ADULT ATTACHMENT STATUS AND PSYCHOLOGICAL DISORDER: THE PREDICTIVE VALIDITY OF ADULT ATTACHMENT IN VIOLENT, PERSONALITY-DISORDERED PATIENTS

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DECLARATION

I, Gillian McGauley confirm that the work presented in this thesis is my own. Where information has been derived from other sources and where I was assisted in data collection and analysis, I confirm that this has been indicated in the thesis.

London: 18th July 2010 

ABSTRACT

This thesis explores the role of attachment in a group of violent, personality-disordered patients in a high secure hospital. The research examines the mental representation of attachment and the perception of parenting, as assessed by the Adult Attachment Interview and the Parental Bonding Instrument, in this patient group and examines whether these differ from those of non-violent psychiatric patients. A prospective study examines whether the attachment measures predict change across a range of outcomes for this group of violent, personality-disordered patients.

This thesis begins with a qualitative literature review on attachment and the development of psychopathology, focussing on attachment and psychiatric disorder in adulthood. The question as to whether particular attachment classifications are associated with specific psychiatric disorders is further investigated by a systematic review and meta-analyses. The meta-analytic results show that insecure attachment acts as a general vulnerability factor for the development of mental disorder.

The distribution of Adult Attachment Interview classifications in these violent, personality-disordered patients significantly differed from non-violent patients. In particular there was an over-representation of individuals with Dismissing and Cannot Classify states of mind and an under-representation of patients who were Unresolved for loss and trauma. Additionally the violent personality-disordered patients had an impaired capacity to mentalize as evidenced by their low level of reflective functioning; especially patients with Dismissing attachments. This deficit is seen as a critical mediating mechanism between Dismissing attachment states of mind and violent behaviour. No one attachment measure predicted change across the outcome measures. However patients with Dismissing and Cannot Classify attachment representations improved in terms of the frequency and severity of their violent and aggressive behaviour. Patients with Preoccupied states of mind made the least progress. The results suggest that these particular attachment states of mind are predictive of change in the violent behavioural trajectory of these patients.

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Chapter 1: Attachment and adult psychopathology; a qualitative review

1.1: Introduction

This chapter aims to show that although environmental factors have received less recent attention compared to their biological counterparts, they are nevertheless important determinates of adult psychopathology. It is proposed that there is a case for repositioning the role of environmental, particularly social factors, as determinants of adult psychopathology. The chapter explores the role that one particular social factor, attachment, may have in the development of adult psychopathology. It is proposed that attachment acts as an intrapsychic filter and, as such, is an important moderator of both environmental and genetic factors which determine adult psychopathology.

The chapter comprises a qualitative, narrative review of the literature on attachment and the development of psychopathology, focussing on the research linking attachment to the development of psychiatric disorder in adulthood, particularly in high risk groups. The differing conclusions within the literature and the limitations of the studies suggest that the research question, as to whether particular attachment classifications are associated with specific psychopathologies and psychiatric disorders, is more appropriately addressed by undertaking a systematic review and meta-analysis of the relevant attachment studies.

1.2: Psychopathology and the depiction of violent forensic patients

It could be argued that the group of individuals whose lives and the lives of others have been blighted most by their psychopathology are those patients detained in forensic institutions. "'Psycho' rapist could be freed in days" (Wells 2009). This headline from The Sun newspaper relates to whether or not a patient, Lee Porritt, detained for treatment in Broadmoor High Secure Hospital, would be released. It is cited here as a reminder that forensic patients have become patients, not solely as a result of their psychopathology, whether it comprises personality disorder (pd), mental illness or both, but because they have offended, often violently, within the context of these conditions and are considered likely of so doing again. It is also cited to illustrate that the person being described is described not as a person. The bastardization of the term psychopathic illustrates the derogatory way in which these patients are often described. There are stronger examples, descriptors such as 'beasts' (Flynn 2008) and 'monsters' (Mcgiven 2009) pepper the pages of the tabloid press. These patients are frequently represented in a dehumanized and often demonized way. This style of depiction forecloses discussion about the interplay of social, environmental and genetic factors which has determined their psychopathology.

Several national treatment and policy guidelines emphasis a person-centred approach to the treatment of individuals with a diagnosis of pd, including those who have become forensic patients as a result of their violence (National Institute for Mental Health in England [NIMHE] 2003; National Institute for Health and Clinical Excellence [NICE] 2009, 2010). A developmental approach to understanding psychopathology, with its focus on the origins and course of individual patterns of normal and abnormal development, necessarily allows for consideration of the violent pd patient as an individual. There is considerable research evidence linking attachment and its disruption to both abnormal development (DeKlyen & Greenberg 2008; Dozier & Rutter 2008) and the development of psychopathology (Lyons-Ruth et al. 1987; Lyons-Ruth, Alpern, & Repacholi 1993; Sroufe 2005). However, it is less clear whether particular patterns of insecure attachment map to particular types of adult psychopathology and, if so, whether the study of attachment representations in individuals with severe psychopathology can enhance our understanding of the course of their illness or of their behaviour. Before reviewing the literature on the links between attachment and psychopathology a case is made for the role of attachment as a determinant of adult psychopathology.

1.3: Determinants of adult psychopathology

Broadly speaking there are two views regarding which factors determine the development of psychopathology in adulthood; those who propose that the main factors are environmental and those who view biological factors as key. The dominant biological mechanism is postulated to be genetic (Dawkins 1976; Scarr & Weinberg 1978; Rutter et al. 1999a, 1999b; Rowe 1994). Until relatively recently the narrative explanation of mental disorder and psychopathology was that they were determined almost exclusively by environmental and social factors, particularly the family system; (Bowlby 1951; Winnicott 1963; Brown & Harris 1978; Fergusson, Horwood, & Lynskey 1992; Maccoby 2000; Rutter 2005a, 2005b). The dominant model of environmental factors has been severely challenged in the last thirty years by the rapid growth of human genetic research and the mapping of the human genome (Plomin & Bergeman 1991; Scarr 1992; Plomin 1994; McGuffin, Riley, & Plomin 2001). Some researchers postulate that the pendulum has swung too far and that the ascendancy of genetic research has eclipsed the contribution of environmental, particularly social, determinants of childhood and adult psychopathology (Fonagy 2003a; Kendler 2005).

1.3.1: The environmental contribution to psychiatric disorder and the gene-environment interaction

Many research studies have shown substantial and significant associations between a wide range of environmental risk factors and psychopathological outcomes (Bowlby 1951; Rutter 1971; Rutter 2005b; Rutter, Kreppner, & O'Connor 2001). The favoured interpretation of these associations was that risky environmental mechanisms were causal in the development

of mental disorder and most childhood and adult psychopathology was seen as the sequlae of environmental risk factors; parental influences were thought to be particularly important.

Contemporary approaches conceptualize psychopathology in a framework that includes social as well as genetic determinants (Kandel 1998). Development involves gene-environment interactions. Genes may moderate social risk factors, as in the case where individuals can develop antisocial behaviour or depression where genetic factors operate, in part, by affecting the sensitivity of the individual to social risk factors. In the absence of genetic risk, adverse environmental factors had little effect (Crowe 1974; Kendler et al. 1995; Cadoret et al. 1996). However social factors may predispose to the development of psychopathology as they can both give rise to adverse events as well as increasing the individual's vulnerability to such events (Brown & Harris 1978; Harris, Brown, & Bifulco 1986). One pathway suggests that the social environmental triggers genetic susceptibility. In the Dunedin cohort both antisocial behaviour in males and depression in males and females have been linked to gene variants, but only for individuals exposed to stressful early life environments (Caspi et al. 2000, 2002, 2003, 2004).

The nature of the main environmental experiences that carry risk are seen as social and to a greater or lesser extent involve the attachment system. Risk derived from situations where social and interpersonal relationships have not been formed (Rutter, Kreppner, & O'Connor 2001; O'Connor et al. 2003; Rutter 2004;); the security of these relationships has been disrupted by neglect or abuse (Cicchetti 2004; Kim & Cicchetti 2004; O'Connor 2006) or the quality of the adult-child interaction has been sub-optimal (Rutter 2005a, 2005b).

There is wide variation in the individual's response to social risk factors; some individuals decompensate and develop a mental disorder; some emerge unaffected and some appear strengthened. This heterogeneity of response is poorly understood (Rutter 2005a; 2005b) but suggests that intra-psychic variables have a contribution (Fonagy 2003a). In other words whether an environmental factor triggers a genetic predisposition to psychopathology may depend, not only on the factor itself, but on the way the individual experiences the environmental factor. It is proposed that the subjective experience of the environment acts as a filter in the mediation of the genotype to the phenotype (Fonagy 2003a).

Attachment has been proposed as one such intra-psychic filter (Fonagy 2003a). There is considerable research evidence linking attachment and its disruption to both abnormal developmental trajectories and the development of poor mental health and psychopathology (Lyons-Ruth et al. 1987; Lyons-Ruth, Alpern, & Repacholi 1993; Sroufe et al. 2005; DeKlyen & Greenberg 2008; Dozier & Rutter 2008). In summary;

- The formation of adequate early social and interpersonal relationships is one of the key environmental determinates of mental health.

- Abnormal social attachments characterize virtually every form of psychopathology (Insel & Winslow 2004).
- Environmental factors that severely restrict the development of attachment relationships, as in institutional or other extremely deprived rearing environments, affect mental health.
- Severe disruptions in or threats to the security of relationships which result from abuse, neglect and rejection are risk factors for the development of psychopathology (Cicchetti & Toth 1995; McClellan et al. 1995; Kaufman 1996; Erickson & Egland 1996).

Recent thinking conceptualises the contribution of attachment to development as extending beyond its crucial role in ensuring the survival of the infant and the importance of the early caregiver relationship in developing a template for later interpersonal interactions to attachment's role in equipping the person with an intrapsychic mental mechanism which acts to process experience and allows the person to represent mental states of the self and other (Fonagy 2003a; Steele 2003a). In brief it is proposed that

- Attachment allows for the development of a representational system
- The representational system allows for the processing of experience.
- The way in which experience is processed can moderate the expression of genotypically and environmentally determinates of adult psychopathology.

1.4: The relationship between attachment and psychopathology

Classical attachment theory is a body of knowledge concerned with the emotional bonds and affective interactions between human beings and the psychological difficulties and psychopathological consequences which arise when these processes go awry (Bowlby 1977). The foundations for the study of human attachment organisation were laid down by John Bowlby and Mary Ainsworth (Bowlby 1969, 1973, 1977, 1988; Ainsworth 1967; Ainsworth et al. 1978; Ainsworth & Bowlby 1991).

As well as the evolutionary advantage, in terms of protection and survival, that a strong affectional bond to a care-giver, bestows on a vulnerable infant, attachment theory proposed that the meaning of experience is encoded in internal working models (IWMs) which then guide expectations and behaviour (Bowlby 1973; Steele 2003b). Bowlby used the term IWMs to describe an individual's representation of the world, of their attachment figures, of him or herself and the relationships between these representations. IWMs are acquired by the infant through internalisation of the characteristic interpersonal interactions of their major attachment figures. If the attachment figure has been sensitive to the infant's needs the child is likely to develop an IWM of the self as valued. If however, the parent has been rejecting the child is likely to construct IWMs of the self as unworthy or incompetent (Bretherton 1995). These IWM not only integrate past experiences, but also regulate the child's behaviour with attachment figures and come to organise and predict behaviour in future attachment relationships (Bretherton & Munholland 1999).

The significance of IWMs is that they comprise of representational systems which provide a mechanism for linking the sequlae of adverse early attachment experiences to the development of psychopathology and for understanding the states of mind of others and oneself. IWMs are now thought of as providing a representational system which allows the child to interpret his or her own experience of self and others in terms of states of mind and mental processes which encompass intentions, beliefs, emotions, desires, impulses and motivations (Bretherton & Munholland 1999; Fonagy 2003a). The child then uses this representational system to predict the behaviour of others or of themself (Fonagy 2003a). It is proposed that, through these representational mechanisms, attachment moderates the expression of environmental factors and gene-environment interactions which determinate adult psychopathology.

The last decade has seen a substantial increase in the number of empirical attachment studies in infants, children and adults exploring the relationship between the child's attachment status and the development of psychopathology. In particular the focus of attachment research has broadened to include clinical and other high risk groups. This literature review concentrates on high-risk groups and examines the evidence as to whether specific attachment states of mind are associated with particular psychiatric disorders and psychopathologies.

1.4.1: Infant attachment and psychopathology in high risk populations

In high risk samples the parental factors shown to increase the risk of children developing psychopathology include parental psychopathology, lower levels of parental support, teenage parenting and substance abuse (Kobak et al. 2006). The Minnesota Parent-Child Project (Troy & Sroufe 1987; Sroufe 2005; Sroufe et al. 2005), a major longitudinal study with follow-up into late adolescence (Carlson 1998), showed that children with insecure attachment patterns, who were raised in high risk environments, were more likely to have poor peer relations, exhibit depressive symptoms and show more symptoms of aggression and maladjustment than their securely attached counterparts.

Infant studies have yielded varying results as to whether specific types of attachment insecurity were associated with the development of particular psychopathologies. Some studies reported that the broad category of insecure attachment was related to behavioural and performance problems (Lyons-Ruth, Alpern, & Repacholi 1993; Belsky & Fearon 2002; Fearon & Belsky 2004), hostile and externalizing problems in childhood (Shaw & Vondra 1995; Shaw et al. 1996) and both internalizing and externalizing behaviours (Munson, McMahon, & Spieker 2001). Other studies (Erickson, Sroufe, & Egeland 1985; Renken et al. 1989), found that the more specific, avoidant attachment, increased a child's risk of problematic and hostile behaviour and contributed to the development of early adult antisocial behaviour (Aguilar et al. 2000). Insecure ambivalent attachment has been associated with

anxiety disorder at age 17 (Warren et al. 1997) however other studies have linked avoidant attachment patterns to internalizing symptoms (Lyons-Ruth, Easterbrooks, & Cibelli 1997) and disorganized (Shaw et al. 1997).

A number of studies have suggested that insecure disorganized/disorientated infants, who lack a consistent strategy for organizing their responses when their attachment system is stressed, were particularly at risk of developing problem behaviours and demonstrating peer aggression (Shaw et al. 1996; Lyons-Ruth, Alpern, & Repacholi 1993; Carlson 1998) and dissociative symptoms in adolescence (Carlson 1998). However studies do not yield clear cut results (Munson, McMahon, & Spieker 2001).

In conclusion insecure attachment is viewed as a risk factor for the development of some forms of psychopathology. Within insecure attachment classifications there is some evidence that disorganized and avoidant attachment increases the likelihood of children developing psychopathology (Sroufe et al. 1999). In particular disorganized/disorientated attachment is seen as a particular vulnerability factor for the development of adaptation problems. However these attachment classifications relate to the development of a wide range of disorders including dissociative symptoms (Ogawa et al. 1997), anxiety states, antisocial behaviour and other externalizing problems. Although some studies have reported links between avoidant attachment and the development of externalizing disorders and between ambivalent attachment and internalizing disorders there is less evidence for specific types of insecure attachment predicting particular disorders.

1.4.2: Childhood attachment and psychopathology in high risk populations

Attachment research in high risk child populations found an over-representation of insecure attachment in children with Oppositional Defiant Disorder (ODD) (Speltz, Greenberg, & DeKlyen 1990); anxiety disorders (Warren et al. 1997; Warren, Emde, & Sroufe 2000; Muris & Meesters 2002); pervasive developmental disorder (PDD) and attention deficit/hyperactivity disorder (ADHD) (Clarke et al. 2002). In ODD children, the attachment classification did not predict problem severity or the course of the illness over the next two years. The risk of diagnosis was increased by the presence of several risk factors such as child characteristics, poor parenting, adverse family environment as well as insecure attachment (Greenberg et al. 2001).

Although children with PDDs such as autism might be expected to have insecure attachments results varied and at best suggested a weak association. Several studies suggested that these children had secure attachments (Rogers, Ozonoff, & Maslin-Cole 1991; Dissanayake & Crossley 1996) although insecure, especially disorganized, attachment classifications occurred more frequently than in non-clinical children. A meta-analysis indicated that 53% of children with PDD had secure attachments, although the rate of

insecure attachments was higher in this group than in normally developing children or those with other developmental disorders (Rutgers et al. 2004).

In summary several childhood attachment studies have shown that securely attached children exhibit lower levels of externalizing (Davies, Cummings, & Winter 2004) and internalizing symptoms and behaviours in middle childhood (Easterbrooks, Davidson, & Chazan 1993; Muris, Mayer, & Meesters 2000; Granot & Mayseless 2001). However there is a lack of specificity with respect to specific insecure attachment classifications and particular psychiatric disorders.

Perhaps the most consistent association found is that between the atypical attachment classifications controlling/punitive and controlling/caregiving, the sequlae to infant disorganized/disorientated attachment status, and childhood psychopathology (Lyons-Ruth 1996). Drawing firm conclusions has been hampered by the small number of studies, many of which measured different symptoms and used differing methods of assessing attachment. As a broad conclusion it appears that children who form a secure attachment to their mothers are less likely to experience clinical symptoms in middle childhood (Kerns, 2008) and that attachment insecurity seems to be an important, but non-specific factor, that increases the risk of a range of childhood psychopathology (DeKlyen & Greenberg 2008).

1.4.3: Adolescent psychopathology and attachment in high risk populations

Many adolescent and adult studies have measured attachment using the Adult Attachment Interview (AAI) (George, Kaplan, & Main 1984, 1985, 1996; Main & Goldwyn 1994, 1998 Hesse 2008). The AAI is a semi-structured interview designed to assess the mental representation of or 'states of mind' with respect to attachment in adults. As it is widely used, its classification system is outlined here. The AAI yields three main categories of attachment; Secure-Autonomous (F); Insecure-Dismissing (Ds) and Insecure-Preoccupied (E) (Main & Goldwyn 1994). Individuals are classified as F if they value attachment relationships and are able to describe them objectively, irrespective of whether these experiences were negative or positive. Individuals are classified as Ds if they are dismissing, devaluing or cut-off from attachment relationships and experiences and as E if they are confused, un-objective and preoccupied with past attachment relationships and experiences.

Superimposed upon these categories is the Unresolved, disorganized/disorientated (U) category, with respect to loss or trauma in relation to an attachment figure (Main & Solomon 1986; Main & Solomon 1990). These speakers make characteristic lapses in the monitoring of their discourse or reasoning when discussing experiences of attachment-related loss or trauma. However, the U individual shows only a localized breakdown of discourse in the AAI narrative around loss and trauma; in other areas of the AAI a U individual may be coherent (Main & Hesse 1992). A fourth category, Cannot Classify (CC) was introduced into the coding

system in 1994 (Hesse 1996). Placement in the CC category indicates that the individual has a disorganized state of mind with respect to attachment and cannot be classified as being Ds, E or F. In other words, the CC individual has no overarching attachment strategy, but employs two disparate and opposing strategies i.e. E and Ds.

Although the assessment of attachment in adolescence has relied on the AAI, there are concerns about the use of this instrument in adolescent populations; especially those considered high risk because individuals in these samples have psychiatric disorders (Lyons-Ruth & Jacobitz 2008). In adolescence the attachment system is in a state of transition which does not progress linearly but may involve the evolution of new attachment forms (Allen 2008). Additionally coding for U may be problematic as many adolescents have not experienced loss of attachment figures (Kobak & Sceery 1988). The state of flux of the attachment system, together with coding issues in the AAI, places limitations on the reliability and validity of the AAI in adolescent samples.

As a general statement secure attachment is associated with healthy functioning in adolescents while insecure attachment has been linked to psychopathology (Allen, Hauser, & Borman-Spurrell 1996; Wallis & Steele 2001; Muris & Meesters 2002;). In Allen's 10-year longitudinal study adolescents, with diagnoses of conduct disorder, major depression and ODD, severe enough to warrant hospitalization, were found to have insecure attachments aged 25. In particular Ds and U attachments were over-represented in the clinical group. These attachment classifications appeared to predict criminal behaviour and drug misuse ten years later. Ds attachment strategies in adolescents have been linked to symptoms of eating disorder (Cole-Detke & Kobak 1996), externalizing symptoms, substance abuse and increased delinquency (Allen et al. 2007; Rosenstein & Horowitz 1996). U attachment has been associated with multiple forms of personality pathology (Nakash-Eisikovits, Dutra, & Westen 2002), although studies are sparse.

Preoccupied (E) attachment classifications in adolescents have been linked to depressive symptoms (Cole-Detke & Kobak 1996) and to a broader array of internalizing problems (Nakash-Eisikovits, Dutra, & Westen 2002; Brown & Wright 2003; Marsh et al. 2003) while E attachments, in interaction with U states of mind for trauma, have been associated with adolescent suicidal behaviour (Adam, Sheldon-Keller, & West 1996).

As a general pattern studies suggest that E attachment states of mind predispose adolescents to developing internalizing symptoms and psychopathology while those with Ds states of mind were more likely to develop externalizing symptoms. However, the pattern is inconsistent as environmental, social and parental factors have all been shown to influence the association between E attachment states of mind and internalizing symptoms.

1.4.4: Adult attachment and psychopathology in high risk populations

Attachment studies in adults have mainly used a cross-sectional design and examined whether specific types of attachment insecurity are associated with particular psychiatric disorders. Most studies of attachment in psychiatric groups have used the AAI to assess attachment organization (George, Kaplan, & Main 1985, 1996; Main & Goldwyn 1994).

Studies examining attachment classifications and depressive disorders have yielded an inconsistent picture. Depression is reported as being associated with both preoccupied (E) attachment (Cole-Detke & Kobak 1996; Fonagy et al. 1996) and dismissing (Ds) classifications (Patrick et al. 1994). However the Cole-Detke and Patrick studies had small samples (n = 14; n = 12 respectively) and differing clinical groups. Studies of individuals with a diagnosis of anxiety disorder report an over-representation of E and U states of mind (Manassis et al. 1994; Fonagy et al. 1996); though the latter finding was not replicated (Van Emmichoven et al. 2003). Studies of attachment in women with eating disorders have also yielded inconsistent results; some studies report that the majority of women were Ds (Cole-Detke & Kobak 1996; Ward et al. 2001) while others report an over-representation of E individuals (Fonagy et al. 1996).

The relationship between attachment states of mind in schizophrenia is more consistent. All studies report that the majority of individuals were Ds with respect to attachment (Dozier, Cue, & Barnett 1994), with high rates of U states of mind (Tyrrell et al. 1999). The authors warn against concluding that the individuals' attachment state of mind predated their schizophrenic illness. They point out that the symptoms of schizophrenia, such as thought disorder, which leads to lapses in the monitoring of reasoning and discourse, may have led to high numbers of individuals being classified as U. Likewise the negative symptoms of schizophrenia may have resulted in individuals being classified as Ds. In other words, it is unclear whether the symptoms of mental illness have disrupted the patient's attachment system, or whether the AAI coding system is responding to the patient's symptoms.

Several studies have looked at the association between attachment states of mind in individuals with a diagnosis of personality disorder (pd), particularly Borderline Personality Disorder (BPD) and Antisocial Personality Disorder (ASPD) (Patrick et al. 1994; Fonagy et al. 1996; Stalker & Davies 1995; Barone 2003; Stovall-McClough & Cloitre 2003). The results consistently report that the majority of individuals with a diagnosis of BPD had E states of mind. When U status was coded, 89% (Fonagy et al 1996) and 75% (Patrick et al. 1994) of patients were classified as Unresolved.

