**	**5**	**1**	**5**	**1**	**94.1**
25	**Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which make me feel 'y'**	**4**	**1**	**4**	**1**	**100**
26	Patient shifts from one behaviour to another within session	3	1	3	1	41.2
B. Psychological distancing from overwhelming feelings						
27	Patient withdraws from therapy	4	1.5	4	1	70.6
28	Patient uses key phrases such as 'but' e.g. 'x is leaving **but** I understand why' instead of 'x is leaving I'm not bothered'	4	1	4	0.5	76.5
29	**Patient uses improved coping strategies to their norm**	**4**	**0.5**	**4**	**0.5**	**100**
30	Patient uses self distraction with repetitive behaviours e.g. counting	3	1	3	1	29.4
31	**Patient overcompensates e.g. increased narcissism, boasting**	**4**	**1**	**4**	**0**	**82.4**
32	Speech differences e.g. patient uses childish voice	4	1	4	1	70.6
33	**Patient becomes more distance from other group members**	**4**	**1**	**4**	**0**	**82.3**

		Round 2		Round 3		
		Median rating	Interquartile range	Median rating	Interquartile range	% Panel members rated item 4-5 Round 3
34	Patient talks all of the time during the group	4	1	4	1	70.6
35	Patient uses other members of the group to express his feelings	3	1	3	1	35.3
36	Patient gains alliance with other group members for support during emotional episodes	4	2	4	1	76.4
37	**Patient does not turn up for group session**	**4**	**2**	**4**	**1**	**82.4**
38	Person sits back from the group	4	1	4	1	64.7
39	Patient places objects between himself and the group e.g. walking stick	3	1	3	0.75	23.5
40	Patient uses personas	3	1	3	1	29.4
41	Patient intellectualises	3	2	3	1	29.4
42	Patient takes the parental perspective	4	1.5	3	1.5	41.2
43	**Patient humiliates others in the group**	**4**	**1.5**	**4**	**1**	**100**
44	Patient questions the integrity of the facilitator(s)	4	1.5	4	0.5	76.4
45	Patient minimises impact of a situation	4	1	4	1	58.9
46	Patient constantly complains about the group or the unit	4	2	3	1.5	47.1
47	**Patient uses humour or sarcasm to avoid emotion**	**4**	**1**	**4**	**0**	**82.4**
48	**Patient denigrates or shows contempt for facilitators and/or group members**	**4**	**0.5**	**4**	**0**	**88.3**
49	**Patient employs coping strategies when feeling strong emotions e.g. time out, counting to 10**	**4**	**0.5**	**4**	**0**	**82.4**
50	Patient is able to talk about his feelings without acting out in a maladaptive way e.g. if angry talks calmly without shouting	4	2	4	1	76.4
51	**Patient takes part in group process whilst experiencing strong emotion**	**5**	**1.5**	**4**	**1**	**82.3**
52	**Patient is able to tolerate emotion**	**4**	**1**	**4**	**1**	**82.3**

		Round 2		Round 3		
		Median rating	Interquartile range	Median rating	Interquartile range	% Panel members rated item 4-5 Round 3
53	**Patient has a sense that they will survive and will not be annihilated by emotions**	**5**	**1**	**4**	**1**	**94.1**
54	Patient expresses self-compassion	4	2	4	1	76.4
55	Patient is able to name emotions	4	1.5	4	0.5	76.4
56	**Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think about the emotion**	**4**	**0.5**	**4**	**0**	**82.4**
57	**Patient is able to feel and reflect**	**4**	**1**	**4**	**1**	**94.1**
C. Ability to reflect on emotion and make meaning of emotion						
58	**Patient is able to speak to facilitator concerning an emotional issues**	**4**	**1**	**4**	**1**	**94.1**
59	Patient is able to work out his confusion in the group session	4	1	4	1	70.5
60	**Patient uses the firs person 'I' indicating an ability to 'wear the feeling'**	**4**	**0**	**4**	**0**	**82.4**
61	**Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective**	**4**	**1**	**4**	**1**	**94.1**
62	**Patient has moments of insight into emotions sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards**	**4**	**1**	**4**	**1**	**88.2**
63	**Patient is able to talk about the past and work out how they felt in the past then is able to name the emotion from the past**	**4**	**1**	**4**	**1**	**82.3**
64	**Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation**	**4**	**1**	**4**	**0.5**	**94.1**
65	**Patient realises presumptions are wrong and is able to take on someone else's view about a situation**	**4**	**1.5**	**4**	**0**	**82.4**
66	**Patient expresses pride when they have understood the emotion and it's meaning within a situation**	**4**	**1**	**4**	**0**	**88.3**