In summary, although some studies have linked particular adult attachment patterns with specific types of psychopathology, the consistent findings are of a general nature; namely

that psychiatric disorders are nearly always associated with insecure states of mind (Kobak et al. 2006) and that the U state of mind is overrepresented in adult psychiatric populations. Furthermore there are only a few studies and their cross sectional design does not allow any firm conclusions to be drawn regarding causality.

1.4.5: Adult attachment in violent populations

The literature has taken three approaches to investigating attachment in high-risk violent populations, where violence has been directed externally as oppose to self-directed violence. Firstly, studying attachment in individuals who have a psychiatric diagnosis but who have also offended violently (van IJzendoorn et al. 1997; Frodi et al. 2001; Levinson & Fonagy 2004): Secondly, studying attachment in inter-familial violence such as in abusive parents (Crittenden, Partridge & Claussen 1991; Adshead & Bluglass 2005) where the individuals may or may not have a psychiatric disorder and in non-incarcerated men who have committed domestic/marital violence but who do not have a diagnosed psychiatric disorder (Holtzworth-Munroe, Stuart, & Hutchinson 1997; Babcock et al. 2000) and thirdly studies which have assessed attachment status in individuals who have a psychiatric diagnosis which is associated with later violence, such as conduct disordered adolescents (Allen, Hauser, & Borman-Spurrell 1996; Rosenstein & Horowitz 1996).

In the first group the Frodi sample consisted of 14 men incarcerated in Swedish forensic psychiatric units and prisons; ten had offended violently, the others had committed drug related offences and most had a diagnosis of ASPD. The Levinson and Fonagy paper reported on a sample of male prisoners who had a diagnosis of personality disorder and who had committed violent crimes. The van IJzendoorn sample consisted of 40 male patients admitted to two Dutch secure forensic facilities, 50% of the patients had committed a severely violent crime, such as murder, while 42% were detained because of sexual crimes. Fifty five per cent of the sample had diagnosis of personality disorder with ASPD and BPD being the most prevalent. All of these studies reported an over-representation of individuals with dismissing (Ds) attachment states of mind. Ds states of mind were statistically more likely in the violent prisoners compared to a matched non-violent group of patients with a personality disorder (Levinson & Fonagy 2004). There were also high levels of individuals with a Cannot Classify (CC) attachment classification.

In the second group of studies insecure attachments were over-represented in the study groups; however both dismissing and preoccupied insecure attachments styles were over-represented. Domestically violent men were more likely to have an insecure attachment status and Ds attachment organisation was associated with higher antisocial scores (Babcock et al. 2000). In mothers who have abused their children an over-representation of both Ds (Adshead & Bluglass 2005) and Ds and E attachment states of mind have been described (Crittenden, Partridge & Claussen 1991).

When considering conduct disorder, which can lead developmentally to violent offending, the findings remained relatively consistent with those adolescents who had dismissing attachment states of mind being more likely to have a conduct disorder. In the only longitudinal attachment study, insecure attachment organization aged 25, was linked to self-reported criminal behaviour as well as hard drug use ten years later (Allen, Hauser, & Borman-Spurrell 1996). The CC subgroup reported the most criminal behaviour while Ds and U individuals had higher levels of criminal behaviour compared with E or F individuals.

In summary there are few empirical studies which have examined attachment and violence and even fewer which have looked at violence in individuals with a psychiatric disorder. The literature is further complicated by studies which use samples of individuals who both have a psychiatric disorder but who are also violent, so it is not possible to ascertain whether insecure attachment is associated with the psychiatric disorder, the violent behaviour or both.

1.5: Discussion

There are several limitations to the studies investigating links between attachment classifications and psychopathology. Studies of attachment in infancy and childhood have the advantage of a longitudinal design however inferring causality is limited by findings regarding the stability of attachment in high risk groups (van IJzendoorn et al. 1997). In particular the U classification, which is fairly strongly linked to psychopathology, is unstable (Lyons-Ruth, Alpern, & Repacholi 1993). Researchers cannot therefore assume continuity of a particular attachment status from infancy through to adulthood in high risk samples with the same certainty as in low risk samples.

Attachment studies in middle childhood, adolescence and adulthood have frequently used a cross-sectional design and childhood studies have often had to address the validity of the different attachment measures used. As the cross sectional studies have used concurrent measurements of attachment the question of causality with respect to attachment insecurity and the development of psychopathology cannot be established. There are also other methodological problems in many of the studies examining adult attachment which may have contributed to inconsistent findings. Inclusion and exclusion criteria vary between studies for the same psychiatric condition; co-morbidity is not always taken into account and subject groups may be heterogeneous; studies are often small in size and have used a range of instruments to assess both attachment and the outcome variables. Finally, the recent inclusion of the cannot classify (CC) category, limits comparison of later with earlier studies. Comparing results across some studies has been limited because of combining AAI categories, for example combining Unresolved (U) and CC classifications.

Within these constraints attachment insecurity has been linked to the development of both internalizing (depression, anxiety, social withdrawal) and externalizing behavioural symptoms (aggression, hostility) across all phases of childhood. With respect to infant attachment and the development of psychopathology, attachment insecurity seems to be an important, but non-specific factor which increases the risk of psychopathology but is not specifically linked to the development of particular disorders. The evidence from middle childhood suggests that children with insecure attachment classifications are at an increased risk of developing psychopathology but there is no clear evidence that particular insecure attachment classifications are linked to specific clinical conditions (Kerns & Richardson 2005; Kerns 2008). Studies of attachment in adolescence link particular concurrent attachment states of mind to psychopathology but in general these links are to categories consisting of aggregated symptoms or disorders. For example adolescents with preoccupied (E) attachment classifications may develop internalizing symptoms while those with dismissing (Ds) states of mind were more likely to develop externalizing symptoms. Even within these broad relationships there were exceptions (Marsh et al. 2003).

Studies of attachment in adulthood postulate that attachment insecurity is a risk factor for the subsequent emergence of adult psychopathology (Sroufe et al. 2005; Kobak et al. 2006; Dozier & Rutter 2008). However it is unclear whether attachment is a general risk factor for mental ill-health or whether specific types of attachment insecurity are associated with particular psychiatric disorders (van IJzendoorn & Bakermans-Kranenburg 1997). Cross sectional study results of attachment states of mind and adult psychopathology yield disparate results. Part of the difficulty arises from the sampling procedure for some studies which have included individuals with both adult psychopathology and disruptive behaviour, such as studies that focus on personality-disordered violent individuals. Although some studies link particular attachment states of mind to particular psychopathologies van IJzendoorn's meta-analysis, although finding highly deviating distributions of attachment classifications in their clinical group, could not demonstrate a specific relationship between types of attachment insecurity and particular disorders (van IJzendoorn & Bakermans-Kranenburg 1996).

1.6: Conclusion

Although the last decade has seen an expansion of attachment research to include psychiatric groups, examination of the empirical literature, to investigate whether particular attachment classifications are associated with specific psychopathologies or psychiatric disorders in adulthood, has lacked a systematic approach. Although it is reasonable to conclude that there is an association between insecure attachment status and psychopathology (van IJzendoorn et al, 1996) the data are not robust enough to conclude whether insecure attachment status constitutes a general risk factor for mental health or

whether specific types of attachment insecurity are associated with particular psychiatric disorders. The qualitative literature review undertaken in this chapter yields differing and inconsistent conclusions and cannot satisfactorily answer the more specific question as to whether particular types of attachment insecurity are associated with particular psychopathologies, psychiatric disorders or the disruptive and violent behaviours that may co-exist in some of these individuals. The quality of the literature and the limitations of the studies suggest that this research question is more appropriately addressed by undertaking a systematic review and meta-analysis of the relevant attachment studies.

Chapter 2: Adult attachment and psychopathology; systematic review and meta-analysis

2.1: Introduction and research question

Although the narrative literature review, presented in chapter 1, supports the association between insecure attachment status and psychopathology it is unclear as to whether insecure attachment constitutes a general risk factor for mental health or whether specific types of attachment insecurity are associated with particular psychiatric disorders. The literature has several limitations; study sizes are often small and consequently report trends that that fail to reach statistical significance; many studies lack comparison groups; other studies aggregate groups of individuals, some of whom had more than one diagnosed psychopathology (Stovall-McClough & Cloitre 2003, 2006) or include individuals who have a particular diagnosis but who also exhibit behaviours that may arise either from the diagnosis or may stem directly from the sequlae of insecure attachment, independent of the diagnosis.

Perhaps the group of individuals who exhibit the most severe psychopathology and behavioural disturbance, either in nature or degree, are violent, personality-disordered patients, whose level of violence necessitates them being detained in a high secure hospital. Could the study of attachment representations in these violent individuals with their severe psychopathology enhance our understanding of either the course of their disorder or of their behaviour? All of the limitations outlined above apply to the attachment studies in patients with a diagnosis of personality disorder; there are few studies; they often lack comparison groups and the study size is frequently small. However a particular limitation of these studies is that some have selected non-violent personality-disordered individuals (Fonagy el al. 1996; Barone 2003; Diamond 2003) while others focus on violent individuals with this diagnosis (van IJzendoorn et al. 1997; Frodi et al. 2001; Levinson & Fonagy 2004;).

The differing conclusions within the literature and these study limitations suggest that the question as to whether insecure attachment constitutes a general risk factor for mental health or whether specific types of attachment insecurity are associated with particular psychiatric disorders is more appropriately addressed through a meta-analysis. A meta-analysis offers the advantage that reported trends from small studies can be quantified by combining the effect sizes and probabilities. Additionally combining the results of several small studies can increase the power of the statistical test and reveal if several non-significant findings, which all show the same trend, prove to be significant. Finally a meta-analysis offers the possibility of de-aggregating data from some studies and re-grouping data to increase the homogeneity of studies when comparing results across studies. In particular a meta-analysis may be a helpful tool for investigating attachment representations in personality-disordered individuals as it will allow trends in attachment representations to be

explored across studies of individuals with a personality disorder and those who are violent within the context of their personality disorder.

2.2: Method

2.2.1: Search strategy

The MEDLINE electronic database was searched between 1974 and 2006 for entries using the following Medical Subject Headings; mental disorder, schizophrenia, bipolar disorder, depression, eating disorder, personality disorder, forensic psychiatry, violence, suicide and crime and text words AAI, adult attachment interview, attachment theory, attachment organisation, attachment status, attachment classification, attachment representation and mentally disordered offender. Additionally a text word search, using the terms listed above, was used to search the PSYCINFO and EMBASE databases from 1974 up to 2006 and the following databases between 1985 up to 2006: Allied and Complementary Medicine Database; Applied Social Science Index and Abstracts; The Cumulative Index to Nursing & Allied Health; Health Management Information Consortium; Science Citation Index Expanded; Social Sciences Citation Index and The Cochrane Library. The bibliographies of review articles and chapters were hand-searched to obtain further references (Agrawal et al. 2004; Dozier et al. 2008; Kobak et al. 2006; van IJzendoorn & Bakermans-Kranenburg 1996).

2.2.2: Study selection

Inclusion criteria: Attachment instruments needed to have adequate psychometric properties (Stein et al. 1998). As the research question involved a consideration of attachment as an organising construct for the development of psychopathology in adulthood only those studies using attachment instruments arising from this conceptual framework were included i.e. those using instruments that operationalize components of the attachment system in adults with respect to childhood and past attachments. Consequently studies that used the AAI (George, Kaplan, & Main 1984, 1985, 1996; Main & Goldwyn 1994, 1998; Main, Goldwyn, & Hesse 2003; Hesse 2008) or validated AAI derivatives such as the AAI Q-set (Kobak et al. 1993) were included. Studies of psychiatric populations were included, irrespective of their design, as long as they reported empirical data. All European language papers were included.

Exclusion criteria: Studies where less than 50% of the individuals were described as not having a psychiatric diagnosis were excluded as were case series studies with less than five participants. As the AAI has limitations when used in younger adolescent populations (Allen 2008; Lyons-Ruth & Jacobitz 2008) studies where the average age of the participants was less than 15 years were excluded.

2.2.3: Data extraction

The numbers of subjects and controls in each categorical attachment classification were extracted from studies that used the AAI. For studies using attachment measures that yielded continuous data, for example AAI Q-set, the means and standard deviations were extracted. For studies where the data were incomplete the authors were contacted with a request for the relevant information. In papers that reported means alone, standard deviations were estimated by interpolation, from a regression of ln(s.d.) on ln(mean) (Newton-Howes, Tyrer, & Johnson 2006). If there were still insufficient data after these approaches the study was excluded.

2.2.4: Data analysis and heterogeneity

Data were entered into RevMan version 4.2 (Cochrane Collaboration, Oxford, UK; see http//:www.cc-ims.net/RevMan/current.html) and meta-analyses were performed. Dichotomous data were analysed by calculating the odds ratio and the 95% confidence intervals for each trial using the more conservative random-effects model that takes heterogeneity between studies into account and permits generalization to the population. Where there was more than one study for comparison the odds ratios were pooled and a summary odds ratio and 95% confidence intervals calculated. The combined probability was calculated as a Z score and as a probability P. Statistical heterogeneity between studies was assessed using the Chi-squared test with its corresponding *P* value, the I^2 test, as well as a visual inspection of the forest plots. The I^2 quantity describes the proportion of total variation in study estimates that is due to heterogeneity rather than chance. The I^2 quantity is not inherently dependent on the number of trials included in the meta-analysis and can be directly compared between meta-analyses (Higgins et al. 2003). Where there was significant heterogeneity within the meta-analysis a sensitivity analysis was performed to see if homogeneity could be achieved. All data were entered into RevMan in such a way that an odds ratio below 1 indicated that the non-pathological condition was favoured in the comparison group.

Continuous data were analysed by calculating the weighted mean difference (WMD) and the 95% confidence intervals for each trial using the random-effects model. Where there was more than one study for comparison the WMDs were pooled and a summary WMD and 95% confidence intervals calculated (see Table 2.1 for all summary statistics of the meta-analyses).

Where the combined probability was statistically significant, a Fail-safe Number and the Critical Number of non-significant studies that are likely to exist was calculated. The Fail-safe N is the number of non-significant studies which would be needed to be added to the meta-analysis to render it non-robust to the file-drawer problem. The Critical and Fail-safe N's were calculated according to the formulae provided by (Clark-Carter 1997).

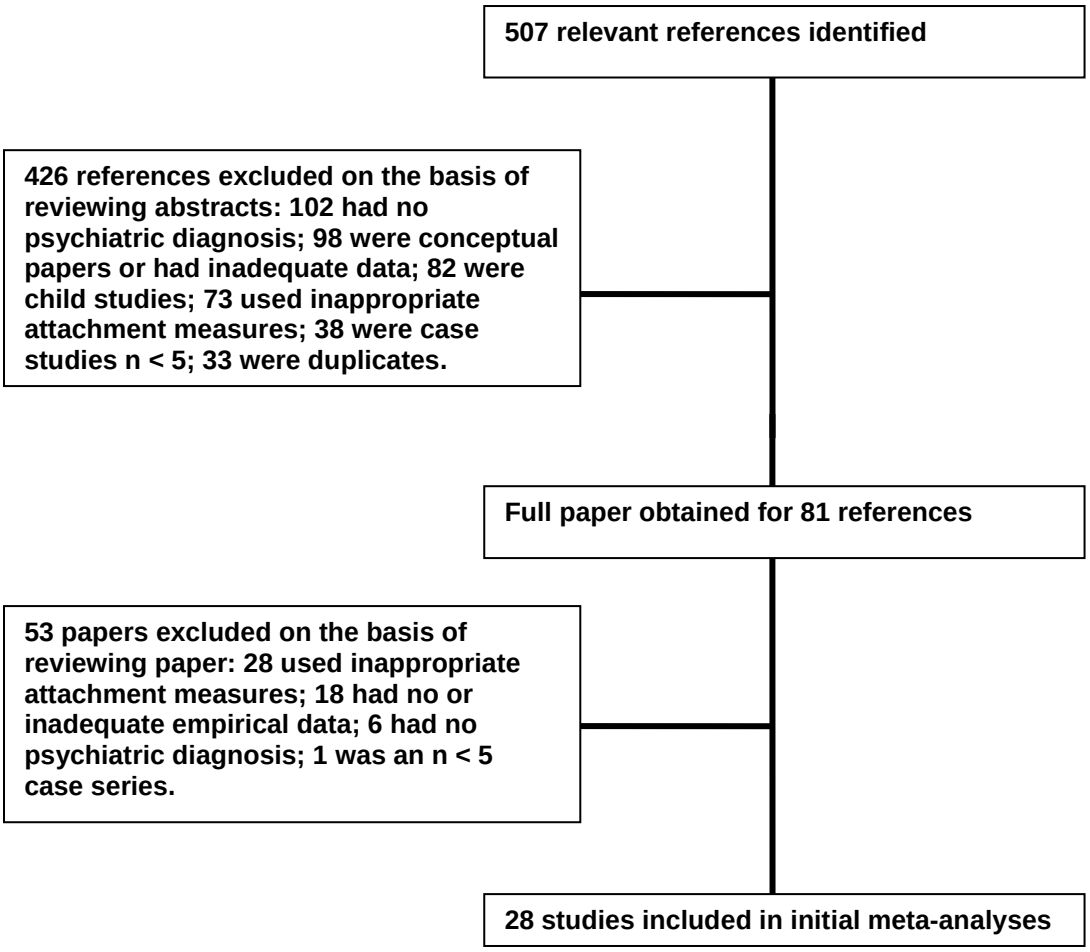
A separate meta-analysis was conducted for each attachment instrument where data allowed according to the attachment classifications yielded by each instrument. Meta-analyses for the AAI were undertaken according to the classifications described in chapter 1 (section 1.4.3), namely; F v non-F; Ds v E; non-U v U and non-CC v CC attachment categories. Meta-analyses for the Q-set methodology used the two prototypes, secure-insecure and avoidance-preoccupation. For studies where there was no control group, a comparison group from a study with a similar population was used. Where there was a choice of control groups the most conservative control population was chosen; where this was not obvious the control groups were aggregated.

2.3: Results

2.3.1: Search results

The principal search of databases and hand searching produced 507 references, 497 from computerised searching and 10 from hand searching. Figure 2.1 summarizes the search results and selection of studies. All references were assessed by application of the study criteria to abstracts and titles of articles. Sixty percent of abstracts were independently assessed by two reviewers; inter-rater reliability was in excess of 95%. Twenty eight studies were included in the meta-analysis. Data were extracted from the remaining papers according to a standardised format. Two raters extracted data jointly from 25% of the papers with 100% inter-rater reliability for data extraction.

Figure 2.1: Flow chart summarizing the search results



2.3.2: Description of studies

Of the 28 studies included in the initial meta-analyses 24 rated the AAI using the original Main and Goldwyn rating system while 4 used the AAI Q-set. Twenty-one were case-control studies; 6 were case series and 1 was a cohort study. The characteristics of included studies are shown in Table 1 in Appendix A. Three studies presented data on adolescents where the mean age of the participants was 16; all of which were eventually excluded from the final meta-analyses leaving a total of 25 studies which were included in the final meta-analyses. Of these 25 studies 17 studies were on mentally ill groups of individuals while 10 studies presented data on patients with a personality disorder. Two studies out of the 25 included 2 sub groups; one subgroup had a diagnosis of mental illness while the other had a diagnosis of personality-disorder; hence the total number of groups of patients is 2 more than the 25 number of total studies. Within the mentally ill group of studies (n = 17) the Main Goldwyn

AAI rating was used for 13 and the Q-set rating system for 4. For all meta-analyses the Fail-safe N was larger than the Critical Number.

2.3.3: Attachment status

2.3.3.1: All studies: The initial meta-analysis of all 24 AAI studies rated using the Main Goldwyn system showed that significantly fewer individuals with psychiatric disorders compared with controls were secure in their attachment status (OR = 0.20, 95% CI = 0.13 - 0.30). Although no particular type of insecure classification was favoured between either the Ds or E categories (OR = 0.69, 95% CI = 0.42 – 1.13). Fewer clinical subjects than controls were non-CC in their classification (OR for non-CC = 0.43, 95% CI = 0.21 - 0.87). In other words the CC classification was over-represented in individuals with a psychiatric disorder. Clinical subjects were less likely than controls to be resolved (OR = 0.19, 95% CI = 0.10 - 0.36). However all comparisons lacked homogeneity as evidenced by moderate to high I^2 values. Higgins (Higgins et al. 2003) suggest that values of 25%; 50% and 75% can be described as low, moderate and high respectively. Four studies used Q-set analysis and as all these studies involved clinical individuals who had a diagnosis of psychosis the results are reported in the psychosis subgroup section.

As the AAI has limitations when used in adolescent samples (Allen 2008; Lyons-Ruth & Jacobitz 2008), studies where the average age of the participants was less than 15 were excluded. Of the included studies the average age of the participants in 3 studies was greater than 15 although they remained in the adolescent range with a mean age of 15.7 years (Adam, Sheldon-Keller, & West 1996), through to 16.4 years (Rosenstein & Horowitz 1996); to 18.8 years (Schleiffer & Muller 2002). As the initial meta-analyses lacked homogeneity a sensitivity analysis of the three adolescent studies was undertaken. Each had a high level of heterogeneity (OR = 0.48, 95% CI = 0.13 - 1.72) for F v non-F; (OR = 0.41, 95% CI = 0.09 - 1.76) for Ds v E and (OR = 1.5, 95% CI = 0.26 - 8.67) for U v non-U. Additionally no one study appeared to account for the heterogeneity (see Appendix B for forest plots). Re-analysis of the data, excluding the 3 adolescent studies, revealed a more homogenous sample with little variation in effect size compared to the earlier meta-analyses.

Please see Table 2.1 for summary statistics for the meta-analyses in adults. This table contains the summary statistics on the 21 studies that used the Main Goldwyn system for rating the AAI and the 4 studies that rated the AAI using the Q-set system. It excludes the 3 studies conducted in adolescents (details of these can be found in Table 1 Appendix A).

Table 2.1: Summary statistics for meta-analyses of AAI studies in adults

	Number of studies	Number of subjects (controls)	Odds ratio (95% CI)	Overall effect size (Z)	Combined P	Heterogeneity
All AAI studies rated using the Main Goldwyn system (n = 21)						
F v non-F	21	624 (1048)	0.18 (0.13 – 0.25)	9.80	P < 0.00001	χ^2 = 25.92; *P* = 0.17; I^2 = 22.8%
Ds v E	21	282 (404)	0.83 (0.52 - 1.13)	0.76	P = 0.45	χ^2 = 26.70; *P* = 0.14; I^2 = 25.1%
Non-CC v CC	8	309 (412)	0.42 (0.23 - 0.75)	2.91	P = 0.004	χ^2 = 10.25; *P* = 0.18; I^2 = 31.7%
Non-U v U	18	577 (936)	0.19 (0.10 - 0.36)	4.97	P = 0.00001	χ^2 = 81.39; *P* < 0.00001; I^2 = 79.1%
All mental illness studies rated using the Main Goldwyn system (n = 13)*						
F v non-F	13	421 (586)	0.21 (0.14 - 0.30)	8.54	P < 0.00001	χ^2 = 14.44; *P* = 0.27; I^2 = 16.9%
Ds v E	13	189 (211)	0.83 (0.49 - 1.41)	0.69	P = 0.49	χ^2 = 13.51 *P* = 0.33 ; I^2 = 11.2%
Non-CC v CC	3	109 (132)	0.53 (0.12 - 2.37)	0.84	P = 0.40	χ^2 = 5.93; *P* = 0.05 ; I^2 = 66.2%
Non-U v U	10	374 (474)	0.17 (0.07 - 0.44)	3.67	P = 0.0002	χ^2 = 49.44; *P* < 0.00001; I^2 = 81.8%
Non-U v U; 4-way (F v Ds v E v U) comparison only	5	228 (271)	0.13 (0.04 - 0.37)	3.76	P = 0.0002	χ^2 = 17.56; P = 0.002; I^2 = 77.2%
Depression subgroup (n = 5)						
F v non-F	5	191 (235)	0.22 (0.12 - 0.42)	4.64	P < 0.00001	χ^2 = 6.78; *P* = 0.15; I^2 = 41.0%
Ds v E	5	49 (78)	1.32 (0.48 - 3.62)	0.53	P = 0.60	χ^2 = 5.17; *P* = 0.27; I^2 = 22.7%
Non U v U	4	177 (216)	0.13 (0.02 - 0.66)	2.45	P = 0.01	χ^2 = 20.10; *P* = 0.0002; I^2 = 85.1%
Eating disorder subgroup (n = 4)						
F v non-F	4	59 (189)	0.23 (0.07 - 0.76)	2.42	P = 0.02	χ^2 = 4.61; *P* = 0.20; I^2 = 34.9%
Ds v E	4	38 (80)	1.76 (0.60 - 5.15)	1.04	P = 0.30	χ^2 = 2.27; *P* = 0.52; I^2 = 0%

Table 2.1: Summary statistics for meta-analyses in adults contd

All personality disorder (pd) studies rated using the Main Goldwyn system (n = 10)*						
F v non-F	10	300 (591)	0.15 (0.08 - 0.30)	5.38	P < 0.00001	χ^2 = 15.85; *P* = 0.07; I^2 = 43.2%
Ds v E	10	114 (241)	1.03 (0.44 - 2.42)	0.07	P = 0.94	χ^2 = 18.61; *P* = 0.03; I^2 = 51.6%
Non-CC v CC	6	222 (324)	0.32 (0.19 - 0.54)	4.32	P < 0.0001	χ^2 = 4.99; *P* = 0.42; I^2 = 0%
Non-U v U	10	307 (591)	0.19 (0.07 - 0.48)	3.51	P = 0.0004	χ^2 = 50.24; *P* < 0.00001; I^2 = 82.1%
Non-U v U; 4-way (F v Ds v E v U) comparison only	4	140 (270)	0.04 (0.02 - 0.08)	9.33	P < 0.00001	χ^2 = 2.16 ; P = 0.54 ; I^2 = 0%
Non-violent pd subgroup (n = 6)						
F v non-F	6	158 (287)	0.10 (0.04 - 0.21)	5.81	P < 0.00001	χ^2 = 6.12 ; P = 0.29 ; I^2 = 18.3%
Ds v E	6	53 (101)	0.46 (0.19 - 1.08)	1.79	P = 0.07	χ^2 = 4.24 ; P = 0.542; I^2 = 0%
Non-CC v CC	2	80 (116)	0.36 (0.11- 1.15)	1.73	P = 0.08	χ^2 = 0.20; P = 0.68; I^2 = 0%
Non-U v U	6	165 (287)	0.05 (0.03 - 0.09)	9.70	P < 0.00001	χ^2 = 4.16; P = 0.53; I^2 = 0%
Violent pd subgroup (n = 4)						
F v non-F	4	142 (304)	0.23 (0.08 - 0.70)	2.58	P = 0.01	χ^2 = 6.65; P = 0.08; I^2 = 54.9%
Ds v E	4	61 (140)	2.65 (0.70 - 9.98)	1.44	P = 0.15	χ^2 = 9.34; P = 0.03; I^2 = 67.9%
Non-CC v CC	4	142 (208)	0.33 (0.16 - 0.70)	2.89	P = 0.004	χ^2 = 4.75; P = 0.19; I^2 = 36.9%
Non-U v U	4	142 (304)	0.62 (0.40 - 0.98)	2.03	P = 0.04	χ^2 = 2.15; P = 0.54; I^2 = 0%
AAI studies rated using the Q-set rating system; all are mental illness studies (n = 4)						
Psychosis subgroup			****WMD (95% CI)**			
Secure-insecure prototype	4	161 (115)	-0.63 (-0.78 - -0.49)	8.48	P < 0.00001	χ^2 = 8.16; P = 0.04; I^2 = 63.2%
Avoidance-preoccupation prototype	4	161 (115)	0.30 (0.09 - 0.51)	2.75	P = 0.006	χ^2 = 22.6; P < 0.0001; I^2 = 86.7%

***** The total number of mental illness studies rated using Main Goldwyn (n = 13) plus the total number of pd studies (n = 10) exceeds the total number of Main Goldwyn AAI studies (n = 21) as two studies contained both mi and pd patient groups.

****** Weighted mean difference

Of the 21 AAI studies conducted in adults significantly fewer individuals with psychiatric disorders were secure in their attachment status (OR = 0.18, 95% CI = 0.13 - 0.25) compared to controls (see Figure 2.2). Although no particular type of insecure classification was favoured between either Ds or E attachment classifications (OR = 0.83, 95% CI = 0.52 - 1.33) (see Figure 2.3). Fewer clinical subjects than controls were non-CC in their classification (OR for non-CC = 0.42, 95% CI = 0.23 - 0.75). In other words the CC classification was over-represented in individuals with a psychiatric disorder (see Figure 2.4). Psychiatric subjects were more likely than controls to be U with respect to attachment status, although this was a highly heterogeneous group (OR = 0.19, 95% CI = 0.10 - 0.36) (see Figure 2.5).

Figure 2.2: Forest plot of all AAI studies in adults; F v non - F attachment

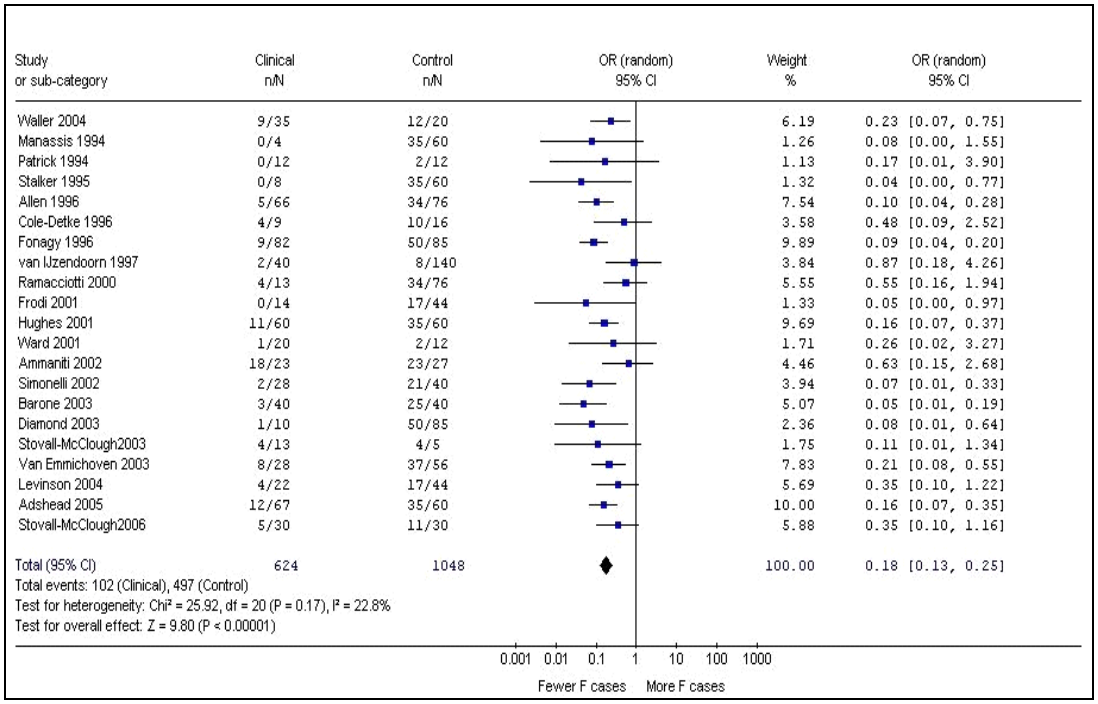


Figure 2.3: Forest plot of all AAI studies in adults; Ds v E attachment

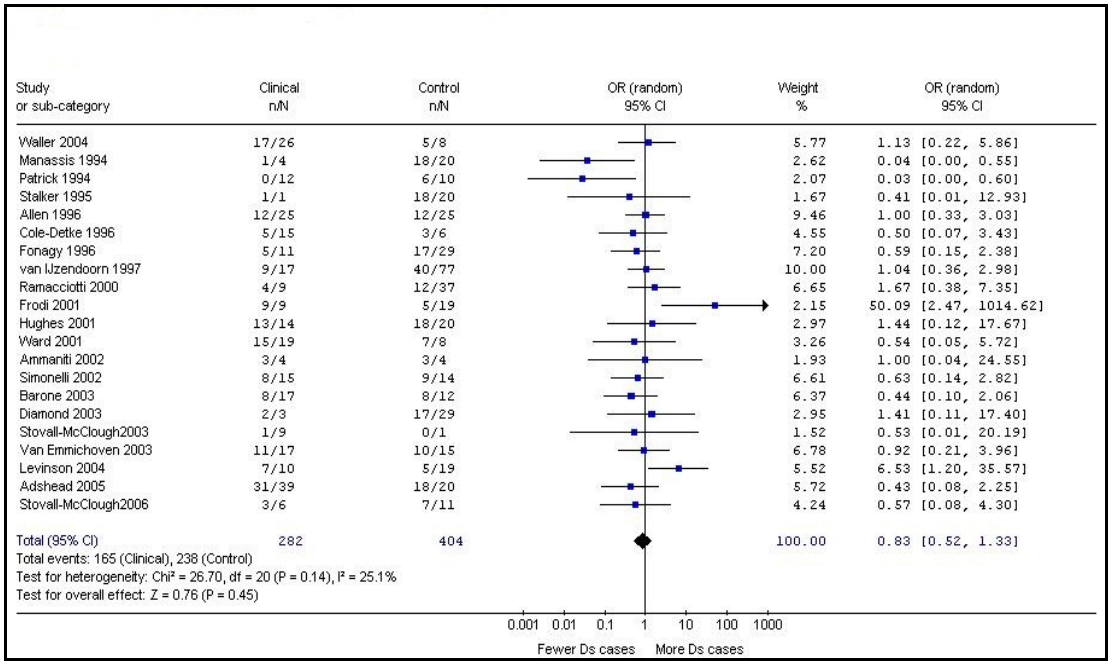


Figure 2.4: Forest plot of all AAI studies in adults; CC v non - CC attachment

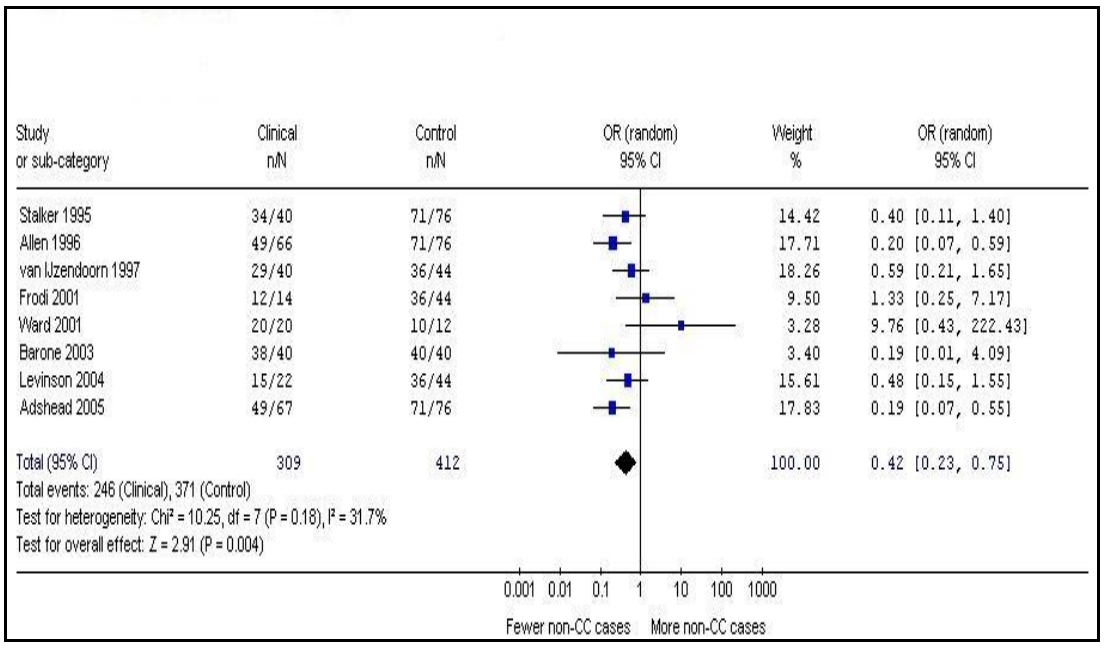
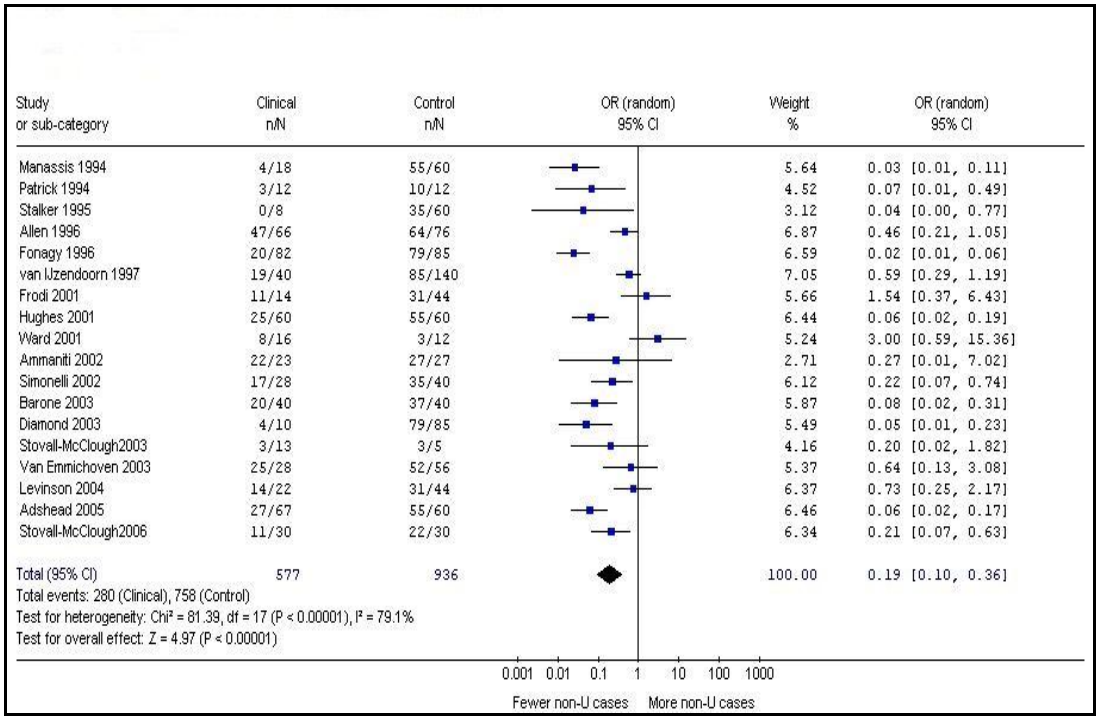


Figure 2.5: Forest plot of all AAI studies in adults; U v non - U attachment



As the research question aimed to examine whether specific types of attachment insecurity are associated with particular psychiatric disorders the studies were grouped diagnostically. This yielded two main subgroups; mental illness and pd. Of the 17 mental illness studies, 13 used the AAI while 4 the Q-set. All the studies of patients with a diagnosis of pd used the AAI. The mental illness group sub-divided into studies of individuals with psychosis, depression and eating disorder. There was only one study of patients with a diagnosis of anxiety disorder and one where the participants had a diagnosis of post traumatic stress disorder (PTSD). Where there was a mixed clinical population, papers were allocated to a group based on the condition that accounted for over 50% of the study population.

2.3.3.2: Mental illness: Although, as a group, mentally ill individuals were significantly less likely to be rated as securely attached on the AAI compared with controls (OR 0.21, 95% CI = 0.14 - 0.30) a diagnosis of mental illness did not favour having either a Ds or E attachment classification (OR 0.83, 95% CI = 0.49 - 1.41). Examination of the 3 studies of mentally ill adults that reported on the CC classification revealed a CC classification was not favoured in either the mentally ill or control group, although this group was highly heterogeneous (OR 0.53, 95% CI = 0.12 – 2.37).

A meta-analysis was also conducted to see whether the presence of mental illness was associated with U states of mind. This analysis was complicated by the fact that data on U

status were presented a variety of ways across the relevant studies (see Appendix A, Table 1). Consequently two analyses were undertaken one for a dichotomous non-U v U comparison and one including studies were U data were presented as part of a 4-way attachment classification (F v Ds v E v U). In both analyses mentally ill individuals were significantly less likely to be resolved in their attachment status than controls (OR 0.17, 95% CI = 0.07 - 0.44) for non-U v U and (OR 0.17, 95% CI = 0.07 - 0.44) for non-U v U (4-way). However both analyses were highly heterogeneous (see Table 2.1). In order to see if a specific attachment status was significantly associated with a particular diagnosis of mental illness the data were grouped further (see Appendix C for all forest plots).

2.3.3.3: Depression subgroup: Analysis of the 5 studies that presented data on adults with a diagnosis of depression showed that depressed patients were significantly more likely to have insecure attachment status compared with controls (OR 0.22, 95% CI = 0.12 - 0.42). However, there was no difference in the type of insecure attachment between the groups. Adults with depression were more likely to be U in their attachment status but the analysis was highly heterogeneous (OR 0.13, 95% CI = 0.02 - 0.66) (see appendix D for forest plots).

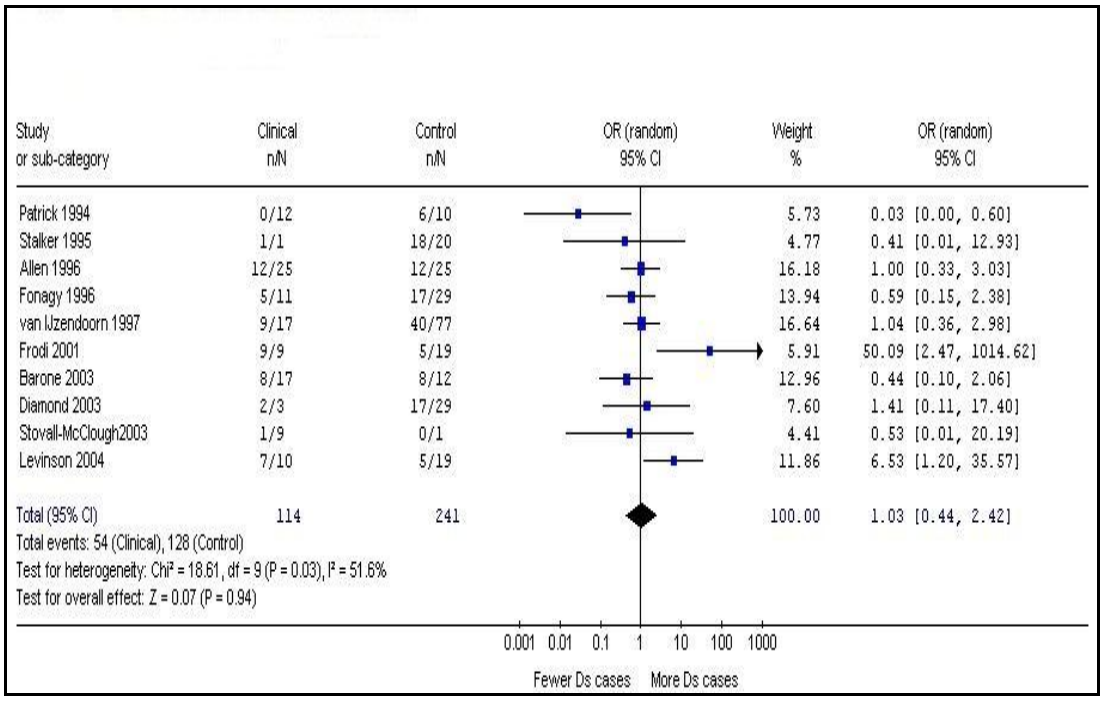
2.3.3.4: Eating disorder subgroup: Patients with eating disorders were significantly more likely to be rated as insecure in their attachment status compared with controls (OR = 0.23, 95% CI 0.07 - 0.76) but demonstrated no difference in the type of insecure attachment (see appendix E for forest plots). There were too few studies to undertake a meta-analysis for U and CC attachment states of mind.

2.3.3.5: Psychosis subgroup: Of the 4 studies which examined the attachment status of patients with a psychotic illness, all used the AAI Q-set. Individuals with psychosis were significantly less secure (WMD -.63, 95% CI = -.78 - -.49) and significantly more avoidant than the controls (WMD .30, 95% CI = .09 -.51) although both analyses were highly heterogeneous (see appendix F for forest plots).

2.3.3.6: Personality disorder: The majority of individuals in 7 of the 10 studies had a diagnosis of BPD. In 2 studies the majority of individuals had a diagnosis of ASPD (van IJzendoorn et al. 1997; Frodi et al. 2001) while Allen's study (Allen, Hauser, & Borman-Spurrell 1996) considered adults diagnosed with conduct problems in adolescence.

As a group, individuals with a diagnosis of personality disorder were significantly less likely to be rated as being secure on the AAI compared with controls (OR 0.15, 95% CI = 0.08 - 0.30), for a sample with low to moderate heterogeneity (see appendix G for all forest plots of pd analysis). Comparison of insecure attachment styles for the whole group revealed that no specific insecure attachment style, either E or Ds, was favoured (OR 1.03, 95% CI = 0.44 - 2.42) in a moderately heterogeneous group (see Figure 2.6).

Figure 2.6: Forest plot of AAI studies in adults; Ds v E attachment in pd group



Six studies reported CC attachment. There were significantly more patients with a CC attachment status in the pd population compared with controls (OR 0.32, 95% CI = 0.19 - 0.54) in a highly homogenous group of studies. Comparison of U attachment yielded significantly more U cases (OR = 0.19, 95% CI = 0.07 - 0.48) in the pd group, but the sample was highly heterogeneous. As there was variation in how U data were presented, to try and improve heterogeneity, the 4 studies that presented U data as part of a 4-way (F v Ds v E v U) comparison were analysed as a subgroup. This subgroup analysis reduced heterogeneity to I^2 = 0% while revealing that pd patients were still significantly more likely to be U compared with a control group (OR = 0.04, 95% CI = 0.02 - 0.08)**.**

The pd studies appeared to comprise of two distinct patient groups; studies involving incarcerated violent patients (IJzendoorn et al. 1997; Frodi et al. 2001; Levinson & Fonagy 2004) or had committed criminal offences (Allen, Hauser, & Borman-Spurrell 1996) and studies involving non-violent pd individuals. Further meta-analyses were conducted to examine the question as to whether, as a group, the violent pd patients differed in attachment classifications from their non-violent counterparts. Within the violent pd group there was an over-representation of individuals with insecure attachment classifications compared to controls (OR = 0.23, 95% CI = 0.08 - 0.70). This was also the case in the non-violent pd group, (OR = 0.10, 95% CI = 0.04 - 0.21). Violent pd patients were more likely to have a CC attachment (OR = 0.33, 95% CI = 0.16 - 0.70) compared to controls whereas CC was not over-represented in the non-violent group but CC was only reported in 2 studies (OR

= 0.36, 95% CI = 0.11 - 1.15)**.** Although violent pd patients were more likely to have U states of mind compared with controls, this just reached significance in the violent subgroup (OR = 0.62, 95% CI = 0.4 - 0.98), but was highly significant in the non-violent pd group (OR = 0.05, 95% CI = 0.03 - 0.09).