		Round 2		Round 3		
		Median rating	Interquartile range	Median rating	Interquartile range	% Panel members rated item 4-5 Round 3
67	**Patient is able to make links between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child**	**4**	**0.5**	**4**	**0**	**94.1**
68	**Patient makes sense of feelings in terms of what is happening in the hear and now**	**4**	**1**	**4**	**1**	**100**
69	**Patient is beginning to use a greater range of words to describe feelings whilst owning basic emotion e.g. owning anger and naming frustration**	**4**	**0.5**	**4**	**0**	**94.1**
70	**Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger**	**4**	**1**	**4**	**0.5**	**100**
71	Patient uses developing awareness of vocabulary to describe emotion by giving various interpretations	4	2	4	1	76.4
72	**Patient expresses how things feel physically e.g. how disappointment is experienced in the body**	**4**	**1**	**4**	**0**	**100**
73	**Patient is able to describe and understand a range of emotions and a range of related sensations**	**4**	**1**	**4**	**1**	**94.1**
74	Patient takes on board the possibility of low levels of emotion that he is not usually aware of	4	1	3	1	41.2
75	**Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror**	**4**	**1**	**4**	**0.5**	**100**
76	Counter-transference of facilitator – e.g. facilitator feels sad rather than irritated when the patient cries	4	2	4	1.5	58.8
77	**Patient explores the past and experiences it in a more emotionally connected way**	**4**	**1**	**4**	**0.5**	**94.1**
78	**Patient is aware of emotional triggers and being able to deal with them on the unit – putting into practice what they've learnt in groups**	**5**	**1**	**5**	**1**	**100**

		Round 2		Round 3		
		Median rating	Interquartile range	Median rating	Interquartile range	% Panel members rated item 4-5 Round 3
79	**Patient knows their own unique disposition e.g. they feel sad when favourite prison officer is off work even when their peers don't**	**4**	**1**	**4**	**0**	**82.4**
80	Patient seeks validation of emotion	4	1	4	0.5	76.5
81	**Patient uses group to explore and check out emotion**	**4**	**1**	**4**	**0**	**88.3**
D. Ability to transform emotion: change one emotion with another emotion						
82	**Patient's emotions are more context appropriate than on previous occasions**	**4**	**1**	**4**	**0**	**82.4**
83	Patient leaves the child behind – e.g. deals with emotion and situation in more mature way	4	2	4	1	70.5
84	**Patient is able to compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first**	**4**	**0.5**	**4**	**0**	**88.2**
85	**Patient comes to the group with negative emotion and leaves with positive emotion because of group's influence**	**4**	**1**	**4**	**0**	**82.4**
86	**Patient reduces parallel offending behaviour**	**5**	**1**	**5**	**1**	**94.1**
87	**Patient demonstrates changes of emotion following self harm (cutting, burning etc.) e.g. anger to sadness**	**4**	**1**	**4**	**0**	**100**
88	When patient talks through past trauma it leads to drop in hygiene, elevated self harm etc.	3	2.75	3	1.75	35.3
89	Patient uses tools from therapy to change the emotional content of the relationship between himself and facilitator	4	1	4	1	70.6
90	**Patient is willing to hear feedback and accept it e.g. 'normally when you get angry like this it's because you're scared'**	**4**	**0**	**4**	**0**	**88.3**
91	Patient doesn't give defensive response to feedback about emotions	4	1.5	4	1	76.4

		Round 2		Round 3		
		Median rating	Interquartile range	Median rating	Interquartile range	% Panel members rated item 4-5 Round 3
92	Patient brings work from 1:1s into group so that there is a difference in way he relates emotionally within the group	4	1	4	1	64.7
93	**Patient is able to override habitual response to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely he seeks out someone to talk to**	**4**	**0**	**4**	**0**	**100**
94	Patient is consistent with his emotions in all settings: 1:1, group, landing, and across security levels	3	2.5	4	1	53.1
95	**Patient remains connected with new emotions at times of stress**	**4**	**1**	**4**	**0.5**	**88.2**
96	Patient reflects historically to illustrate how they see other group members in relation to himself e.g. you remind me of myself 3 years ago now I feel like x instead of y when I'm in that situation	3	1	3	1	47.1
97	**Patient behaves differently in response to a feeling e.g. less avoidant, smoking less, greater tolerance of emotive situations**	**4**	**0.75**	**4**	**0**	**82.4**
98	Patient recognises emotion could get the better of him but chooses to behave more appropriately	4	0.5	4	0.5	76.5
99	**Patient shares a sense of mutual care in group e.g. feeling guilty about not coming to the group because he will let the others down**	**4**	**0**	**4**	**0**	**88.3**
100	**Patient believes other people's needs and the survival of the group are important**	**4**	**1**	**4**	**0**	**82.4**
101	**Patient shows an increasing ability to work with others in the group in a selfless way**	**4**	**2**	**4**	**1**	**88.2**