Although, not reaching significance, there was a trend for the non-violent personality disordered group to contain more patients with a Preoccupied (E) attachment status in the clinical group (OR = 0.46, 95% CI = 0.19 - 1.08). However this was not the case in the violent personality-disordered group where no specific insecure attachment status was favoured (see Figure 2.7 and 2.8 respectively).

Figure 2.7: Forest plot of AAI studies in adults; Ds v E attachment in the non-violent pd subgroup

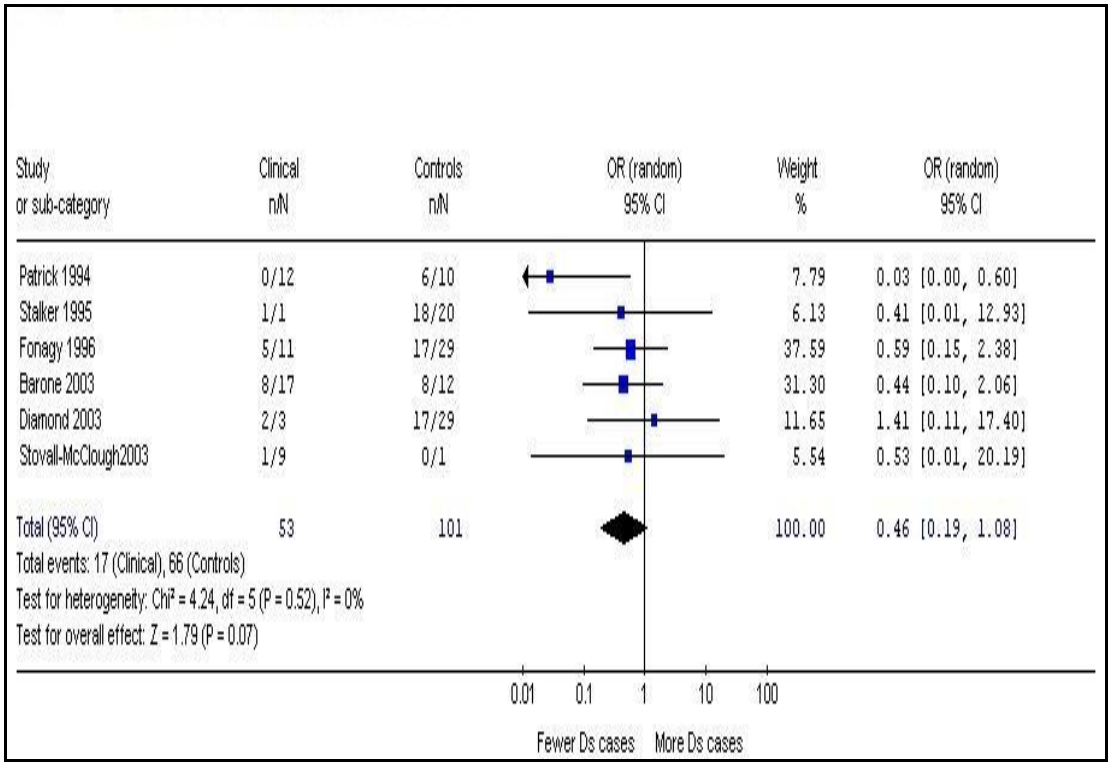
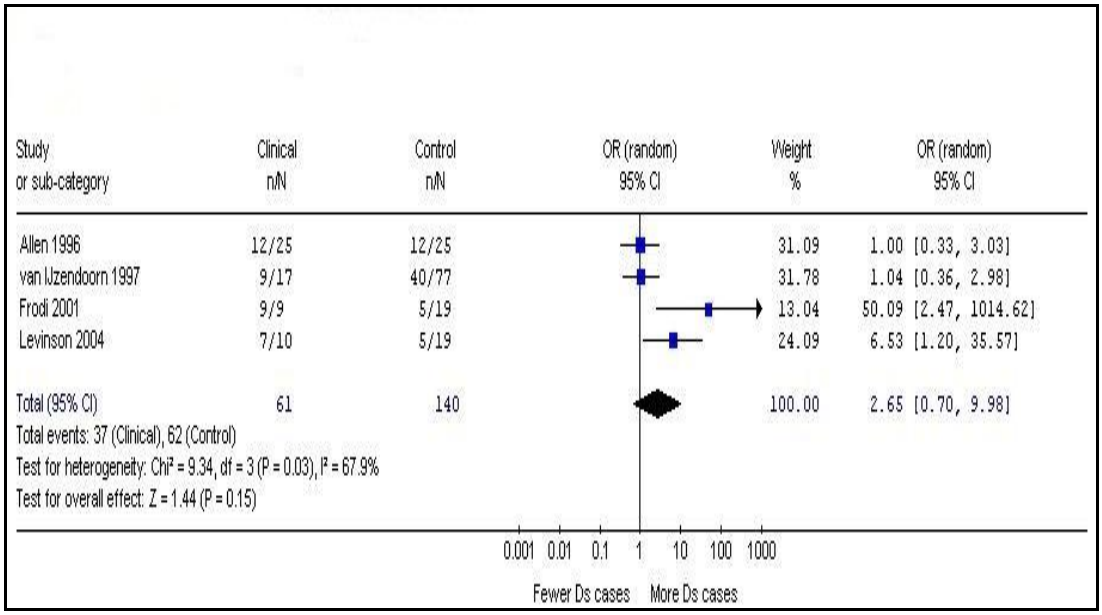


Figure 2.8: Forest plot of AAI studies; Ds v E attachment in the violent pd subgroup



2.4: Conclusions

The main conclusion which can be drawn from these meta-analyses is that although insecure attachment is linked with an increased likelihood of the presence of mental disorder, there are few significant associations between specific attachment states of mind and particular psychiatric disorders in adulthood. This result suggests that insecure attachment acts as a general vulnerability factor for the development of mental disorder rather than being associated with particular psychiatric disorders.

2.5: Limitations

The limitations of these meta-analyses fall into two main areas; its scope and the deficits in the included studies.

Limitations of scope: Studies of attachment and psychopathology in adulthood have assessed attachment in several different ways. These meta-analyses focussed on only one of these. Another important stream of attachment research developed from social psychology. Hazan and Shaver proposed that romantic love could be conceptualized as an attachment process (Hazan & Shaver 1987). Several self-report and interview attachment measures have been developed from the social cognition tradition (Bartholomew & Horowitz 1991; Feeney, Noller, & Hanrahan 1994). These conceptualize attachment as an interpersonal process, as oppose to the developmental psychology perspective, from which the AAI originated, which conceptualizes attachment as an intra-psychic process. As social psychology and developmental psychology conceptualize attachment differently the

measures arising from these traditions measure different constructs of attachment and therefore could not be faithfully combined in these meta-analyses. As it is proposed that attachment acts as an intra-psychic filter, the disruption of which predisposes the individual to an abnormal developmental trajectory and the emergence of psychopathology in adulthood, the systematic search was limited to measures that operationalize components of the attachment system in adults with respect to childhood and past attachments.

Limitations of included studies: 6 of the 21 included AAI studies did not have a control group necessitating using a comparison group from a study with a similar population. Although proxy control groups were matched as well as possible to the study population and the most conservative group used, this process resulted in the comparison group from some studies being used more than once which may have introduced bias. Of those studies that did have a control group not all potential confounding variables were controlled for. Only 7 studies controlled for age, gender and socio-economic status; a further 3 studies controlled for two of these variables with an additional study just controlling for one variable.

Another limitation arises out of the potential heterogeneity of the psychiatric groups within studies and the quality of the information available regarding diagnostic mix and attachment status. Some studies, which included patients from different diagnostic groups such as personality disorder, depression and eating disorder (Fonagy et al. 1996; Levinson & Fonagy 2004), provided a break down of attachment status with respect to their diagnostic mix; some did not (Adshead & Bluglass 2005). Studies where the attachment status of different diagnostic groups could not be de-aggregated were allocated to a diagnostic subgroup for meta-analysis on the basis of the most frequent diagnosis in the sample. Thus there was undoubtedly diagnostic heterogeneity in some subgroups.

An additional limitation of the studies was that few commented on co-morbidity between Axis I and Axis II disorders within the diagnostic groups of their participants. For example, of the 10 studies where the participants had a diagnosis of personality disorder only 4 studies looked at whether these individuals also had a mental illness diagnosis (Fonagy et al 1996; Barone 2003; Stovall-McClough & Cloitre 2003; Levinson & Fonagy 2004). The extent of diagnostic overlap varied within these studies however none of the studies included patients with a diagnosis of psychosis. In Fonagy et al's group the patients with a diagnosis of BPD were more likely than individuals with other personality disorder diagnoses to have a co-morbid Axis I diagnosis. In Barone's group 10 of her 40 patients had an Axis I disorder; mainly affective or anxiety disorders but all of the acute symptoms were in remission at the time of the study. In Stovall-McClough & Cloitre group all the 13 women had co-existing diagnosis of Post Traumatic Stress Disorder (PTSD). Levinson and Fonagy's prison sample, not unexpectedly, had the highest level of diagnostic overlap. All of the prisoners who had a diagnosis of personality disorder also had an Axis I diagnosis (either depression; anxiety or

substance abuse). The other 6 studies did not examine whether their personality-disordered patients also had an Axis I disorder. Of the 13 studies using mentally ill patients only one (Adshead & Bluglass 2005) commented on whether there was a co-existing Axis II disorder. A further limitation, which may have introduced heterogeneity, related to the diagnostic procedures used in the studies; of the 21 studies which used the AAI only 12 diagnosed psychiatric disorder against standardized diagnostic criteria. The issue of co-morbidity is relevant for two reasons which are discussed below. First, whether co-existing mental illness could have disrupted the attachment measure? Second, whether the symptoms of mental illness could have disrupted the attachment system?

For some meta-analyses homogeneity could not be achieved. Sensitivity analyses were performed and where a reason for heterogeneity could be found and where there was a coherent rationale the particular studies were removed. The results of the meta-analyses are reported with and without the removed studies if their removal altered the effect size or degree of homogeneity of the remaining studies. Despite this approach, homogeneity could not always be achieved. Factors contributing to heterogeneity may have been the wide range of differing sample sizes, small numbers of subjects in each category and the differing way in which U status was reported.

2.6: Discussion

Before discussing the conclusion that attachment insecurity acts as general vulnerability factor for the development of psychopathology, other possible explanations as to the paucity of associations found are examined. First, that the attachment measures may have been reactive to the presence of mental disorder; second, that the symptoms of psychopathology could generally disrupt attachment.

2.6.1: Were attachment measures reactive to the presence of mental disorder?

Failure to find associations between particular attachment states of mind and adult psychopathology may have occurred if the presence of mental disorder disrupted the attachment measure. The AAI and Q-set measures used were developed using empirical data from non-clinical populations (Kobak et al. 1993; Hesse 2008). It is only in the last two decades that attachment research methodology has been applied to psychiatric populations including violent forensic patients (Dozier 1990; Sack et al. 1996; Tonin 2004). As less is known about how attachment measures behave psychometrically in these populations the possibility remains that the individual's psychopathology so colours the AAI narrative as to influence the coding system and ultimately the AAI classification. Such reactivity to psychopathology could then account for the lack of association between particular insecure

attachment classifications and specific psychiatric diagnoses; furthermore any such association might simply be an artefact of measurement.

The AAI is a robust instrument which meets stringent psychometric criteria. Its demonstrated reliability (Bakermans-Kranenburg & van IJzendoorn 1993; Benoit & Parker 1994; van IJzendoorn, Juffer, & Duyvesteyn 1995; Crowell et al. 1996) and discriminant (Bakermans-Kranenburg & van IJzendoorn 1993; Sagi et al. 1994; Crowell et al. 1996) and predictive validity (Crowell & Feldman 1988; van IJzendoorn, Juffer, & Duyvesteyn 1995; Steele, Steele, & Fonagy 1996) is supporting evidence against the proposal that the AAI coding system is disrupted by psychopathology. Furthermore, most of the studies (68%) in these meta-analyses provided reliability data for their AAI raters who had passed a stringent reliability test; 7 studies had dual raters with a Kappa greater than .7. Cross validating the AAI with other attachment instruments is difficult due to the limited number of studies in psychiatric populations (Agrawal et al. 2004). However, data from studies in the meta-analysis which used the AAI Q-set (Dozier 1990; Dozier et al. 1991; Dozier, Cue, & Barnett 1994; Tyrrell et al. 1999) suggests similar attachment patterns to those obtained using the AAI in mentally ill populations. Evidence for the discriminant validity of the AAI comes from study designs where a parallel interview, designed to follow the structure and demands of the AAI without activating attachment representations, has been used (Crowell et al. 1996; Taylor, Target, & Charman 2008). Results in non-clinical samples demonstrated that classifications on the parallel interview did not overlap significantly with the AAI suggesting that the AAI was tapping into participants' attachment representations. In the light of the AAI's robust psychometrics it seems unlikely that mental disorder disrupted the AAI.

2.6.2: Could the symptoms of psychopathology disrupt the attachment system?

A further possibility as to why there were so few associations between attachment states and types of psychopathology would be that the AAI co-varied with the presence of psychopathology. In other words, if the direction of causality was that psychiatric illness disorganised the attachment system, in contrast to the proposed hypothesis, namely that insecure attachment acts as a vulnerability factor for the development of psychopathology. Without studies which measure attachment before, during and after an episode of illness it is difficult to support or refute the proposal that psychopathology changes attachment status. Although, not a psychiatric condition, it is recognized that the trauma of a bereavement may affect the U attachment status. The AAI manual (George, Kaplan, & Main 1984) cautions that a U classification is in doubt if the individual has suffered a loss by death in the previous year, suggesting that traumatic loss can temporarily disrupt thinking around the attachment figure, but that this aspect of attachment status can change. Similarly the attachment literature in individuals of low socio-economic status has demonstrated that attachment becomes more disordered at times of life stress (Weinfield, Sroufe, & Egeland 2000; Allen et

al. 2004). However, running counter to this hypothesis is the finding of no significant correspondence between U status and a diagnosis of PTSD in women who had suffered a stillbirth (Turton et al. 2004).

Further support refuting the hypothesis that psychiatric illness disorganises the attachment system comes from studies of children with autism or other forms of Pervasive Developmental Delay which demonstrate that these children could form secure attachments (Rogers, Ozonoff, & Maslin-Cole 1991; Dissanayake & Crossley 1996). In a sample of adults with autism, which used a parallel interview design, there was little evidence that autistic symptomatology disrupted attachment security (Taylor, Target, & Charman 2008).

If mental disorder disrupted attachment status it could be argued that the literature would show evidence of two further associations. First, that differing mental disorders would disrupt attachment status in differing ways. Second, that if psychopathology was disrupting attachment, an association with the severity of the disorder might be expected. With respect to the first expected association, the attachment literature spanning the life-cycle has, in general, failed to show associations between the type of psychiatric condition and specific attachment insecurity. In other words individuals' with anxiety and depressive illnesses do not show different attachment patterns. However, if an individual develops an anxiety or depressive disorder they are more likely to fall into the general category of attachment insecurity. With respect to the second proposal no studies were found which demonstrated an association between attachment insecurity and the severity of psychopathology, Overall there seemed little evidence to support the proposition that particular attachment patterns are integral to particular mental disorders beyond increasing an individual's vulnerability.

2.6.3: Insecure attachment states of mind as a vulnerability factor for the development of mental disorder

Although attachment insecurity is postulated to be a risk factor for the subsequent emergence of adult psychopathology (Kobak et al. 2006; Dozier et al. 2008) it was unclear from the literature as to whether it acts as a general mental health risk factor or whether specific types of attachment insecurity are associated with particular psychiatric disorders (van IJzendoorn & Bakermans-Kranenburg 1996). Meta-analytic treatment of the data were used to both increase power and to quantify the trends reported in the literature so that an overall view could be obtained as to the probability of particular attachment states of mind being associated with particular psychiatric disorders.

Considering all studies, unsurprisingly, individuals with a psychiatric disorder were sicker than controls, from an attachment perspective, as evidenced by higher levels of insecure attachment. The under-representation of secure attachment status and over-representation individuals with CC and U attachment states of mind in the psychiatric group replicate the

findings of other studies (van IJzendoorn et al. 1996; IJzendoorn et al. 1997). Although some literature has suggested that particular attachment categories are linked to specific forms of adult psychopathology this hypothesis has not been subjected to a quantitative methodological approach using meta-analyses. Although an appealing one, the meta-analyses reported lends little overall support to this hypothesis with respect to the global category of mental illness or specific diagnoses.

2.6.4: Insecure attachment states of mind, violence and psychiatric disorder

The literature on attachment in individuals who are violent to others, briefly outlined in Chapter 1 (section 1.4.5), presents as a mixed bag of studies conducted across populations some of whom have a concomitant psychiatric disorder. Focussing on those studies which investigated attachment in violent individuals with a psychiatric disorder this systematic review found that violent individuals fell within the sub-group of studies which investigated attachment in individuals with personality disorder.

Whilst these studies report an over-representation of individuals with insecure attachment representations in the violent personality-disordered group (van IJzendoorn et al. 1997; Allen et al. 2004) some are more specific and report an over-representation of individuals with a Dismissing (Ds) classification amongst the violent pd group (Frodi et al. 2001; Levinson & Fonagy 2004). Levinson and Fonagy found that more AAI's were coded Ds (36%) in the violent personality-disordered group of prisoners compared with their personality-disordered controls (0%). Furthermore these AAI's were classified at the extreme end of the dismissing spectrum. Although the possibility that Ds attachment status is over-represented in violent pd individuals compared to non-violent individuals is not supported in this meta-analysis it may well be that these results are inconclusive because of the limitations of the studies. In particular in the two studies that did not show an over-representation of Ds individuals in the violent personality-disordered individuals (van IJzendoorn et al. 1997; Allen et al. 2004) not all of the patients satisfied a diagnosis of personality disorder.

There is both theoretical and empirical evidence to suggest that disordered attachment representations may be linked to particular forms of violence. Bowlby (Bowlby 1944) first discussed violence as a disorder of attachment and care-giving systems. He postulated that the antisocial behaviour, in a subgroup of juveniles who he described as having an affectionless character, had its origins in early disorders of attachment, arising from the pathological effects of prolonged and early separation. Subsequent researchers have conceptualised the emergence of non-survival directed aggression and violence as a failure of normal human developmental processes to tame inherent aggression and that one of the important evolutionary purposes of attachment is the socialization of natural aggression (Fonagy 2003b). Researchers have demonstrated associations between insecure attachment status and violence and aggression in children and adults (George, Kaplan, &

Main 1996; Gilliom et al. 2002). Insecure attachment status also predicts the development of conduct disorder (cd) with its associated aggressive and violent behaviour (DeKlyen & Speltz 2001). Early-onset, cd is a risk factor for the development of adult antisocial behaviour (Moffitt 1993; Caspi et al. 2002) and is therefore a risk factor for the emergence of violent offending (Henry et al. 1996; Farrington 2003). In the Cambridge study Farrington (Farrington & West 1993; Shepherd & Farrington 1995; Farrington 2000) showed that some of the best predictors of subsequent offending in 8 year olds included conduct disorder, marital discord between the parents, harsh or erratic parental discipline and separation from a parent for reasons other than by death or illness. Within the context of early conduct disorder and delinquency, insecure attachment is probably best thought of as one of the predisposing factors towards later violence.

Individuals with Ds attachment states of mind are dismissing and derogating of attachment relationships and experiences or cut-off from these relationships. Although some of the literature suggests a possible specific association between Ds states of mind and violence a question remains as to whether there is a pathway that links a Ds attachment state of mind to violence?

Fonagy and colleagues (Fonagy 2003b; Levinson & Fonagy 2004), in their developmental model of violence, suggest that the early determinants of Ds states of mind, such as adverse environments, including disrupted or trauma infused attachment experiences, coupled with gene-environment interactions lead to a disavowal of attachment experiences and the capacity to think about them. The capacity to think about one's own mental state and the mental states of others has been referred to as mentalization (Fonagy & Target 1997) and is developed within the context of secure early attachment relationships with primary care givers. The capacity to mentalize i.e. to ascribe meaning to human behaviour, which ultimately shapes our understanding of others and ourselves, develops through experiencing our internal states being understood by another mind (Koren-Karie et al. 2002; Fonagy 2003b). Individuals whose early attachment experiences have included disruption and maltreatment, which have resulted in the development of Ds states of mind, are likely to have an impaired capacity to mentalize. They have either not had the continuity of early attachment relationships, in which the child can learn about mental states, or maltreatment from attachment figures has turned the child's mind away from taking the perspective of the other, as to do so would expose the child to the hostility in the abuser's mind which is directed towards him or her (Beeghly & Cicchetti 1994; Cicchetti 2004; O'Connor 2006). Conversely it is known that the formation of healthy attachment relationships acts as a protective factor and may diverts the child away from a pathway of violence and behavioural disturbance as, through such relationships, the child can learn about the other as another human being (Rutter et al. 2001; O'Connor et al. 2003; Fonagy 2003b).

The capacity to mentalize is thought to be a crucial inhibitory factor for interpersonal violence and it is hypothesised that a deficit in mentalizing (Fonagy et al. 1997; Frith & Frith 1999) is a critical mediating mechanism between Ds states of mind and violent behaviour as it might remove a critical inhibitory barrier to violence (Levinson & Fonagy 2004). Mentalization can be assessed by rating AAI transcripts for reflective function (rf) (Fonagy 1998). Reflective function assesses the individual's capacity to understand and interpret their own and others behaviour in terms of underlying mental states (Fonagy et al. 1991). This proposed pathway linking Ds states of mind, rf and violent behaviour is supported by some empirical research. Levinson and Fonagy (Levinson & Fonagy 2004) report poorer mentalization in a violent group of prisoners, whose offences were of inter-personal violence, compared with prisoners who had committed non-violent offences. They propose that the violent act may occur when a person with poor mentalization is in conflict and therefore resorts to physical action against the other. Although this model proposes that Ds attachment states of mind are an integral part of the mechanism that leads to some violent offending, other explanations need to be considered in which the association between Ds attachment status and violence is incidental.

First, that Ds states of mind arise as an adaptation to the forensic environment. In other words the nature of the environment in forensic institutions is such that in order to 'survive' offenders need to psychically cut off from and deactivate their attachment representations. Sadly there are several public inquiry reports that describe how harsh, unpredictable, perverse or intimidating regimes may come to predominate in either prisons or young offender institutions or in secure health care settings (Department of Health 1992; NHS London 2009). These reports document violent acts in institutions whose role is to care for and treat patients. These events are rare but the experience of being a patient in an environment where trusting relationships with other people cannot be guaranteed and where explosive violence can erupt may lead to a disavowal and devaluing of attachment as a psychological defence. An additional factor is that these environments are, by necessity, highly controlled and restrictive and patients remain in them for several years. The median length of stay for personality-disordered patients in high security is 5.3 years (Butwell et al. 2000). The experience of being a patient for this length of time may well propel the individual to develop a Ds state of mind as an adaptation to the forensic environment.

A second hypothesis, which would explain the literature findings of an over-representation of Ds states of mind in violent offenders, is that the extreme nature of the violent index offence (the crime that led to their admission to forensic care) may result in the individual's attachment representation becoming Ds in order to 'protect' the person's mind from the traumatic memory of the effects of their violence. Although no studies were found which assessed attachment in potential offenders pre and then post their index offence there are two strands of evidence which are indirectly supportive of this hypothesis.

First, exposure to events and environments which stress and emotionally overwhelm the individual can lead to an increase in insecure attachment status, particularly in adolescents (Allen et al. 2004); poverty, depression and emotional enmeshment have been identified as contributing to a shift in attachment status from security to insecurity (Allen 2008). Second, although it may seem counterintuitive to think of violent patients as being traumatized by their own violence, the act of homicide has been shown to lead to symptoms of PTSD in a group of mentally ill forensic patients (Gray et al. 2003; Evans & Mezey 2007). In these studies offenders' PTSD was specifically related to their index offence of homicide and patients were more likely to develop PTSD if their victim was a family member (Papanastassiou et al. 2004). In response to their PTSD symptoms offenders may turn their mind away from and limit the influence of attachment relationships in an attempt to free themselves from their intrusive PTSD thoughts about their offence or their victim. This Ds response is consistent with the finding that, in a sample of young violent offenders with intrusive memories of their offence, 20% of the sample reported some degree of amnesia for their offence (Evans & Mezey 2007) and that having emotional ties with the victim was associated with amnesia for the offence (Taylor & Kopelman 1984). Although the empirical studies lend some support to the proposal that the extreme nature of the violent offence may result in some offenders disavowing these experiences from their minds it remains an open question as to whether such disavowal extends to their current state of mind with respect to attachment relationships and experiences.

2.6.5: The research question

One hypothesis, drawn from the empirical and theoretical literature, is that Ds attachment representations, as assessed by the AAI, may be over-represented in a violent group of pd patients compared with a non-violent group and may well discriminate between these groups (Levinson & Fonagy 2004). However, whether a Ds attachment state of mind or indeed other insecure states of mind can predict change in violent behaviour or other outcomes such as inter-personal relating in personality-disordered patients is not answerable from either the literature or this meta-analysis as all of the studies, bar one, were cross sectional and assessed attachment status concurrently with psychopathology; consequently their design leaves the question of prediction unaddressed. Although there are plausible theoretical links and empirical evidence, outlined above, to support the model where a highly dismissing attachment state of mind is linked to violent behaviour in pd forensic patients, other explanations have been considered in which the association between Ds attachment status and violence in personality-disordered patients is incidental.

The question of whether attachment representations in violent personality-disordered offenders could predict change in their violent behaviour could be investigated through a

prospective study of these individuals. A key research question would be whether particular insecure attachment states of mind predict change in violent or aggressive behaviour or in other outcomes, such as psychiatric symptomatology or inter-personal relating, in violent personality-disordered patients.

Chapter 3: Attachment representations and their predictive validity in violent personality-disordered patients

3.1 Introduction and research aims

The systematic review revealed that studies of attachment in violent individuals, who also had a diagnosed psychiatric disorder, focussed on individuals with a diagnosis of personality disorder. The results of the meta-analyses showed that insecure attachment states of mind were over-represented in violent personality-disordered individuals however the results were inconclusive as to whether particular insecure attachment states of mind were associated with this group of individuals. Although there is both theoretical and empirical evidence to suggest that particular insecure attachment states of mind may be linked to violence and aggression in personality-disordered individuals (Frodi et al. 2001; Levinson & Fonagy 2004) the limitations of the studies to date may account for the failure to find specific relationships using meta-analytic methodology. This research has two main aims:

First, to investigate the distribution of attachment classifications in a group of violent personality-disordered patients and to examine the extent to which attachment states of mind and the perception of the parenting relationship, in such a group, are similar to or differ from those in a) studies of individuals with a diagnosis of personality disorder and b) studies of individuals with a diagnosis of personality disorder who have committed violent offences.

Second, to examine the extent to which the mental representation of attachment and the perception of the parenting relationship in a group of violent personality-disordered patients is predictive of change across a range of domains. In particular, whether attachment predicts outcome in terms of change in subsequent aggressive and violent behaviour as well as whether it predicts outcome in terms of pro-social behavioural change; changes in psychiatric symptomatology and interpersonal functioning and changes in cognitive attribution style with respect to the index offence.

These aims will be investigated by conducting a prospective study of attachment representations and perception of the parenting relationship in violent personality-disordered patients who are detained in Broadmoor Hospital, a high secure hospital. Attachment representations will be measured using the Adult Attachment Interview and the patients' perception of the qualities of their parental relationship will also be measured using the Parental Bonding Instrument (PBI) (Parker, Tupling, & Brown 1979). To date there are no longitudinal studies of this group investigating whether patients' attachment states of mind and the perceived qualities of their parental relationship are predictive of the course or outcome of inpatient treatment; although these exist for non-violent personality-disordered patients (Fonagy et al 1996). Drawing on the literature, Fonagy's study examined whether attachment classifications predicted a response to inpatient psychotherapeutic interventions in a

personality-disordered inpatient population. The proportion of patients who improved was highest in the group whose AAI attachment classification was Dismissing (Ds).

3.2 Research hypotheses

Main hypotheses

That:

1. Violent personality-disordered patients will show a significantly different distribution of attachment representations and the quality of their parenting relationship compared to non-violent personality-disordered individuals. In particular it is hypothesised that there will be an:
   - Under-representation of Secure (Autonomous) (F) attachment states of mind
   - Under-representation of Insecure-Preoccupied (E) attachment states of mind
   - Over-representation of Insecure-Dismissing (Ds) attachment states of mind
   - Over-representation of the Cannot Classify (CC) attachment state of mind
   - Over-representation of Unresolved (U) states of mind

   as assessed by the AAI in the Broadmoor patient group. In addition it is hypothesised that the Broadmoor patients will perceive their parental relationships as significantly less caring and more controlling, as measured by the PBI, compared to non-violent clinical groups.

2. That the mental representation of attachment and the perception of the parenting relationship, in a group of violent personality-disordered patients, will predict change in
   - Aggressive and violent behaviour
   - Pro-social behaviour
   - Psychiatric symptomatology
   - Interpersonal functioning
   - Cognitive attribution style with respect to their index offence

   in the Broadmoor patient group during the 16 months subsequent to their admission.

Subsidiary hypotheses

1. That the AAI will be a reliable attachment measure in this group of violent personality-disordered patients.
2. That the demographic and forensic characteristics of the patients included in the study will be typical of violent personality-disordered patients in Broadmoor Hospital.
3. That no associations are expected between attachment representations and the quality of the parental relationship and demographic variables such as age, gender, level of education, employment history and offending profiles.
4. That the Broadmoor patient group will have poorer reflective function (rf) scores, as rated from the AAI, compared with other psychiatric and personality-disordered individuals.

5. That scores on the reflective function (rf) scale (Fonagy et al. 1998; Fonagy & Target 1997), as rated from the AAI, will be significantly associated with the Dismissing and Unresolved AAI classifications and particular demographic variables such as IQ.

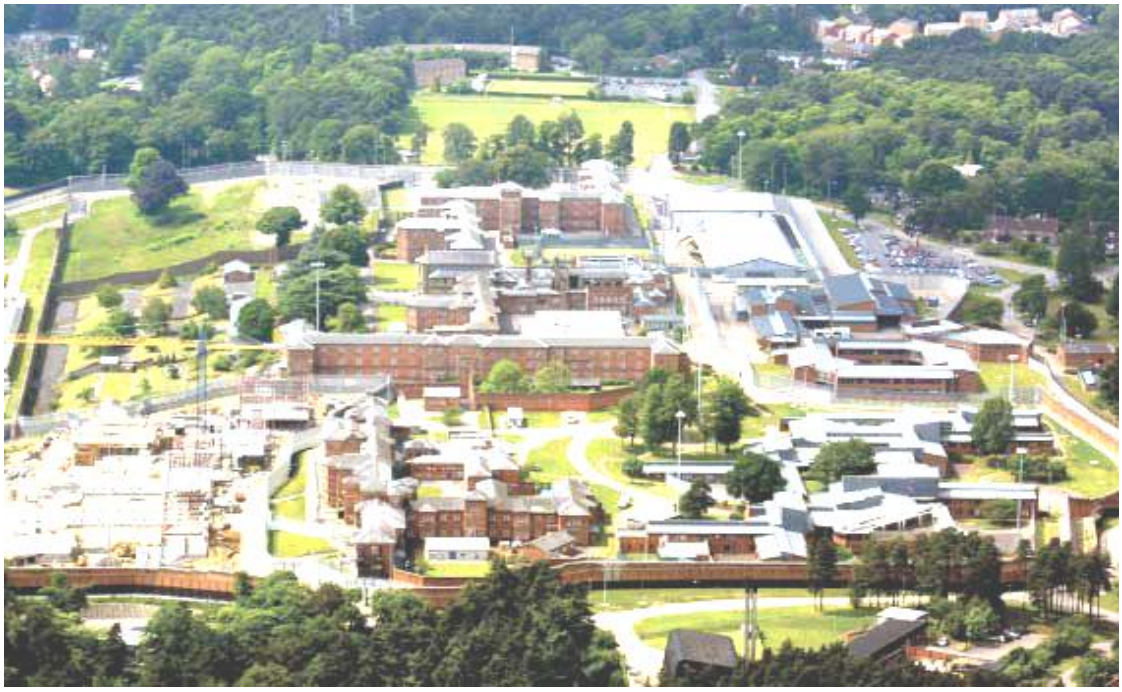
6. That the Broadmoor patient group will have experienced more adverse parental experiences compared with other psychiatric and personality-disordered individuals as assessed by the 'inferred parental experiences' scale scores of the AAI and by the PBI.

3.3 Methodology

3.3.1 Study design

This was a prospective study of a group of violent forensic patients detained in Broadmoor High Secure Hospital all of whom had a research diagnosis of personality disorder. Broadmoor Hospital (Figure 3.1) is one of three high secure hospitals in England where patients are detained on an involuntary basis under the Mental Health Act 2007 (HMSO 2007) because they suffer from a Mental Disorder and pose a serious risk of harm to the public. Most of the patients in the hospital have been convicted of violent offences. At the time of the study the hospital provided treatment for men and women with a psychiatric diagnosis of mental illness or personality disorder whose level of risk required a high secure environment.

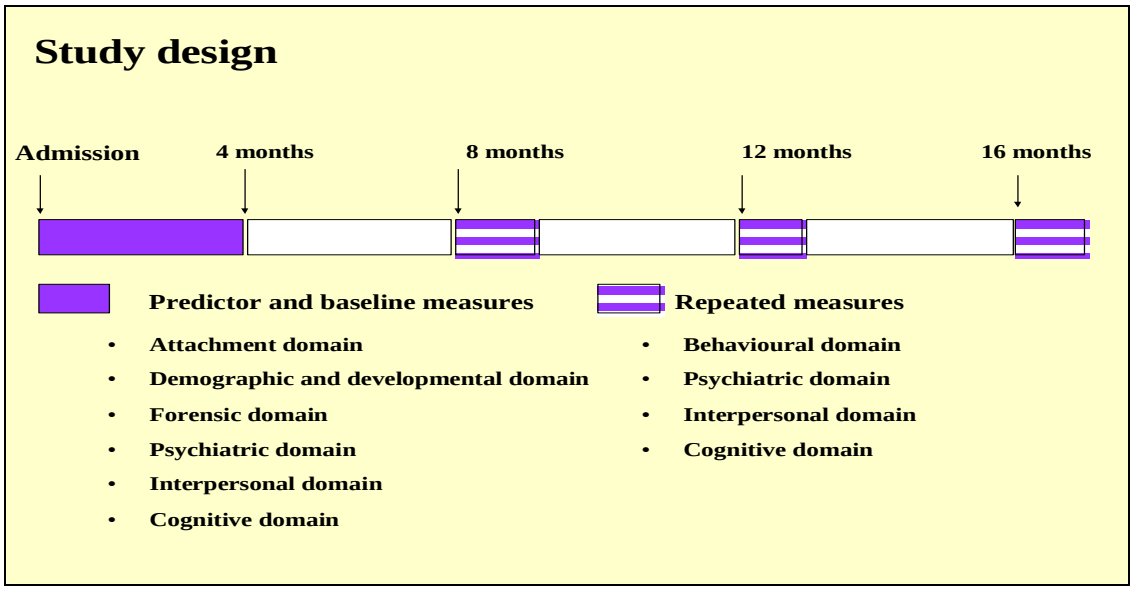
Figure 3.1: View of Broadmoor Hospital: Reproduced with the permission of Glen Harvey at Rex Features



The predictor attachment measures (AAI and PBI) along with the baseline measures were completed within the first four months of the patients' admission. Patients were followed up for the subsequent year and outcome measures completed at 8, 12 and 16 months (see Figure

3.2). If the patient was transferred out of the hospital during the follow-up period, for example, to prison or to another unit, then every effort was made to contact him or her.

Figure 3.2: Study design



3.3.2 Recruitment of patients

The research study was approved by the Broadmoor Ethics and Research Committee (see Appendix H). All patients sequentially admitted to the male and female admission wards between 29/10/97 and 13/05/03 were reviewed by the researcher. Patients were approached if they met the following inclusion criteria:

- Aged 18 or above.
- Estimated IQ of 70 and above.
- A provisional diagnosis of pd as measured by the screening version of the Structured Clinical Interview for DSM IV Axis II Disorders (SCID II) (First et al. 1997).

Patients were excluded if they met any of the following criteria:

- Presence of either a physical disability or serious physical illness.
- Either active symptoms of mental illness or behavioural disturbance precluded completion of the base line measures.
- Proficiency in English precluded completion of base line measures.
- They had returned to the hospital as a result of failed trial leave so had technically never been discharged.
- They had been transferred from another high secure hospital and were therefore already a high secure patient.

Patients who had been formally discharged and then either recalled or readmitted were eligible for inclusion. Out of a total of 340 patients admitted, 105 were eligible for inclusion.

The majority of the 340 patients were excluded as they were either too psychotic or too aggressively disturbed to take part or they had no indication of having a diagnosis of pd on the SCID II screening version. If a patient was excluded because of their level of disturbance, their progress was monitored and if their mental state or behaviour improved within the first 4 months they were re-approached. Of the remaining 105, seventy-one individuals consented and were recruited. Written informed consent was obtained from all patients (see Appendix H). Of the other 34 patients, 32 declined to take part, while 2 did not have a pd diagnosis on the SCID II semi-structured interview. Five of the initial 71 consenting patients could not complete the baseline measures and were early dropouts. This left a final total of 66 patients.

By the 8 months, 4 patients had dropped out of the trial, at 12 months a further 3 dropped out and by 16 months another 4 had left. Of these 11 (16.7%) patients, 5 declined to continue, 3 were lost to follow-up as they were transferred to prison and quickly released, 1 patient's mental state deteriorated too much to continue, 1 patient was deported and 1 patient was transferred to a medium secure unit where the Consultant Forensic Psychiatrist declined the researcher access.

Sample size

The proposed sample size was thought adequate to demonstrate a median effect size, allowing for refusals, of .5 (Cohen 1988) with a beta set at the conventionally accepted level of 0.8 and alpha (α) at 0.5. Power analyses to determine the effect size would require prior knowledge of the magnitude and spread of change expected. This information was not available as changes in the outcome measures have rarely been investigated in this population. The sample size proposed is greater than for an average pilot study using the AAI, which might aim to recruit 30 individuals.

3.3.3 Assessment schedules and measures

The measures tapped five domains; attachment; behavioural (antisocial and pro-social indices); psychiatric; interpersonal functioning and cognitive. Following Dolan and Coid's (Dolan & Coid 1993) recommendation data were collected by multiple methods and measures were completed according to the schedule shown in Table 3.1.

Table 3.1: Description and frequency of administration of assessment schedules, instruments and predictor, baseline and outcome measures

		Baseline period; 0-4 months	Follow–up point in months		
Domain and type of instrument or schedule	Description of measure		**8**	**12**	**16**
Predictor measures: Attachment domain					
Adult Attachment Interview AAI)	Semi-structured interview	*			
Parental Bonding Instrument (PBI)	Self-report	*			
Baseline Data: Demographic, developmental and forensic domain					
The Broadmoor Baseline Data Schedule	Standardized pro-forma. Researcher collected from notes and patient interview	□			
Baseline Data: Psychiatric domain					
The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)	Semi-structured interview	□			
The Structured Clinical Interview for the DSM-IV Pds (SCID-II)	Semi-structured interview	□			
Primary outcome measures: Behavioural domain					
Antisocial index	Researcher collected according to a standardized format.		**x**	**x**	**x**
Pro-social index	Researcher collected according to a standardized format		**x**	**x**	**x**
Secondary outcome measures: Psychiatric domain					
The Brief Psychiatric Rating Scale (BPRS)	Semi-structured interview	□	**x**	**x**	**x**
The Symptom Checklist-90 (Revised) (SCL-90-R)	Self-report	□	**x**	**x**	**x**
Secondary outcome measures: Interpersonal domain					
Inventory of Interpersonal Problems (IIP)	Self-report	□			**x**
Chart of Interpersonal Reactions in a Closed Environment (CIRCLE)	Observer (nurse) rated	□	**x**	**x**	**x**
Secondary outcome measures: Cognitive domain					
The Revised Gudjonsson Blame Attribution Inventory BAI)	Self-report	□			**x**

* = Predictor measures; □ = baseline measure; **x** = outcome measure

3.3.3.1 Predictor measures: Attachment domain

The Adult Attachment Interview

The AAI (George, Kaplan, & Main 1985, 1996) is a semi-structured interview consisting of a series of questions and probes, designed to assess the mental representation of attachment in adults. The interview elicits a narrative about the individual's childhood attachment experiences, including trauma and loss and their evaluation of how these experiences currently affect their adult personality. It asks a series of open-ended questions about early attachment relationships and experiences with significant attachment figures about separations, rejection, loss, trauma and physical and sexual abuse, (see Appendix I for details of the interview).

The interview was audio-recorded and transcribed according to the guidelines and rated by a detailed discourse analysis in accordance with the AAI manual (Main & Goldwyn 1994, 1998). Ratings were assigned across a number of scales for the inferred parental behaviour towards the participant. Then ratings were assigned representing various aspects of the participant's state of mind with respect to attachment. In other words the participant's inferred experiences with each parental figure is evaluated as to how their experiences may or may not have been integrated and the extent to which these currently affect the person's present style of attachment. Finally participants were assigned to one of five possible classifications which best suited their overall state of mind with respect to attachment.

As these classifications have been described in Chapter 1 section 1.4.3 they are only briefly restated. The three main categories of attachment are Secure (F), Insecure-Dismissing (Ds), and Insecure-Preoccupied (E). The Cannot Classify (CC) category indicates that the individual employs two disparate and opposing attachment strategies i.e. E and Ds. Hesse suggested that CC individuals show a complete breakdown of coherent discourse about attachment experiences; whereas Ds and E individuals display an insecure, but consistent, strategy in their attachment narratives. CC status is rare in non-clinical populations but over-represented in studies involving participants with histories of psychiatric disorder, violence and experiences of sexual abuse. Superimposed upon these categories is the Unresolved/disorganised (U) category with respect to loss and abuse in relation to an attachment figure (Main & Solomon 1989; Main & Hesse 1990, 1992).

In addition all AAI transcripts were rated for the individual's reflective function (rf) (Fonagy 1998). The inter-rater reliability of the scale has been shown to be high and both raters had been trained. Rf assesses the individual's capacity to understand and interpret their own and others behaviour in terms of underlying mental states (Fonagy et al. 1991). High rf scorers have an awareness that experiences give rise to certain beliefs and emotions, that these result in certain kinds of behaviour and that interpersonal relationships are associated with certain feelings and beliefs; as such rf is linked to the capacity for empathy. Low scores are given to

those people who reject the invitation to be reflective, e.g. when asked why do they think their parents might have behaved in that way, one patient replied 'I don't know, you tell me you are the shrink'.

Both of the AAI raters who coded the transcripts were reliable (Main & Goldwyn 1994, 1998), were naïve to the study hypothesis and were not involved in any data collection. The AAI was used because it is psychometrically robust, as described in chapter 2, section 2.5.1, and because it is the main attachment instrument which has been used in pd and forensic populations. An additional self-report attachment measure, the PBI (Parker, Tupling, & Brown 1979), was included so that no one attachment instrument would be solely relied upon. Two measures were used because of reports that attachment information from the AAI and PBI does not highly correlate in clinical samples (Manassis et al. 1999). The PBI was chosen as it is a self-report instrument and could be easily completed; unlike the AAI.

Although the AAI has been used in violent forensic populations (van IJzendoorn et al. 1997; Frodi et al. 2001; Levinson & Fonagy 2004) no inter-rater reliability data were found on it in these populations. To investigate the first subsidiary hypothesis, that the AAI will be reliable measure in this group, a study specific inter-rater reliability was undertaken for the categorical AAI classifications on 21% of transcripts (see Table 3.2). Pearson's correlation co-efficient (r) was used to calculate inter-rater reliability for rf.

Table 3.2: AAI inter-rater reliability

	Cohen's Kappa
2-way; secure v insecure	1.00
3-way; F v Ds v E	.62
4-way; F v Ds v E v U	.70
5-way; F v Ds v E v U v CC	.62
U v non U	1.00
	Pearson's r
Reflective function	.63

The Parental Bonding Instrument (PBI)

Like the AAI the PBI measures the nature of early ties between parents and children as recalled when the children are adults. Unlike the AAI it is a self-report questionnaire and is used to assess the perceived parental bonding style to each of the parents, or primary attachment figures, as identified by the patient. The patient is asked to rate the qualities of the relationship with his/her mother and father in the first 16 years of their life. There are 25 questions in total each of which the respondent rates on a 4-point Likert scale items (see Appendix I). Scoring is performed along the two non-orthogonal dimensions; care/involvement

v indifference/rejection and protection/control/ intrusion v encouragement of independence. At one extreme care involves parental affection, warmth and empathy, at the other coldness, indifference and rejection. The dimension of protection ranges from intrusiveness and infantilization through to promotion of independence.

The instrument's psychometric properties have been well defined (Parker 1983; Joyce 1984; Plantes et al. 1988; Parker 1989; Wilhelm & Parker 1990). Studies have supported the validity of this instrument to measure both perceived (Sarason, Pierce, & Sarason 1987) and actual parenting styles (Parker 1983, 1986; Parker & Gladstone 1996) with clinical and non-clinical populations.

Studies using the PBI in non-clinical and clinical groups; we were interested to see if the Broadmoor patients differed from other clinical groups. A literature review was undertaken to investigate attachment patterns, as assessed by the PBI, in non-clinical and clinical groups.

Search strategy: A search of PSYCINFO from 2001-2006 was conducted using the text word terms 'Parental Bonding Instrument' and 'PBI'.
Study selection: As the aim was to compare PBI scores for the Broadmoor sample with other groups, papers were selected using the following criteria:

a) Demographic: groups were matched, as far as possible, for age, ethnicity and gender with the study patients;
b) Diagnosis: wherever possible four groups were identified for comparison with the Broadmoor patients; normal controls; patients with major depression; psychotic patients and individuals with pd. The most robust studies were chosen from each diagnostic group for comparison. Preference was given to studies with the largest participant numbers with similar demographics to the Broadmoor group, which also provided comparison data;
c) Data papers with inadequate raw data and a sample size below 15 were excluded.

Data extraction and analysis: The means and standard deviations were extracted for each PBI dimension. The difference in means, between the representative studies and the Broadmoor patients was calculated using independent t tests. .