APPENDIX N

Group Emotional Engagement Questionnaire Item-to-Factor Loadings for 2-, 3-, 4- and 5-Factor Solutions following Initial Exploratory Factor Analysis (EFA)

*Table A1Two-factor solution item-to-factor loadings following initial EFA**

Item	*Factor loadings*	
	1	2
There is an emotional connection and agreement between therapist and patient	.69	
Patient shows empathy, care, nurturance when another group member expresses emotion	.80	
Patient has genuine understanding of another's perspective	.82	
Patient expresses emotion which fits with the situation	.74	
There is congruence with what patient is saying and showing	.69	
Patient says what he is feeling	.75	
Patient shows a variety of emotions	.81	
Patient is able to demonstrate understanding between behaviour and emotion	.84	
Patient identifies emotional triggers to their behaviour	.85	
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y	.81	
Patient uses improved coping strategies to their norm	.84	
Patient takes part in group process whilst experiencing strong emotion	.74	
Patient is able to tolerate emotion	.67	
Patient has a sense that they will survive and will not be annihilated by emotions	.67	
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion	.61	
Patient is able to feel and reflect	.85	
Patient can speak to facilitator concerning emotional issues	.76	
Patient uses the first person 'I' indicating an ability to 'wear the feeling'	.69	
Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective	.81	
Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	.82	
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.81	
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.84	
Patient realises presumptions are wrong and can take on someone else's view about a situation	.80	
Patient expresses pride when they have understood the emotion and it's meaning within a situation	.81	
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.73	
Patient makes sense of feelings in terms of what is happening in the here and now	.70	
Patient is beginning to use a greater range of words to describe feelings whilst owning the basic emotion e.g. owning anger and naming frustration	.80	
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.83	
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.73	
Patient is able to describe and understand a range of emotions and a range of related sensations	.85	
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.80	
Patient explores the past and experiences it in a more emotionally connected way	.85	
Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups	.82	
Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't	.76	
Patient uses group to explore and check our emotion	.76	
Patient's emotions are more context appropriate than on previous occasions	.89	
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.83	
Patient comes to the group with negative emotion and leaves with positive emotion because of the group's influence	.68	
Patient reduces parallel offending	.74	
Patient is willing to hear feedback and accept it e.g.	.76	
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to	.81	
Patient remains connected with new emotions at times of stress	.84	
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations	.81	
Patient shares a sense of mutual care in group e.g. feeling guilty about not coming to the group because he will let others down	.70	
Patient believes other people's needs and the survival of the group are important	.68	
Patient shows an increasing ability to work with others	.77	
Patient talks incessantly using cruel and hurtful language		.64

*67.24% cumulative variance explained

*Table A2 Three-factor solution item-to-factor loadings following initial EFA**

Item	***Factor loadings***		
	1	**2**	**3**
Patient employs coping strategies when feeling strong emotions e.g. time out, counting to 10	.63		
Patient has a sense that they will survive and will not be annihilated by emotions	.69		
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion	.73		
Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective	.72		
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.72		
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.82		
Patient expresses pride when they have understood the emotion and it's meaning within a situation	.76		
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.72		
Patient is beginning to use a greater range of words to describe feelings whilst owning the basic emotion e.g. owning anger and naming frustration	.79		
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.82		
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.74		
Patient is able to describe and understand a range of emotions and a range of related sensations	.82		
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.74		
Patient explores the past and experiences it in a more emotionally connected way	.82		
Patient is aware of emotional triggers	.72		
Patient's emotions are more context appropriate than on previous occasions	.81		
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.78		
Patient reduces parallel offending	.68		
Patient is willing to hear feedback	.68		
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to	.80		
Patient remains connected to new emotions at times of stress	.82		
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations	.77		
There is congruence with what patient is saying and showing		.70	
Patient believes other people's needs and the survival of the group are important		.73	
Patient overcompensates e.g. increased narcissism, boasting			.69
Patient becomes more distant from other group members			.68
Patient humiliates others in group			.70
Patient uses humour or sarcasm to avoid emotion			.62
Patient denigrates or shows contempt for facilitators and/or group members			.74