Search results: The search yielded a total of 110 papers. Of these, 105 were discarded on the basis of poor matches: 22 for non-comparable population; 15 for age; 9 for ethnicity; 13 for gender; 12 for diagnostic criteria; 11 as there was no raw data; 4 for sample size; 9 as unable to access; 10 as the PBI had not been used, leaving 5 papers which were judged to be the optimum ones for comparison. Comparison data are provided in Table 3.16.

3.3.3.2 Baseline Measures

Demographic and developmental domain

Demographic, developmental, psychiatric and forensic information was collected from three sources; patient interviews; case-notes and previous reports. Information was collected systematically using a standardized pro-forma, The Broadmoor Baseline Data Schedule. Data from the schedule were coded according to the Baseline Data Schedule Coding Template (see Appendix J). Social class was coded according to Classification of Occupations (HMSO 1980). IQ was assessed using the Revised Wechsler Adult Intelligence Test (Wechsler 1981) as part of the patient's admission assessment.

Psychiatric domain

Axis I and Axis II Psychiatric symptomatology was assessed on entry into the study using 2 semi-structured interviews.

Structured Clinical Interview for DSM-IV Axis I Disorders, Clinician Version (SCID I-CV)

The SCID I-CV (First et al. 1997a) is a semi-structured interview, designed for use in clinical settings as a way of ensuring standardised assessments of DSM-IV Axis I diagnoses. It includes full diagnostic evaluations of those DSM diagnoses most commonly seen in clinical practice. The SCID I-CV determines whether an Axis I diagnosis has ever been present (lifetime prevalence) and whether or not there is a current episode, defined as meeting diagnostic criteria within the past month. Ratings are given depending on the extent to which the criteria of the SCID disorders have been met. The SCID I-CV was used as a baseline measure to systematically evaluate major Axis I diagnoses. As well as the information from the clinical interview, case note information was also used in deciding the ratings.

In terms of reliability of the SCID-I good agreement is reported for the non-psychotic SCID-I DSM-IV disorders, with Kappa (k) values ranging from 0.72 for Social Phobia to 0.93 for Major Depressive Disorder; only Obsessive Compulsive Disorder falls outside this range (k of 0.40). Test-retest values at 7 - 10 day intervals had a wide variability, with k values ranging from 0.35 for Dysthymic Disorder to 0.78 for PSTD (Zanarini et al 2000). Reliability tests good inter-rater reliability and good test-retest reliability (average k=0.65), (Williams et al. 1992).

A study specific inter-rater reliability was undertaken on the SCID I-CV. Reliability was tested by conducting joint interviews with patients for 16% of the sample; independent ratings were made by each clinician. Reliability was assessed across the 15 major categories of DSM-IV Axis I disorders. The average Cohen's Kappa values for SCID-I between the raters was .92 with a range of .57 to 1.

The Structured Clinical Interview for the DSM-IV Personality Disorders (SCID-II)

The SCID-II (First et al. 1997b) is a 119 item, semi-structured interview which assesses the presence or absence of the 10 DSM-IV personality disorders. If the threshold is reached on the pre-determined number of items for each category the category of pd is rated as present. The instrument has acceptable test-retest (k = 0.68) and inter-rater reliability (k = 0.71). The SCID-II was administered within four months of the patient's admission. Case note information was also drawn on in making the ratings.

A study specific inter-rater reliability was undertaken on the SCID II by interviewing 20 patients, using clinically experienced raters. The average Kappa values for the first pair of raters was 0.70 (range; 0.31 to 1) and 0.92 (range; 0.63 to 1) for the second. Kappa was < .6 only for the diagnosis of depressive pd. The kappa values for inter-rater reliability were consistent with the literature.

3.3.3.3 Primary outcome measures: Behavioural domain

The primary outcome measures were two behavioural measures relating to anti-social (violence and aggression) and pro-social behaviour which were developed specifically for this research so that the patients' behaviour could be assessed systematically from documented, recorded behaviour at the 8, 12 and 16 follow-up points. They aimed to quantify the extent to which the patients' behaviour was aggressive and violent and the extent to which patients' engaged in the treatment programme activities available to them. Collecting these data across time allowed the patients' trajectories to be followed for both violent antisocial behaviour as well as pro-social behaviour.

Antisocial Index and Pro-social Index

The measures were devised according to the following procedure. Outcome data were collected at the 8, 12 and 16 month follow-up points, using a standardized pro-forma, the Broadmoor Follow-up Data Schedule (see Appendix J). Information was collected on untoward violent and aggressive incidents and seclusions in the 4-month period prior to each follow-up. The severity and frequency of incidents were documented.

For the anti-social index information was collected from the case-notes and the incident and seclusion forms, filled in by staff after each event. For the pro-social index Information was collected from the hospital's data-base for patient activities for the frequency of their attendance at occupational therapy, education and work areas. Details of any privileges granted to the patients, such as various levels of parole were also collected. A daily attendance rate at each of these areas was available to the researchers. Percentage attendance at activities was calculated for each patient for the 4 month time period prior to each follow-up point. Attendance was calculated on the basis of attendance at the number of sessions of activity available for the patient. Non-attendance because of non-patient factors,

such as lack of staff to escort the patient or cancellation of the session were factored out of the calculation. Sessions which were not attended because the patient was 'forced' into a choice because of the hospital regime, for example if a patient decided to attend a professional visit rather than an activity area, were also factored out. These were not counted as a 'non-attendance' as the patient could not determine when such visits would have been arranged. Consequently, non-attendance was the result of an active choice on the patient's part either through staying in bed, staying on the ward or verbally refusing to attend. For patients who were transferred to prison or other units every effort was made to collect follow-up data according to the schedules. However comparable information was not always available or, if available, was not always in a comparable form.

Data from the follow-up schedules were coded according to the Broadmoor Follow-up Data Schedule Coding Template (see Appendix J). Three scales were constructed. Data on seclusions, transfers to prison and violent and aggressive incidents were operationalized into a 7-point Likert scale for seclusions and transfer to prison and a 5-point scale for incidents and transgressions. Data on discharge to lesser levels of security, attendance at activities and privileges granted were operationalized into a 5-point pro-social scale (see Appendix K). The data for each patient, for each 4 month follow-up period were rated according to the 3 scales. The scores were converted to standardised z scores to allow seclusion and incident scores to be combined to give an overall antisocial index which, along with the scores on the incident, seclusion and pro-social index, were used as the behavioural dependent variables and primary outcome measures. This process yielded primary outcome measures that assessed violent and aggressive behaviour (the incident and seclusion scales) and one which assessed pro-social behaviour in terms of engagement in aspects of the treatment regime.

The seclusion, incident and pro-social scales all underwent inter-rater reliability testing. A second rater was recruited who was naïve to the study hypotheses; did not know any of the patients and was not involved in the collection of study data. The Spearman rank correlation co-efficient (2-tailed) between the two raters was .94 for the seclusion scale, 1.0 for the incident scale and .98 for the pro-social scale.

3.3.3.4 Secondary outcome measures

Psychiatric domain

Brief Psychiatric Rating Scale - Expanded Version (4.0) (BPRS)

The BPRS (Overall & Gorham 1962; Ventura et al. 1993) is a semi-structured interview for evaluating psychiatric symptoms and assessing symptom change in psychiatric patients. It is widely used in research and the expanded 24-item version has good inter-rater and test-retest (Ventura et al. 1993; Roncone et al. 1999). The first 14 items cover symptoms such as depression, suicidality, hostility, suspiciousness, unusual thought content. Items 15-24 are rated on the basis of observed behaviour or speech during the interview and cover emotional

expressiveness such as blunted affect or emotional withdrawal and behaviours such as uncooperativeness, excitement and distractibility. Ratings were made in accordance with the administration manual and case note information was used to inform the rating. The time frame for assessment was one month prior to the interview. The BPRS yields a global score from summing the rating for each item. A study specific inter-rater reliability was undertaken for 16% of cases using two raters who provided all the diagnostic information for the study. The Spearman rank correlation co-efficient (rs, 2-tailed) between raters was .8 (range; .58 to .99).

The Symptom Checklist-90-Revised (SCL-90-R)

The SCL-90-R (Derogatis & Lazarus 1994) is a 90-item, self-report inventory designed to screen for a wide range of psychiatric symptoms. It assesses the psychological and symptom status and intensity of psychiatric patients' symptoms on 9 symptom dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism. It has been widely used in psychiatric populations (Dolan, Evans, & Wilson 1992), (see Appendix K)

Each item is rated on a five-point scale of distress ranging from 'not at all' to 'extremely'. The instrument also provides three global indices of distress; the Global Severity Index (GSI), which measures the current overall level of distress and is the best single indicator of the current level or depth of the disorder; a Positive Symptom Distress Index (PSDI), which reflects the average level of distress reported for the symptoms endorsed and can be interpreted as a measure of symptom intensity; and a Positive Symptom Total (PST), which indicates the number of symptoms reported regardless of the level of distress reported and can be interpreted as a measure of symptom breadth. Five of the items required a slight adaptation as the patients were detained in a secure environment; for example 'How much have you been bothered by feeling afraid to go out of your house alone?' became 'How much have you been bothered by feeling afraid to leave your room alone?'

Normative scores are available for four different groups; adult psychiatric inpatients, adult psychiatric outpatients, adult non-patients and adolescent non-patients. The SCL-90-R has good psychometric properties, details about its reliability and validity are extensively reported in the manual (Derogatis 1994). In brief, the internal consistency for the subscales of the SCL-90-R is excellent, with alphas from .79 to .90. Test-retest reliability coefficients for the SCL-90-R in two separate studies ranged from .68 to .83 (Horowitz et al. 1988) and from .75 to 0.84 (Magni, Schifano, & de Leo 1986). Convergent and Discriminant validity of the SCL-90 has also been established (Peveler & Fairburn 1990; Koeter 1992) as well as its concurrent validity (Weissman et al. 1977).

Interpersonal domain

Chart of Interpersonal Reactions in a Closed Environment (CIRCLE)

The CIRCLE is an observer rated questionnaire which assesses the interpersonal and social behaviour of hospitalised psychiatric inpatients over the last month (Blackburn 1992; Blackburn & Renwick 1996) (see Appendix K). Although self-report measures of inter-personal relating are available (Wiggins & Pincus 1992) observer ratings are thought to be particularly useful in the assessment of forensic psychiatric patients (Blackburn & Renwick 1996), particularly those with personality disorder.

The CIRCLE scales were developed to operationalize the interpersonal circle (Leary 1957; Wiggins 1982), an empirically derived framework for describing interpersonal functioning. The interpersonal circle (IPC) delineates the interpersonal domain by a model in which variables form a circular array or circumplex around the two orthogonal dimensions of power (dominance v submission) and affiliation (hostility v nurturance) most commonly negotiated in social encounters. The CIRCLE consists of 49-items which assess these scales and asks about verbal and non-verbal behaviours e.g. joins in group activities, abuses or swears at nurses. Each item is assigned to one of the eight domains; dominant, coercive, hostile, withdrawn, submissive, compliant, friendly and sociable which represent the octants of the interpersonal circle. The score in each domain indicates the prominence of that domain's style within the participant's interpersonal repertoire of behaviour.

The CIRCLE has been used in secure, forensic settings (Blackburn 1992; Milton et al. 2005) and has acceptable inter-rater reliability (Blackburn & Renwick 1996; McCartney et al. 1999). For reliability reasons, ratings are obtained from two independent raters at broadly similar times. Scoring consists of adding the items that form each of the IPC scales and converting the total scores into standardized (z) scores. The patient's primary nurse and a second nurse, both of whom had been able to observe the patient's behaviour over the last month, independently completed the CIRCLE rating the patient's behaviour over the past week. The two ratings were done sequentially and averaged for the final score. If items were left unanswered a pro-rated score was calculated from the average of the answered items.

A study specific inter-rater reliability was undertaken by assessing for 15 (22%) cases using two nurse raters across all eight categories of the CIRCLE. The average Spearman rank correlation co-efficient (rs, two–tailed) for the CIRCLE between the raters was .63 (range; .23 to .83). Poor reliability was found on the submissive scale (rs = .23); for all other scales was Kappa >.5. After excluding the submissive scale the remaining average reliability was .68. It was unsurprising that the submissive scale had poor reliability as this octant is least well represented by the CIRCLE item pool having only 3 items assigned to it (Blackburn & Renwick 1996).

Inventory of Interpersonal Problems (IIP)

The IIP is a 127 item, self-report questionnaire which asks about difficulties relating to other people (Horowitz et al 1988) (see Appendix K). Patients rated the amount of distress they experienced from each interpersonal problem on a 5-point scale. The first 78 items concern how hard it is to do things, while the last 49 focus on things that are done too much. The higher the score the greater the problem is perceived to be. The IIP has six subscales, hard to be assertive, hard to be sociable, hard to be submissive, hard to be intimate, too responsible and too controlling. Test-retest results with psychiatric patients show that the IIP is reliable for the total score and the subscales and convergent validity with SCL-90-R was also satisfactory (Horowitz et al. 1988; Barkham, Hardy, & Startup 1994).

An overall mean score was calculated as well a mean for the six subscales. In keeping with Horowitz's recommendation if items were left unanswered a pro-rated score was calculated from the average of the answered items. Scores are presented as normative and ipsative scores. Ipsatizing is when individual item scores are expressed as a deviation from the individual's mean score across all items in order to give a measure of the extent to which the behaviour is considered a problem by the person relative to the other problems measured by the IIP. Horowitz regarded ipsatizing as a way of eliminating variance due to the patient's overall level of distress.

Cognitive domain

The Revised Gudjonsson Blame Attribution Inventory (BAI)

This is a 45 item, self-report questionnaire that measures attributions for a specific offence (Gudjonsson & Singh 1989) (see Appendix K). It was used to assess the patient's attribution style with respect to their index offence. The revised BAI consists of three independent factors; External attribution where the individual blames responsibility for their offence on social circumstances, e.g. In my case the victim was largely to blame for my crime; Mental element attribution where the patient attributes responsibility to their mental illness or poor self-control e.g. I was under a great deal of stress when I committed the crime and Guilt feeling attribution where the person feels remorse concerning the offence e.g. I am constantly troubled by my conscience for the crimes I committed. The patients completed the BAI with respect to their Index Offence. Items were scored true or false and assigned to the relevant attribution scale according to the scoring instructions so that the BAI yielded a score for External attribution; Mental element attribution and Guilt feeling attribution. If items were left unanswered a pro-rated score for each dimension was calculated from the average of the answered items. The BAI has adequate validity in forensic populations (Shine 1997).

3.4: Statistical analysis and analytic strategy;

Data analyses were conducted using the Statistical Package for the Social Sciences (SPSS) versions 14.0 and 15.0.

To test the main hypothesis that:

1. Violent personality-disordered patients will show a significantly different distribution of attachment representations and the quality of their parenting relationship compared to non-violent personality-disordered individuals. In particular it is hypothesised that there will be an:
    - Under-representation of Secure (Autonomous) (F) attachment states of mind
    - Under-representation of Insecure-Preoccupied (E) attachment states of mind
    - Over-representation of Insecure-Dismissing (Ds) attachment states of mind
    - Over-representation of the Cannot Classify (CC) attachment state of mind
    - Over-representation of Unresolved (U) states of mind

    as assessed by the AAI in the Broadmoor patient group. In addition the Broadmoor patients will perceive their parental relationships as significantly less caring and more controlling, as measured by the PBI, compared to non-violent clinical groups.

    Chi-squared (χ^2), with Yates Continuity Correction, applied as appropriate and Independent t tests (two-tailed) were used to compare the Broadmoor patients' attachment profile on the AAI and PBI with the non-violent pd groups extracted from the literature. Where scores for similar groups from studies were combined the weighted means and pooled standard deviations were calculated. Although this was an a priori hypothesis a conservative approach was used in the analytic strategy and the Chi-squared comparisons were adjusted for multiple comparisons using a Bonferroni adjustment (see Table 4.10).

To examine second main hypothesis that:

2. The mental representation of attachment and the perception of the parenting relationship, in a group of violent personality-disordered patients, will predict change in
    - Aggressive and violent behaviour
    - Pro-social behaviour
    - Psychiatric symptomatology
    - Interpersonal functioning
    - Cognitive attribution style with respect to their index offence

    in the Broadmoor patient group during the 16 months subsequent to their admission.

    The predictive validity of the attachment variables across time was investigated by subjecting the groups to within-subject analysis of variance using the multivariate solution to the repeated measures analysis provided by the SPSS General Linear Model program**.**

Continuous variables derived from the AAI scales and PBI dimensions were median split to investigate the pattern of change across time for high and low scorers. Trend tests, within the General Linear Model program, were used to examine whether the relationship between attachment variables and the outcome measures formed a significant pattern or trend across the follow-up period and to examine the nature of this trend i.e. was it linear or did the trend have a more complex pattern, rising and falling as in a quadratic or cubic trend. For example did the level of aggressive and violent behaviour alter in a linear pattern (increase or decrease by a regular amount) across time depending on the nature of the patients' attachment relationship?

Within-subject analysis of variance using the multivariate solution to the repeated measures analysis provided by the SPSS General Linear Modelling program was also used to look for main effects. This allowed for an examination of the pattern of change over time for the group as a whole for the primary (Antisocial Index and Pro-social Index) and secondary outcome measures (SCL-90-R, BPRS, CIRCLE, IIP and the BAI).

To examine the subsidiary hypotheses

1. That the AAI will be a reliable measure in this group of violently personality-disordered patients Cohen's Kappa (k), a statistic that corrects for chance agreement, was used for categorical constructs. Kappa values above .70 are considered to reflect good agreement; values from .50 to .70, fair and below .50 poor agreement. Pearson's correlation co-efficient (r) was used for to compute inter-rater reliability for constructs which yielded continuous data such as rf.

2. Chi-squared (χ^2) with Yates Continuity Correction applied as appropriate; independent t tests (checking for equality of variance) and ANOVA's were used to examine the hypothesis that the study patients were typical of violent personality-disordered patients in the hospital.

3. To test for a lack of associations between attachment representations and the quality of the parental relationship and demographic variables such as gender, age, level of education, employment history and offending profiles Chi-squared (χ^2) with Yates Continuity Correction, applied as appropriate, was used for discrete variables where the independent and dependent variables were categorical or nominal i.e. AAI classifications with gender and offending profiles. One-way, between subjects, analysis or variance (ANOVA) was used to check for a lack of associations between categorical AAI classifications and variables that yielded continuous ratio or interval data such as age and IQ. Kendall's tau was used to test for a lack of associations between categorical AAI data and variables with ordinal data i.e. educational and employment level.

Lack of associations between continuous data for the AAI scales for inferred experience and states of mind and the PBI dimensions and demographic variables were investigated using independent t tests (2-tailed, checking for equality of variance) for categorical variables such as gender and offending profile. Spearman's rho correlation co-efficient was used to test for lack of associations between AAI scale sores and PBI dimensions with interval (i.e. IQ) and ratio data (i.e. age). Kendall's tau correlation co-efficient was used to test for a lack of associations between AAI scale sores and PBI dimensions with ordinal data (i.e. educational and employment level).

4. Independent t tests (2-tailed, checking for equality of variance) were used to test the hypothesis that the Broadmoor patient group will have poorer reflective function (rf) scores, as rated from the AAI, compared with other psychiatric and personality-disordered individuals.

5. One-way, between subjects, analysis or variance (ANOVA) was used to examine the hypothesis that reflective function (rf) scale (Fonagy et al. 1998; Fonagy & Target 1997), as rated from the AAI, would be significantly associated with the Dismissing and Unresolved AAI classifications while Spearman's rho correlation co-efficient was used to test for an association between rf and particular demographic variables such as IQ.

6. Independent t tests (2-tailed, checking for equality of variance) were used to test the hypothesis that the Broadmoor patient group will have experienced more adverse parental experiences compared with other psychiatric and personality-disordered individuals as assessed by the 'inferred parental experiences' scale scores of the AAI and by the PBI dimensions.

   For categorical constructs, such as the AAI classifications and SCID diagnoses reliability is reported in terms of Cohen's Kappa (k). A combination of Pearson's correlation co-efficient (r) and Spearman's rho (rs) were used for to compute inter-rater reliability for constructs which yielded continuous data. Associations between the attachment measures were examined using one-way, between subjects, analysis of variance (ANOVA), testing for equality of means, to analyse the continuous variables yielded by the PBI and the categorical AAI classifications. Spearman's rho (rs) was used to examine the relationship between the AAI scale scores and the PBI dimensions.

   In cases where the normality assumptions of parametric tests were violated, non-parametric tests such as Mann Whitney U were also performed to confirm the significance of the observations. Logistic regression (Forward Stepwise Selection) was used to control for Axis I diagnoses when the relationship between Axis II diagnoses and AAI categories was being investigated. To protect against chance findings, especially in

post hoc analyses, a strong probability criterion of $p \leq .001$ was used and significance was adjusted for multiple comparisons using a Bonferroni adjustment.

7. Data reduction: As the study design included a large number of secondary outcome measures, a factor analysis was performed using principal component analysis with varimax rotation to identify the underlying factors for the subscales of the SCL-90-R, and IIP and the CIRCLE subscales to reduce the number of secondary outcome variables to a manageable size and decrease the likelihood of Type 1 errors. Factor scores, calculated using a regression method, were used in subsequent analysis with entry and outcome measures (see Table 3.3 for Factor names and descriptors and Appendix L for the factor matrix). Multiple regression was used as appropriate, to establish which combination of predictor variables provided the best prediction of the dependent variable.

   SCL-90-R: All 9 subscales of the SCL-90-R were entered into the factor analysis. The scree plot showed 2 distinct factors which accounted for 82.36% of the variance. Factor 1 had a high eigenvalue of 6.8 while this fell to .6 for Factor 2 The first factor comprised the obsessive-compulsive; interpersonal sensitivity, depression and anxiety subscales and is best described as an Internalizing Factor. The second factor comprised the hostility, phobic anxiety, paranoid anxiety and psychoticism subscales and is best described as an Externalizing Factor.

   CIRCLE: All 8 subscales of the CIRCLE were entered. The scree plot showed 3 distinct factors with eigenvalues greater than 1 which accounted for 87.43% of the variance. Factor 1 delineated a dimension best described as a Hostile Factor and comprised the coercive, hostile, dominant subscales and negatively loaded for the compliant subscale. Factor 2 described a Sociable Factor and comprised the sociable and friendly subscales. Factor 3 described a delineated a factor that was best described as an Internalizing Factor and comprised the withdrawn and submissive subscales.

   IIP: The 6 IIP subscales were entered into the factor analysis. The scree plot showed 2 distinct factors which accounted for 82.97% of the variance. Factor 1 had an eigenvalue of 4.3 while this fell to .7 for Factor 2. The first factor described a dimension that was best described as an Isolating Factor and comprised of the assertive, sociable and intimate scales where patients rated themselves as finding it difficult to assert their own identity and as finding it hard to be sociable or intimate. The second factor delineated a dimension that was best described as an Externalizing Factor and comprised the submissive, controlling and responsible subscales where patients rated themselves as finding it difficult to be submissive and as being too controlling and overly responsible.

   Factor scores were calculated by normalizing the scores on each subscale and multiplying this Z score by the corresponding factor loading for the relevant subscale to generate 2

Factors for the SCL-90-R baseline time point; 3 Factors for the CIRCLE at baseline and 2 Factors for the IIP at baseline. This process was repeated for the SCL-90-R, CIRCLE and IIP outcome data at the 8, 12 and 16 month time points as appropriate. These First Order Factors were used to examine the validity of the outcome measures at baseline and to look at change in the sample across time. As this research aimed to investigate whether attachment measures could predict the trajectory of these patients in the hospital over the next year these factors were used to see whether these outcomes could be predicted from attachment classifications and dimensions.