*58.92% cumulative variance explained

*Table A3 Four-factor solution item-to-factor loadings following initial EFA**

Item	***Factor loadings***			
	1	**2**	**3**	**4**
Patient shows a variety of emotions	.60			
Patient is able to demonstrate understanding between behaviour and emotion	.66			
Patient identifies emotional triggers to their behaviour	.73			
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y'	.65			
Patient uses improved coping strategies to their norm	.70			
Patient employs coping strategies when feeling strong emotions e.g. time out, counting to 10	.62			
Patient takes part in group process whilst experiencing strong emotion	.60			
Patient has a sense that they will survive and will not be annihilated by emotions	.68			
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion	.73			
Patient is able to feel and reflect	.69			
Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective	.70			
Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	.70			
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.70			
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.80			
Patient realises presumptions are wrong and can take on someone else's view about a situation	.65			
Patient expresses pride when they have understood the emotion and it's meaning within a situation	.74			
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.70			
Patient is beginning to use a greater range of words to describe feelings whilst owning the basic emotion e.g. owning anger and naming frustration	.78			
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.80			
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.72			
Patient is able to describe and understand a range of emotions and a range of related sensations	.80			
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.72			
Patient explores the past and experiences it in a more emotionally connected way	.78			
Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups	.70			
Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't	.62			
Patient's emotions are more context appropriate than on previous occasions	.79			
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.76			
Patient reduces parallel offending behaviour	.66			
Patient is willing to hear feedback and accept it e.g. 'normally when you get angry like this it's because you're scared'	.66			
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to	.79			
Patient remains connected with new emotions at times of stress	.80			
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations	.76			
Patient shows empathy, care, nurturance when another group member expresses emotion		.65		
Patient has genuine understanding of another's perspective		.66		
There is congruence with what patient is saying and showing		.72		
Patient says what he is feeling		.73		
Patient can speak to facilitator concerning a emotional issues		.69		
Patient uses the first person 'I' indicating an ability to 'wear the feeling'		.61		
Patient shares a sense of mutual care in group e.g. feeling guilty about not coming to the group because he will let the others down		.60		
Patient believes other people's needs and the survival of the group are important		.76		
Patient shows an increasing ability to work with others in the group in a selfless way		.71		
Patient overcompensates e.g. increased narcissism, boasting			.82	
Patient humiliates others in the group			.82	
Patient uses humour or sarcasm to avoid emotion			.73	
Patient denigrates or shows contempt for facilitators and/or group members			.82	
Patient breaks down and cries when talking about past abuse				.65
Patient uses non verbal cues – body language e.g. foot tapping, restlessness, sitting intensely still for long period of time and there is a sense that he is feeling anger				.60
Physical symptoms e.g. voice is elevated				.65
Patient shows overt expression of emotion				.70

*62.12% cumulative variance explained

*Table A4 Five-factor solution item-to-factor loadings following initial EFA**

Item	***Factor loadings***				
	1	**2**	**3**	**4**	**5**
Patient identifies emotional triggers to their behaviour	.75				
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y	.69				
Patient uses improved coping strategies to their norm	.73				
Patient employs coping strategies when feeling strong emotions e.g. time out, counting to 10	.61				
Patient has a sense that they will survive and will not be annihilated by emotions	.69				
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion	.72				
Patient takes time to reflect – e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective	.72				
Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	.72				
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.73				
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.83				
Patient expresses pride when they have understood the emotion and it's meaning within a situation	.77				
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.72				
Patient is beginning to use a greater range of words to describe feelings whilst owning the basic emotion e.g. owning anger and naming frustration	.80				
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.83				
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.73				
Patient is able to describe and understand a range of emotions and a range of related sensations	.82				
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.74				
Patient explores the past and experiences it in a more emotionally connected way	.81				
Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups	.72				
Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't	.66				
Patient's emotions are more context appropriate than on previous occasions	.82				
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.78				
Patient reduces parallel offending	.68				
Patient is willing to hear feedback and accept it e.g.	.69				
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to	.80				
Patient remains connected with new emotions at times of stress	.83				
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations	.77				
There is congruence with what patient is saying and showing		.72			
Patient believes other people's needs and the survival of the group are important		.70			
Patient overcompensates e.g. increased narcissism, boasting			.84		
Patient humiliates others in the group			.83		
Patient uses humour or sarcasm to avoid emotion			.76		
Patient denigrates or shows contempt for facilitators and/or group members			.83		
Patient breaks down and cries when talking about past abuse				.78	
Physical symptoms e.g. voice is elevated				.61	
Patient shows overt expression of emotion				.71	
Behavioural signs of avoidance e.g. patient asks to leave the room/ leaves the room					.72
Patient is violent in group					.60