Table 3.3: Factor names and descriptors for the secondary outcome measures

Factor	Factor name	Factor descriptor
SCL-90-R Factor 1	Internalizing	Patients rated themselves as experiencing distress from obsessive-compulsive; depressive and anxiety symptoms and feelings of inadequacy and inferiority
SCL-90-R Factor 2	Externalizing	Patients rated themselves as experiencing distress from phobic anxiety, paranoid anxiety and psychotic symptoms and mental states characterized by anger and hostility
CIRCLE Factor 1	Hostile	Patients were rated as coercive, hostile, dominant subscales and non-compliant in their interpersonal interactions.
CIRCLE Factor 2	Sociable	Patients were rated as being sociable and friendly in their interpersonal interactions
CIRCLE Factor 3	Internalizing	Patients were rated as being withdrawn and submissive in their interpersonal interactions
IIP Factor 1	Isolating	Patients rated themselves as having difficulty in being appropriately assertive and as finding it hard to be sociable or intimate in their interpersonal interactions.
IIP Factor 2	Externalizing	Patients rated themselves as finding it difficult to be appropriately submissive and as being too controlling and overly responsible in their interpersonal relationships.

Chapter 4: Attachment in violent personality-disordered patients

4.1: Introduction

This chapter comprises a description of the demographic, clinical and attachment profile of the patients on entry into the study. In particular the first main hypothesis is examined as to whether the violent personality-disordered patients in the study show a significantly different distribution of attachment representations and quality of their parenting relationship, as assessed by the AAI and PBI, compared to both non-violent personality-disordered individuals and to other groups of personality-disordered individuals who have also offended. The results presented allow the subsidiary hypotheses (2-6) to be examined. The validity of the secondary outcome measures in this population is also examined to establish whether or not they can be used to usefully predict change in this patient group in the particular setting of a high secure hospital.

4.2: Results

4.2.1: Description of participants

In order to examine whether the demographic and forensic characteristics of the study patients were typical of violent personality-disordered patients in the hospital (2nd subsidiary hypothesis) these variables were compared between the consenting and non-consenting patients. Table 4.1 shows the descriptive data for demographic, ethnicity, social class, forensic, education, and employment variables for both groups.

There were no significant differences between the consenting and non-consenting patients with respect to gender (χ^2 = 1.49, df = 1, p = .32), age (t = .19, df = 98, p = .84) or IQ (t = .93, df = 76.59, p = .36). There were also no significant differences between the consenters and non-consenters for ethnicity (t = -.08, p = .67), socio-economic status (t = -.19, p =.20) or level of education (t = .14, p = .45). Initially the ratio of male to female patients in the hospital was 3:1, however during the research the demographic pattern changed in line with the national policy directive 'Women's Mental Health: Into the Mainstream' (Department of Health 2002) and the rate of female admissions declined. The percentage of female patients in the study sample is therefore less than the 25% expected if the gender mix of the hospital had remained constant but is reflective of the changing proportion of male to female admissions in the recruitment period.

Table 4.2 details the index offence type and the previous offences for the study patients and non-consenting patients. Many of the patients had multiple previous offences and more than one crime documented as their index offence. There were no significant differences between the consenting and non-consenting patients for the frequency of any of the index offences

(major violence, χ^2 = 1.21, df = 1, p = .47; minor violence, χ^2 = .01, df = 1, p = .65; sexual offences, χ^2 = .38, df = 1, p = .49; acquisitive offences, χ^2 = 1.18, df = 1, p = .38; arson, χ^2 = .85, df = 1, p = .49; other offences, χ^2 = .06, df = 1, p = .94).

Additional patient data are provided in Tables 4.3 and 4.4. Developmental, educational and employment data are shown in Table 4.3 and data relating to previous use of health services and contact with the Criminal Justice System are shown in Table 4.4.

The SCID I results (see Table 4.5) show that several patients had co-morbid Axis-I diagnoses: 20 patients had a mood disorder which was, in the main, a depressive disorder; 27% had a diagnosis of other psychoses which was mainly accounted for by previous episodes of drug induced psychosis; 12 patients had a current diagnosis of schizophrenia. Table 4.6 shows the diagnostic spread of pd diagnoses, as assessed by the SCID II. All categories of personality disorder were represented with most patients 62 (92.3%) having a cluster B pd. The mean (sd) number of pd diagnoses, as measured categorically by SCID II, was 2.98 (1.59) (range 1-7), with only 16 (24.2%) patients having one pd; 23 (34.9%) having 2-3; 24 (36.4%) having 4-5 and 3 (4.5%) having 6-7.

Table 4.1: Demographic and forensic variables for participating and non-consenting patients

Variable	Frequency (%) for study patients (n = 66)	Frequency (%) for non-consenting patients (n = 34)
Male	55 (83.0)	28 (82.4)
Female	11 (17.0)	6 (17.6)
Caucasian	61 (92.7)	32 (94.2)
Black or Black British	5 (7.6)	1 (2.9)
Asian or Asian British	0	1 (2.9)
HMSO status		
Professional	1 (1.5)	1 (2.9)
Intermediate	5 (7.6)	1 (2.9)
Skilled	27 (40.9)	13 (41.2)
Semi-skilled	17 (25.8)	5 (14.7)
Unskilled	12 (18.2)	8 (23.5)
Armed Forces	3 (4.5)	5 (14.7)
Legal classification*		
Legal classification of Psychopathic Disorder (PD)	37 (56.1)	6 (18.2)
Legal classification of Mental Illness (MI)	20 (30.3)	22 (66.7)
Variable	mean (sd)	
Dual legal classification (PD + MI)	9 (13.6)	6 (18.2)
Age	31.35 (8.25) range (19 - 51)	31.00 (9.21) range 19 - 60
IQ	92.24 (14.41) range (70 - 135)	89.9 (10.37) range 72 - 110

***** Legal classification under 2003 Mental Health Act

Table 4.2: Forensic variables for participating and non-consenting patients

Offence type	Frequency (%) for study patients (n = 66)	Frequency (%) for non-consenters (n = 34)
Index offence		
Major violence[1]	29 (43.9)	17 (50.0)
Minor violence[2]	13 (19.7)	6 (23.5)
Sexual offences	10 (15.2)	4 (11.8)
Acquisitive offences	11 (16.7)	4 (11.8)
Arson	11 (16.7)	2 (8.8)
Criminal damage	3 (4.5)	0
Other	3 (4.5)	1 (2.9)
Previous offences		
Major violence	13 (19.7)	
Minor violence	33 (50.0)	
Sexual offences	12 (18.2)	
Acquisitive offences	38 (57.6)	
Arson	11 (16.7)	
Criminal damage	26 (39.4)	

[1] Includes homicide, attempted murder, infanticide and grievous bodily harm
[2] Includes actual bodily harm, assault, making an affray, wounding and threats of violence

Table 4.3: Developmental, educational and employment variables for the patients

Variable	Frequency (%) (n = 66)
Care before 10 years old	18 (27.3)
Care after 10 years old	25 (37.9)
Physical abuse	35 (53.0)
Sexual abuse	33 (50.0)
Conduct disorder	55 (83.3)
Grew up with 0 - 2 siblings	44 (66.7)
Grew up with 3 - 5 siblings	17 (25.8)
Grew up with 6 - 8 siblings	5 (7.5)
Educational attainment	
Primary and incomplete secondary education	49 (77)
Secondary education and some	15 (23)
Employment history	
0 - 1 jobs lasting > 6 months in the last 5 years	54 (81.9)
2 - 3 jobs lasting > 6 months in the last 5 years	12 (18.2)
In hospital or prison for > 50% of the previous 5 years	44 (66.7)
Unemployed for > 50% of the previous 5 years	14 (21.2)

Table 4.4: Psychiatric and forensic variables for the patients

Variable	Mean (sd) (n = 66)	Range
Number of inpatient admissions	1.41 (2.63)	0 - 15
Longest inpatient admission (months)	2.55 (5.69)	0 - 32
Total time in inpatient treatment (months)	4.53 (10.76)	0 - 49
Number of secure inpatient admissions	1.24 (1.7)	0 - 7
Longest secure inpatient admission (months)	13.64 (24.34)	0 - 140
Total time in inpatient secure treatment (months)	19.83 (37.16)	0 - 217
Number of previous convictions (excluding index offence)	9.68 (16.92)	0 - 94
Total time served in prison for previous convictions (months)	55.32 (72.13)	0 - 300

Table 4.5: Psychiatric diagnoses for the patients as measured by SCID I (n = 66)

SCID I diagnosis	Frequency (%)
Mood disorder†	20 (30.3)
Schizophrenia†	12 (18.2)
Other psychoses†	18 (27.3)
Alcohol abuse	43 (65.2)
Alcohol dependence	28 (42.4)
Substance abuse	41 (62.1)
Substance dependence	24 (36.4)
Anxiety disorders†	14 (21.2)

† SCID I diagnoses are current or current and lifetime

Table 4.6: Personality disorder diagnoses for the patients as measured by SCID II (n = 66)

SCID II diagnosis	**Frequency (%)**	**SCID II diagnosis**	**Frequency (%)**	**SCID II diagnosis**	**Frequency (%)**
Cluster A	36 (54.5)	Cluster C	32 (48.5)	Cluster B	62 (93.9)
Avoidant	19 (28.8)	Paranoid	31 (47.0)	Histrionic	1 (1.5)
Dependent	3 (4.5)	Schizotypal	3 (4.5)	Narcissistic	11 (16.7)
Obsessive - compulsive	3 (4.5)	Schizoid	7 (10.6)	Borderline	31 (47.0)
Passive - aggressive	16 (24.2)			Antisocial	52 (78.8)
Depressive	21 (31.8)				

4.2.2: Descriptive results for the AAI and PBI in the Broadmoor group

AAI: Table 4.7 shows the patients' AAI attachment categories while their AAI scale scores are shown in Table 4.8. The numbers of patients who could be rated on the scale scores falls below 66, at times, because the information in some transcripts was too sparse for the rater to code accurately. The number of patients who could be rated for Unresolved (U) states of mind fell as either the patients declined to discuss these events or the interviewer failed to probe sufficiently to allow a rating.

Table 4.7: Distribution of AAI attachment classifications for the patients

AAI classifications without atypical 'F' (n = 65)	Ds v E frequency (%)	Ds v E v U frequency (%)	Ds v E v CC frequency (%)	Ds v E v U v CC frequency (%)
Dismissing (Ds)	40 (60.6)	31 (47.0)	28 (42.4)	23 (34.8)
Preoccupied (E)	25 (37.9)	16 (24.2)	11 (16.7)	7 (10.6)
Unresolved (U)		18 (27.3)		9 (13.6)
Cannot Classify (CC)			26 (39.4)	26 (39.4)

Table 4.8: AAI scale scores for inferred experience and states of mind for the patients

AAI scale scores for inferred experience with respect to parents	**mean (sd)**	**range**
Loving mother (n = 64)	1.55 (1.68)	-1.0 - 7.0
Loving father (n = 62)	1.26 (1.62)	-1.0 - 5.0
Rejecting mother (n = 63)	5.75 (2.39)	1.0 - 9.0
Rejecting father (n = 59)	6.00 (1.97)	1.0 - 9.0
Neglecting mother (n = 57)	3.82 (2.76)	1.0 - 9.0
Neglecting father (n = 51)	3.24 (2.48)	1.0 - 9.0
Role reversing mother (n = 64)	2.54 (2.12)	1.0 - 9.0
Role reversing father (n = 62)	1.89 (1.90)	1.0 - 9.0
Maternal pressuring to achieve (n = 64)	1.41 (1.11)	1.0 - 7.0
Paternal pressuring to achieve (n = 62)	1.63 (1.33)	1.0 - 7.0
AAI scale scores for states of mind with respect to parents		
Idealization of mother (n = 65)	3.56 (2.49)	1.0 - 8.0
Idealization of father (n = 63)	2.57 (2.12)	1.0 - 8.0
Involving anger to mother (n = 65)	2.43 (1.95)	1.0 - 8.0
Involving anger to father (n = 63)	2.28 (1.72)	1.0 - 7.0
Derogation of mother (n = 66)	2.05 (1.96)	1.0 - 9.0
Derogation of father (n = 63)	2.33 (2.07)	1.0 - 7.0
Overall derogation (n = 66)	3.13 (2.33)	1.0 - 9.0
Lack of recall (n = 66)	3.49 (2.02)	1.0 - 9.0
Meta-cognitive monitoring (n = 66)	1.44 (.94)	1.0 - 5.0
Passivity of discourse (n = 66)	3.36 (1.54)	1.0 - 7.0
Unresolved for loss (n = 54)	3.10 (2.23)	1.0 - 9.0
Unresolved for trauma (n = 44)	3.83 (1.84)	1.0 - 8.0
Coherence of transcript (n = 66)	2.64 (1.03)	1.0 - 6.0
Coherence of mind (n = 66)	2.08 (1.14)	-1.0 - 5.0
Reflective function (n = 66)	1.74 (1.94)	-1.0 - 6.0

On initial coding 5 (7.6%) patients were classified as having secure attachment relationships. In van IJzendoorn's (van IJzendoorn et al. 1997) group of 40 patients, admitted to either of two Dutch forensic psychiatric hospitals, there were 2 (5%) patients classified as secure (F) and 1 (7%) in Frodi's (Frodi et al. 2001) group of 14, who were a mixed group of patients and prisoners. However it is unclear from these studies whether the F individuals also had a diagnosis of pd.

In this high secure population it was surprising to find 5 pd patients with a secure attachment status. Closer examination of their coding revealed that these patients were not prototypically F, hence they are distinguished by the notation 'F'. Four patients were rated in subgroups of the F category (F4b and F5) as their discourse around attachment showed preoccupied traits, such as current anger and passivity of thinking and three of the five 'F' patients were coded as E as a secondary classification, while one patient also had U attachment status. As there was a problem in using inferential statistics for the analysis of the 'F' patients they were re-grouped. The 3 'F' patients with E characteristics in their primary and secondary classifications were regrouped in the E category, (forced E's) one 'F' patient who was U was regrouped within the U group and the one final patient who was not prototypically F was excluded from this section of the analysis**.** For completeness for AAI classifications with and without 'F' patients are detailed in Appendix M

The associations of predictor variables for categorical attachment data were investigated with respect to the following attachment categories; Ds v E; Ds v E v U; U v non-U and CC v non-CC.

PBI: Table 4.9 shows the patient scores on the PBI dimensions. The number of patients who rated each dimension falls below 66 as some patients had had so little contact with a parental figure that they were unable to complete the PBI. These were mainly patients who had spent their early years in several residential care facilities.

Table 4.9: PBI scores for the study sample

PBI dimension	Broadmoor patients mean (sd)	Range
Maternal care (n = 64)	17.61 (9.68)	(0 - 35)
Maternal protection (n = 63)	18.48 (8.65)	(0 - 36)
Paternal care (n = 57)	14.99 (9.91)	(0 - 36)
Paternal protection (n = 57)	16.69 (7.94)	(0 - 33)

4.2.3: Comparison of the AAI and PBI in the Broadmoor group with other populations

AAI classifications: In order to test the first main hypothesis regarding the distribution of attachment representations in the Broadmoor group compared to both other violent and non-violent pd groups data from six studies were combined to form the pd, non-violent group (see Table 4.10) The Barone group consisted of 40 out-patients with a diagnosis of BPD. Of these 31(78%) had a co-morbid diagnosis of narcissistic, histrionic and ASPD; none of the sample had acute Axis I symptomatology. The Diamond group consisted of 10 patients with a diagnosis of BPD receiving psychotherapy. The Fonagy group consisted of non-psychotic inpatients in a non-secure pd unit; 72% had an Axis II diagnosis (average number of Axis II

diagnoses = 1.4), of these 72%, 36 (44%) had a diagnosis of BPD, 22 (27%) had ASPD or paranoid pd and 46% had a combination of other pds. The Patrick patients were outpatients with BPD. No data were provided regarding the presence of other Axis I or other Axis II disorders. The Stalker group were a group of 45 women with a diagnosis of BPD, paranoid pd or avoidant pd who also had a history of childhood sexual abuse. The Stovall-McClough group were a group of 13 women with a diagnosis of BPD who were also co-morbid for PTSD.

The violent pd group combined data from 3 studies. The van IJzendoorn forensic sample consisted of 40 male admissions to two Dutch secure forensic facilities, 50% of the patients had committed a severe violent crime, such as murder, while 42% were detained because of sexual crimes. Fifty five per cent of the sample had diagnosis of pd; ASPD and BPD were the most prevalent. As in the Broadmoor sample, there was notable co-morbidity with each patient having an average of 2.9 pds. The paper combines participant numbers for the U and CC categories. The Frodi sample consisted of a small number of men incarcerated in a Swedish forensic psychiatry unit (n = 2) and a medium secure prison (n = 12). Ten had a violent index offence, the others had drug committed related offences. Eleven had a diagnosis of pd (9 with ASPD; 2 with ASDP and BPD). The Levinson and Fonagy paper reported a sample of admissions to a high secure prison. All participants had both a DSM-IV Axis I disorder (excluding schizophrenia) and an Axis II diagnosis, with 50% meeting the criteria for BPD.

Table 4.10 shows the distribution of AAI classifications in the study group compared with the two other groups. The distribution of attachment classifications in the Broadmoor group significantly differed from the non-violent pd group (mainly individuals with BPD and ASPD) for two-, three- and four-way group comparisons. For the two-group comparison patients with a Unresolved (U) attachment status were significantly under-represented in the Broadmoor group compared with the non-violent pd group (27.27% v 67.2%). For the three-group comparison the significant difference was accounted for by the over-representation of Dismissing (Ds) patients in the Broadmoor group (60.61 v 23.4%). The same pattern was present on four-group comparison, with a significant under-representation of U patients and an over-representation of Ds in the Broadmoor group (46.97% v 10.40%) compared with the non-violent pd group.

There were no significant differences in the attachment distributions of the violent forensic group compared to the Broadmoor group. However there was a trend for individuals with U states of mind to be under-represented in the Broadmoor group compared with the other studies of violent patients (27.27% v 42%); however this did not quite reach statistical significance (p = .06). Only two comparison studies provided data on Cannot Classify (CC) individuals (Frodi et al. 2001; Levinson & Fonagy 2004). In the Levinson & Fonagy prison population there were 7 (31.8%) prisoners with a CC classification compared to 26 (39.4%) in the Broadmoor population. There was no significant difference for the distribution of CC on a four-way comparison (F v E v Ds v CC) between these two populations ($\chi^2 = 3.34$; p = 0.3; df =

3). In the Frodi sample there were 2 (14.3%) CC individuals compared with 26 (39.4%) in the Broadmoor sample. Again there was no significant difference for the distribution of CC on a four-way comparison (F v E v Ds v CC) between these two populations ($\chi^2 = 3.34$; p = 0.3; df = 3).

Table 4.10: Distribution of AAI classifications in the Broadmoor sample and comparison with other pd groups

Adult population	N	AAI classifications						
		F (%)	**E** (%)	**Ds** (%)	**U or U plus CC**†	**Two-group χ^2 df = 1**	**Three - group χ^2 df = 2**	**Four-group χ^2 df = 3**
Broadmoor violent pd patients	66	5 (7.6) [4] (6.0)	21(31.8) [13] (19.7)	40 (60.61) [31] (46.97)	0 [18] (27.27)			
Pd non-violent patients (Barone 2003, Diamond et al. 2003, Fonagy et al. 1996 Patrick et al. 1994, Stalker & Davies 1995, Stovall-McClough & Cloitre 2003)	192 [192]	29 (15.1) [16] (8.3)	118 (61.5) [27] (14.1)	45 (23.4) [20] (10.4)	0 [129] (67.2)	56.12***	30.72***	48.27***
Violent pd patients (van IJzendoorn et al. 1997, Frodi et al. 2001, Levinson & Fonagy 2004)	76 [76]	7 (9.2) [6] (7.9)	30 (39.5) [13] (17.1)	39 (51.3) [25] (32.9)	0 [32]† (42.1)	3.41	1.24	4.28

Note: [ ] Bracketed figures are the number of individuals in each attachment classification according to the four-way attachment distribution (F v E v Ds v U); non-bracketed numbers exclude the U participants and denote the number of individuals in each attachment classification according to the three-way attachment distribution (F v E v Ds). Two-group refers to U v non-U comparison. The two-group chi-squared was Yates corrected. Three-group refers to the F v E v Ds comparison. Four-group refers to the F v E v Ds v U or U plus CC comparison. Asterisks indicate statistically significant differences between the study group (row 1), when compared to each of the other populations (rows 2 and 3) for two, three and four group attachment distributions.

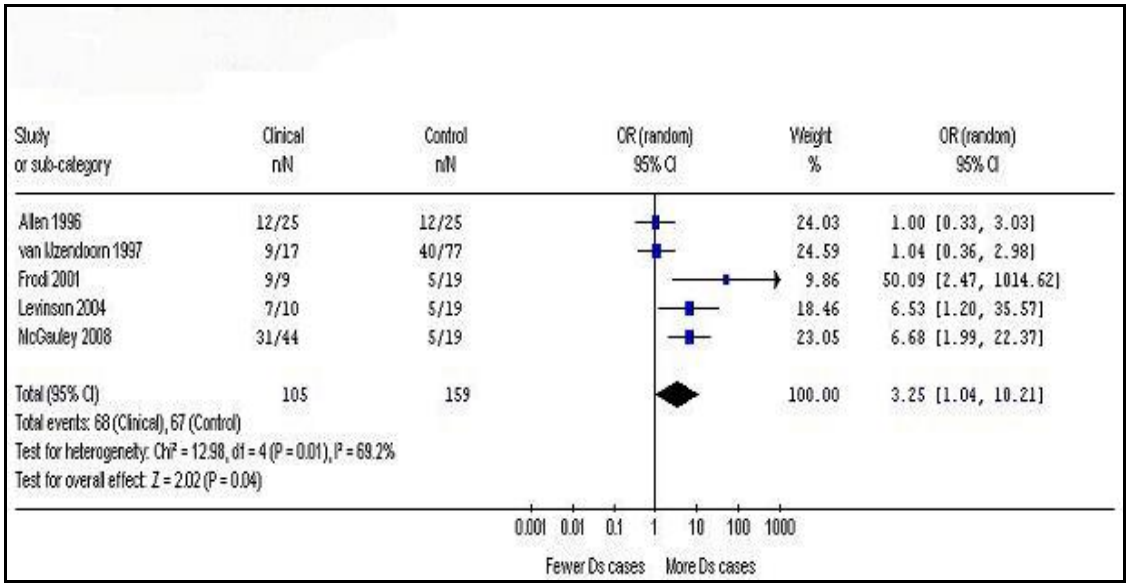
*** p ≤ .0001: significance was adjusted for multiple comparisons using a Bonferroni adjustment.

† Includes combined U and CC categories as reported by van IJzendoorn and Bakermans-Kranenberg 1996

We were interested to see whether adding the Broadmoor study to the studies in the original meta-analysis of Ds v E for violent pd (as shown in Figure 2.8) added weight to the hypothesis that violent pd patients would show a significantly different distribution of attachment representation, in particular an over-representation of Ds attachment states of mind compared to non-violent pd individuals. The forest plot in Figure 4.1 shows that the addition of the

Broadmoor study increased the overall effect size to statistical significance, although heterogeneity remained moderately high (OR = 3.25, 95% CI = 1.04 - 10.21, I^2 = 69.2%; Z = 2.02, P = 0.04).