*65.05% cumulative variance explained

APPENDIX O

Group Emotional Engagement Questionnaire Item-to-Factor Loadings for 1- and 2-Factor Solutions following Initial Exploratory Factor Analysis (EFA)

*Table A1 Item-to-factor loadings for one-factor solution**

Item	***Factor loadings***
	1
Patient shows a variety of emotions	.77
Patient is able to demonstrate understanding between behaviour and emotion	.83
Patient identifies emotional triggers to their behaviour	.86
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y'	.81
Patient uses improved coping strategies to their norm	.84
Patient takes part in group process whilst experiencing strong emotion	.72
Patient has a sense that they will survive and will not be annihilated by emotions	.70
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion	.65
Patient is able to feel and reflect	.84
Patient takes time to reflect e.g. is challenged in group, goes away and thinks about issue, returns to later group with clearer perspective	.82
Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	.82
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.82
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.86
Patient realises presumptions are wrong and can take on someone else's view about a situation	.79
Patient expresses pride when they have understood the emotion and its meaning within a situation	.83
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.75
Patient is beginning to use a greater range of words to describe feelings whilst owning the basic emotion e.g. owning anger and naming frustration	.83
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.86
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.76
Patient is able to describe and understand a range of emotions and a range of related sensations	.88
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.81
Patient explores the past and experiences it in a more emotionally connected way	.87
Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups	.82
Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't	.76
Patient's emotions are more context appropriate than on previous occasions	.90
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.85
Patient reduces parallel offending behaviour	.74
Patient is willing to hear feedback	
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to	.82
Patient remains connected with new emotions at times of stress	.86
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations	.82

*64.56% cumulative variance explained

*Table A2 Item-to-factor loadings for two-factor solution**

Item	***Factor loadings***	
	1	**2**
Patient shows a variety of emotions	.66	
Patient is able to demonstrate understanding between behaviour and emotion	.71	
Patient identifies emotional triggers to their behaviour	.77	
Patient identifies cognitive processes linked to their emotions e.g. I think 'x' which makes me feel 'y'	.84	
Patient uses improved coping strategies to their norm	.66	
Patient has moments of insight into emotions which are sustainable over periods of time e.g. has a 'light bulb moment' and holds onto it by repeatedly talking about it afterwards	.73	
Patient can talk about the past, and work out how they felt in the past, then is able to name the emotion from the past	.77	
Patient applies parts of the programme to issues in the past or within the group e.g. linking schemas to a situation	.76	
Patient can make the link between emotion being felt in the present with emotions felt in the past e.g. fear of female prison officer in the present linked to fear of mother as a child	.65	
Patient is able to make links between surface emotion and emotion underlying this e.g. fear or disappointment overlaid with anger	.68	
Patient expresses how things feel physically e.g. how disappointment is experienced in the body	.67	
Patient is able to describe and understand a range of emotions and a range of related sensations	.72	
Patient is able to account for different levels of emotion e.g. from anxiety through varying levels to terror	.64	
Patient knows their own unique disposition e.g. they can identify they feel sad when favourite prison officer is off work even when their peers don't	.67	
Patient's emotions are more context appropriate than on previous occasions	.72	
Patient can compare near identical situations separated by time and observe a difference in the way the second situation is dealt with compared to the first	.65	
Patient takes part in group process whilst experiencing strong emotion		.64
Patient has a sense that they will survive and will not be annihilated by emotions		.71
Somatising – patient has an awareness that physical pain/ailment is about emotion and is able to then think of about the emotion		.64
Patient realises presumptions are wrong and can take on someone else's view about a situation		.65
Patient explores the past and experiences it in a more emotionally connected way		.62
Patient is aware of emotional triggers and is able to deal with them on the unit – putting into practice what they've learnt in groups		.61
Patient reduces parallel offending behaviour		.78
Patient can override habitual responses to a feeling and realise that it can be better met with a more appropriate response e.g. instead of masturbating when feeling lonely, seek out someone to talk to		.74
Patient remains connected with new emotions at times of stress		.64
Patient behaves differently in response to a feeling e.g. is less avoidant, is smoking less, has greater tolerance of emotive situations		.75

*67.24% cumulative variance explained