Figure 4.1: Forest plot of violent pd studies of Ds v E attachment classifications including the Broadmoor sample



AAI scale scores: As the literature search yielded only four papers that presented AAI scale score data (Fonagy et al. 1996; Ward et al. 2001; Barone 2003; Levinson & Fonagy 2004) the scale scores for the Broadmoor group were compared with data in each of the four papers. Scale scores for similar groups were combined by calculating the weighted means and pooled standard deviations for the scale scores and are shown in Table 4.12. Four comparison groups emerged; normal controls; psychiatric inpatients; non-violent pd patients and violent pd patients.

With respect to inferred parental experience the Broadmoor patients experienced their parental care as significantly less loving compared to normal controls ($t = -15.58$; $\rho < .001$; $df = 189$), psychiatric inpatients ($t = -5.62$; $\rho < .001$; $df = 166$), a non-violent pd group ($t = -5.34$; $\rho < .001$; $df = 162$) and a violent pd group ($t = -4.75$; $\rho < .001$; $df = 86$). Although they experienced their parents as more rejecting compared to normal controls ($t = 10.21$; $\rho < .001$; $df = 189$), there were no significant differences between the Broadmoor group and any of the other clinical groups. Interestingly, the Broadmoor patients experienced their parental behaviour as significantly less neglecting compared to other psychiatric inpatients ($t = -6.05$; $\rho < .001$; $df = 166$), a non-violent pd population ($t = -4.89$; $\rho < .001$; $df = 162$) and a violent pd prison population ($t = -8.02$; $\rho < .001$; $df = 86$); their experience of parental neglect was similar in

degree to normal controls. The Broadmoor group experienced significantly less pressure to achieve from their parents compared to normal controls ($t = -4.29$; $\rho < .001$; $df = 189$) and psychiatric patients ($t = -4.86$; $\rho < .001$; $df = 166$).

With respect to the current states of mind it was the overarching scales that showed the most significant differences. Broadmoor patients were more likely to have significantly lower scores on the combined coherence of mind and transcript scales compared to the normal controls ($t = -17.27$; $\rho < .001$; $df = 189$), the psychiatric patients ($t = -6.89$; $\rho < .001$; $df = 166$) and a non-violent pd population ($t = -7.69$; $\rho < .001$; $df = 162$). The Broadmoor group also demonstrated poorer coherence in their narrative and thinking than a violent, pd prison population ($t = -2.07$; $\rho < .05$; $df = 86$). A similar pattern was seen for the rf scores. As hypothesised (subsidiary hypothesis 4) the Broadmoor group had significantly poorer rf than either the normal controls ($t = -11.97$; $\rho < .001$; $df = 189$), psychiatric patients ($t = -5.94$; $\rho < .001$; $df = 166$), or non-violent pd population ($t = -4.89$; $\rho < .001$; $df = 162$) and a similar level of rf as the violent personality-disordered prison population.

Only one paper (Barone 2003) presented data for the U scales. Compared to the normal controls the Broadmoor patients were significantly more likely to be U for both loss ($t = 3.04$; $\rho < .01$; $df = 189$) and trauma ($t = 11.40$; $\rho < .001$; $df = 189$), however, surprisingly, they were less likely to be U for loss compared to the non-violent pd population ($t = -1.97$; $\rho < .05$; $df = 162$) and showed no significant differences with respect to resolution to trauma.

With respect to the other state of mind scales the Broadmoor patients were significantly more likely to exhibit higher levels of passivity i.e. have a wandering and vague narrative style, punctuated by intrusions of irrelevant information, compared to the normal controls ($t = 3.63$; $\rho < .001$; $df = 189$) and the psychiatric patients ($t = 2.05$; $\rho < .05$; $df = 166$). Broadmoor patients were significantly less likely to have an angry and preoccupied state of mind compared to the non-violent pd population ($t = -2.12$; $\rho < .05$; $df = 162$), or to idealize their parental relationship compared to the prison pd group ($t = -2.18$; $\rho < .05$; $df = 86$).

Associations between rf and AAI classifications

The reflective function (rf) scale is not part of the Main and Goldwyn classification system but was devised by Fonagy (Fonagy & Target 1997; Fonagy et al. 1998) for use with AAI transcripts to yield a measure of the individual's capacity to understand the nature of mental states in themselves and others and how these link to behaviour, cognitions and affects, as this emerges within the AAI narrative. It was hypothesised (subsidiary hypothesis 5) that poor rf would be associated with a Dismissing (Ds) and Unresolved (U) attachment states of mind (see Table 4.11 for significant associations).

As predicted rf was significantly associated with a Ds attachment state of mind (p = .01), with Ds patients being rated as having lower rf. As some of the patients classified as E also had Ds traits the Ds patients were regrouped to yield a pure E group and a dismissing trait group (Dst) if they had a either a primary Ds classification or any secondary Ds traits. Patients who had dismissing features as well as a categorical Ds classification had significantly poorer rf than patients with E classifications (p = .001). Unexpectedly U patients had significantly higher levels of rf although this was a weak association and should be treated cautiously.

Table 4.11: Significant associations between rf and AAI classifications reported as means and (standard deviations)

	Ds n=40	**E n=25**	**F(1,64)**	**Dst n=52**	**E n=13**	**F (1,64)**	**U n=18**	**Non-U n=48**	**F(1,64)**
rf (n=65)	1.21 1.64)	2.44 (2.08)	6.98** p = .01	1.32 (1.58)	3.15 (2.40)	11.21*** p = .001	2.53 (2.14)	1.44 (1.78)	4.38* p = .04

* p ≤ .05; ** p ≤ .01; *** p ≤ .001

Table 4.12: Distribution of AAI scale scores in the Broadmoor sample and comparison with pd groups

Inferred parental experience scales	Broadmoor pd patients (n = 66)	Normal controls weighted mean (pooled sd) (n = 125) (Fonagy et al 1996, Barone 2003)	Psychiatric patients weighted mean (pooled sd) (n = 102) (Fonagy et al 1996, Ward 2001)	Non-violent pd patients weighted mean (pooled sd) (n = 98) (Fonagy et al 1996, Barone 2003)	Violent pd patients (n = 22) (Levinson & Fonagy 2004)
Loving parents	1.40 (1.65)	5.37 (1.72)***	2.80 (1.46)***	2.75 (1.49)***	2.66 (0.8)***
Rejecting parents	5.87 (2.18)	2.82 (1.44)***	5.82 (2.22)	5.27 (2.26)	5.84 (1.6)
Neglecting parents	3.53 (2.62)	3.17 (1.70)	5.82 (2.0)***	5.48 (2.32)***	6.94 (1.3)***
Role-reversal	2.22 (2.01)	2.02 (1.30)	2.78 (1.73)	2.82 (1.65)	
Pressuring to achieve	1.52 (1.22)	2.34 (1.32)***	2.72 (1.98)***	1.96 (1.68)	1.30 (0.6)
States of mind scales					
Involving anger with parents	2.36 (4.1)	2.02(1.25)	3.73 (1.82)**	3.51 (1.96)*	2.64 (1.6)
Idealisation of parents	3.07 (2.31)	2.72 (1.24)	2,84 (1.85)	2.51 (1.67)	4.15 (1.9)*
Derogation of parents	2.19 (2.02)	1.77 (.95)	2.35 (1.75)	2.29 (1.55)	2.13 (1.3)
Passivity of thought	3.36 (1.54)	2.57 (1.20)***	2.82 (1.85)*	3.57 (1.68)	4.02 (2.4)
Coherence of mind and transcript	2.36 (1.09)	5.68 (1.54)***	3.75 (1.52)***	3.91 (1.49)***	3.16 (1.7)*
Lack of recall	3.49 (2.02)	3.33 (1.24)	4.41 (1.91)**	3.96 (1.75)	4.19 (2.5)
Unresolved for loss	3.10 (2.23)	2.01 (1.46) †**		3.91 (1.94) †*	
Unresolved for trauma	3.83 (1.84)	1.01 (.63) †***		3.65 (2.04) †	
Metacognition	1.44 (.94)	3.33 (1.61) †***		1.71 (1.03) †	
Reflective function	1.74 (1.94)	5.20 (1.5) ††***	3.45 (1.62)***	3.33 (1.68) †††***	2.11 (1.4)

Note: Asterisks indicate statistically significant differences between the study group (column 1), when compared to each of the other populations (columns 2-5).
Some cells are blank and the number of participants alters for some scales as not all papers presented data on all scales. For example the Fonagy paper did not present scale data for the U or metacognition scales, while the Barone paper did not present data on rf.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$
† n = 40; †† n = 85; ††† n = 58

Comparison of PBI scores in the Broadmoor group with non-clinical and clinical groups

Table 4.13 shows the Broadmoor patients' PBI compared with other groups. Compared with the norms from the Mackinnon and Plantes studies (Plantes et al. 1988; Mackinnon et al. 1989) the Broadmoor patients scored significantly lower for both maternal ($t = -7.26$; $\rho < .001$; $df = 217$ Mackinnon et al.) and ($t = -6.11$; $\rho < .001$; $df = 99$ Plantes et al.) and paternal care ($t = -5.22$; $\rho < .001$; $df = 210$, Mackinnon et al.) ($t = -5.88$; $\rho < .001$; $df = 92$, Plantes et al.) indicating that the Broadmoor patients perceived their parental relationships as highly lacking in warmth and love and characterized by coldness and rejection compared with normal individuals. The Broadmoor patients also had significantly higher scores on both parental protection dimensions of the PBI ($t = 4.00$; $\rho < .001$; $df = 216$, Mackinnon et al.), ($t = 4.86$; $\rho < .001$; $df = 98$, Plantes et al.) for maternal and ($t = 3.92$; $\rho < .001$; $df = 210$, Mackinnon et al.) ($t = 5.03$; $\rho < .02$; $df = 92$, Plantes et al.) paternal protection. Higher scores on the protection dimension of the PBI indicated that the Broadmoor group perceived their parental relationship as intrusive and controlling compared with normal individuals.

In their review Favaretto (Favaretto & Torresani 1997) combined data from studies using the PBI on 111 patients with schizophrenia (Warner & Atkinson 1988; Häfner & Miller 1991; Onstad et al. 1994). Compared with this group the Broadmoor patients reported their parental relationships as being significantly less caring ($t = -4.15$; $\rho < .001$; $df = 173$) for maternal and ($t = -2.54$; $\rho < .05$; $df = 166$) for paternal care.

With respect to unipolar depression, including major depression and dysthymia, Favaretto grouped seven studies yielding a total of 435 subjects (Birtchnell 1988; Plantes et al.1988; Alnaes & Torgersen 1990; Parker 1993; Rodriguez et al. 1993; Oakley-Browne et al. 1995; Rey 1995). Broadmoor patients reported significantly less maternal care ($t = -2.77$; $\rho < .01$; $df = 497$) and less paternal care ($t = -3.53$; $\rho < .001$; $df = 490$) compared to the depressed patients.

The literature available on the use of the PBI in pd populations suggests that it correlates highly with experiences of abuse and neglect (Zweig-Frank & Paris 1991; Patrick et al. 1994). However, of the studies available, many had small numbers (Patrick et al 1994) or used an all female sample (Paris & Frank 1989). The most comparable sample with the Broadmoor group was that of Paris (Paris et al. 1991) who recruited patients with Cluster B pd. Compared to non-violent pd patients the Broadmoor group perceived their parental care as significantly colder and more rejecting than their non-violent counterparts, ($t = -2.06$; $\rho < .05$; $df = 122$) for maternal care and ($t = -2.18$; $\rho < .05$; $df = 115$) for paternal care.

The literature on the use of the PBI in offender populations was sparse. Some of the studies used non-comparable samples of adolescents (Chambers et al. 2000). Other studies report on the PBI in sexual offenders. Bogaerts' paper (Bogaerts, Vanheule, & Declercq 2005) however reports on a group of 'adult child molesters' drawn from prison and an educational training program, 69% of whom had a pd. Compared to both the non-pd and pd offender groups the

Broadmoor patients rated themselves as having significantly less caring parental relationships ($t = -11.17$; $\rho < .001$; $df = 146$ for maternal care, non-pd offenders; $t = -8.81$; $\rho < .001$; $df = 120$ for maternal care, pd offenders; $t = -10.78$; $\rho < .001$; $df = 139$ for paternal care, non-pd offenders; $t = -8.45$; $\rho < .001$; $df = 115$ for paternal care, pd offenders). Additionally the Broadmoor patients rated themselves as having less protective and controlling relationships with both parents compared to both the non-pd and pd offender groups ($t = -8.59$; $\rho < .001$; $df = 145$ for maternal protection, non-pd offenders; $t = -8.73$; $\rho < .001$; $df = 119$ for maternal protection, pd offenders; $t = -8.77$; $\rho < .001$; $df = 139$ for paternal protection, non-pd offenders; $t = -9.94$; $\rho < .001$; $df = 115$ for paternal care, pd offenders). Although the results for the offender sample should be viewed with caution as the means for all dimensional scores on the PBI in Bogaerts' group were high compared to other clinical groups.

Table 4.13: Distribution of PBI dimensions in the Broadmoor sample and comparison with other groups reported as means and (standard deviations).

Comparison sample	PBI dimension			
	Maternal care	**Maternal protection**	**Paternal care**	**Paternal protection**
Broadmoor violent pd patients	17.61 (9.68) (n = 64)	18.48 (8.65) (n = 63)	14.99 (9.91) (n = 57)	16.69 (7.94) (n = 57)
Normal controls (Mackinnon et al. 1989) (n = 155)	27.30 *** (7.00)	13.50*** (7.50)	22.70*** (8.40)	12.10*** (6.40)
Schizophrenic patients (Favaretto and Torresani 1997) (n = 111)	22.3*** (8.4)	17.3 (8.3)	18.9* (8.5)	18.2 (8.6)
Unipolar depressed patients (Favaretto and Torresani 1997) (n = 435)	21.2** (9.7)	17.10 (9.3)	19.9*** (9.7)	14.5 (8.5)
Cluster B pd patients (Paris et al. 1991) (n = 60)	20.7* (6.9)	18.1 (9.5)	18.0* (3.3)	16.2 (9.4)
Offender sample; child molesters (Bogaerts et al. 2005) (n = 84)	34.2*** (7.9)	29.6*** (6.4)	31.6*** (7.4)	28.5*** (7.7)
Pd offender sample, child molesters (Bogaerts et al. 2005) (n = 58)	32.53*** (9.01)	31.23*** (7.41)	29.15*** (7.93)	31.57*** (8.11)

Note: Asterisks indicate statistically significant differences between the study group (row 1), when compared to each of the other populations (rows 2-7).

Note: The numbers of patients who were able to rate each dimension falls below 66 in the Broadmoor group as some patients had so little contact with either their parents or paternal figure that they were unable to complete the PBI.

***** $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

4.2.4: Associations between the AAI and PBI

The AAI and PBI both measure the nature of early affectionate ties between parents and children as recalled by the children as adults and, as such, the two measures would be expected to have some common areas of overlap. However, although they tap similar concepts, the AAI assesses current attachment representations as assessed by the experience scales while the PBI focuses more on historical recollections of parental behaviours and attitudes. Two attachment measures were used because of reports that attachment information from the AAI and PBI may not share the same degree of overlap in clinical samples and may not correlate highly (Manassis et al. 1999). Rather than assessing the validity of one instrument against the other we were interested in seeing if it was the overlapping or the independent areas of the instruments which predicted the outcome for these patients. An additional reason for using the PBI was that it is a self-report instrument and could be easily completed; unlike the AAI which requires considerable resources to administer and rate.

Few studies, which have used both the AAI and the PBI, have looked at their construct validity (Manassis et al. 1999). The type of insecurity on the AAI (Ds or E) was significantly associated with maternal care on the PBI ($F_{(1, 61)} = 5.99$, $p = .02$) but not with any other PBI dimension. Individuals with a Ds attachment status reported higher levels of maternal care compared to those patients who were E. This, apparently counterintuitive, finding is probably explainable when the associations between the AAI scale scores for states of mind and PBI dimensions are considered. U and CC attachment states of mind were not significantly associated with any of the PBI dimensions.

Table 4.14 shows the correlation coefficients for the AAI scale scores and PBI dimensions. In terms of convergent validity as expected from the literature, the AAI loving scale was significantly positively associated with the PBI dimensions of parental care and paternal protection; more loving representations of fathers were associated with less controlling perceptions of them on the PBI. The rejecting and neglecting experience scales were significantly negatively correlated with care; additionally fathers represented as more rejecting were perceived as more controlling and over-protective. The AAI maternal involving scale was positively correlated with the overprotection PBI dimension. The strongest correlations were between parental idealization and parental care. Patients with highly idealizing states of mind towards their parents rated their care as more optimal on the PBI. An idealizing state of mind, with respect to attachment, is one of the markers of an overall categorical classification of Ds. This association may account for why those with a Ds attachment classification reported higher levels of maternal care. The other main group of associations were the significant negative associations between AAI parental derogation scores and PBI parental care. The lack of significant associations between the lack of recall, metacognitive monitoring, passivity,

unresolved and coherence states of mind scales and the PBI dimensions is evidence of the validity of these measures in this population.

Table 4.14: Correlation matrix for AAI scale and PBI dimension scores; n = 66. (Correlations reported as Spearman's rho)

AAI scales for inferred experience with respect to parents	PBI dimensions			
	Care mother	Care father	Protection mother	Protection father
Loving mother	**.42****	.21	-.01	-.16
Loving father	-.01	**.59****	.10	**-.35****
Rejecting mother	**-.45****	-.18	-.12	.02
Rejecting father	-.20	**-.53****	-.04	**.28***
Involving / role reversing mother	.03	-.01	**.27***	.13
Involving / role reversing father	.08	.16	.18	-.07
Neglecting mother	-.12	**-.42****	-.08	.04
Neglecting father	**-.38****	-.29	-.01	-.05
Pressuring to achieve mother	-.13	.07	.16	-.03
Pressuring to achieve father	.01	.08	.05	-.12
AAI scales for organized states of mind with respect to parents				
Idealization of mother	**.52****	.23	-.19	-.11
Idealization of father	.15	**.56****	.08	**-.32***
Involving anger to mother	**-.26***	-.04	.13	.19
Involving anger to father	-.13	-.18	.19	.16
Derogation of mother	-.19	**-.27***	.10	**.44****
Derogation of father	**-.27***	**-.42****	-.04	.14
Overall derogation	**-.28***	**-.32***	.11	.18
Lack of recall	.15	-.14	-.09	-.05
Metacognitive monitoring	-.14	.04	.19	-.03
Passivity of discourse	-.15	.03	.12	.06
Unresolved for loss	-.09	-.08	.11	.05
Unresolved for trauma	-.09	.17	.09	-.09
Coherence of transcript	-.11	.05	-.09	-.17
Coherence of mind	-.04	-.05	-.11	-..02
Reflective Function	-.10	-.09	.07	-.04

* = $p \leq .05$; ** $p \leq .01$

4.2.5: Associations between outcome measures

In order to assess the degree of overlap and discrimination between the domains a correlation matrix was computed for the secondary outcome measures and their factors in each of the domains (see Appendix N). As expected, there were moderately high correlations (range; .58 -.60) between the two instruments (BBRS and the SCL-90-R) in the Psychiatric domain, indicating that, although there was some overlap, they were still tapping different areas. Within the interpersonal domain there were low correlations (range; .00 - .26) between the IIP and the

CIRCLE indicating that these instruments were assessing different areas of interpersonal functioning. There were no very high correlation coefficients between the instruments in the Psychiatric domain and the Interpersonal domain indicating that these are distinct domains. In general the correlation coefficients were lower where either one or both measures were observer rated, for example between the BPRS and the CIRCLE or between the SCL-90-R and the CIRCLE, compared to where both measures were patient rated. The highest correlation coefficients (range: .59 -.67) were between the patient rated IIP and SCL-90-R, indicating that the patients may perceive their difficulties in interpersonal relating and their psychiatric symptoms as less differentiated than they were perceived by observers. The correlation coefficients between the Cognitive domain and the other domains were low indicating that this domain was well differentiated from both the Psychiatric and Interpersonal domains.

In summary the correlation coefficients showed that the secondary outcome measures have adequate discriminate and convergent validity in this violent population. In general, the low levels of overlap between the instruments in each domain support the use of two measures (observer and patient rated) of psychiatric symptomatology and interpersonal relating. However caution is needed with respect to the IIP and SCL-90-R as there is some overlap between the global scales and factors of these two instruments in this sample.

4.2.6: Validity

The validity (discriminant and convergent) of the instruments used was examined by investigating the relationship between the predictor measures and the secondary outcome measures across the 5 domains. As most of these analyses (unless otherwise indicated by reference to the subsidiary hypotheses) were undertaken post hoc a more stringent significance level of p=.001 was adopted in the reporting of results to protect against chance findings. As the literature revealed only 4 papers that reported AAI scale scores, associations between baseline variables and scale scores were formulated mainly on the basis of clinical knowledge and the application of attachment theory constructs as opposed to being empirically derived from previous research.

4.2.6.1: The relationship between the AAI and PBI and the secondary outcome measures across the 5 domains

Demographic, developmental and violent domain

AAI classifications: There was only one weak association between the developmental variables and the categorical AAI classifications. Those patients with a history of childhood conduct disorder (cd) were significantly more likely to have a Cannot Classify (CC) AAI classification (χ^2 = 3.67, df = 1, p = .04) compared to patients who did not fall into the CC group. Of the 55 (83.3%) patients with a childhood diagnosis of cd 25 (45.5%) were CC with respect to their attachment status, compared with 1 (9.1%) patient from the 11 (16.7%)

patients who were not CC. Surprisingly developmental variables, such as being in care or having been abused were not associated with any specific attachment classification. In support of the 3rd subsidiary hypothesis and the discriminant validity of the AAI, demographic variables, such as age, gender and level of education and employment history were not associated with any particular AAI classification.

The lack of significant associations between the AAI classifications and offending profiles is also supportive of the 3rd subsidiary hypothesis and of the AAI's discriminant validity in this patient group. Only one strongly significant relationship emerged between being Unresolved (U) on AAI classification and having a previous conviction of arson (χ^2 = 13.75, df = 1, p = .001, exact 2-tailed). Of the 11 (16.7%) patients with a previous offence of arson 8 (72.7%) patients were U, while of the 55 (83.3%) non-arsonists only 10 (18.2%) were U. However due to the relatively low numbers of patients with an arson offence the association must be viewed with caution and are in need of replication.

AAI scale scores: On the basis of previous research (Fonagy 1998) a positive correlation was predicted between IQ and the rf scale. We were also interested in seeing if other overarching scales, related to higher level cognitive functions, such as coherence of the attachment narrative and thought were associated to IQ. In support of the 5th subsidiary hypothesis there was a positive association between the patients' capacity to think about their own and others' states of mind as assessed by the rf scale (p = .01) and IQ. There was also a weak positive correlation between IQ and the coherence of the patients' thinking (p = .03) and coherence of their attachment narrative (p = .01). These associations were unrelated to their educational history.

As little is known about how violent pd patients represent their attachment experiences as assessed by the AAI scale scores we were interested in looking at whether scale scores were associated with other particular variables. On post hoc testing there was an association between those patients who had spent longer periods of time either unemployed or in prison in the previous 5 years and maternal idealization. Those patients with a poorer work record were significantly more likely to have an idealizing state of mind towards their maternal relationship (p = .001). This post hoc association makes broad clinical sense as an attachment strategy to defend against a more accurate representation of their mothering experience, although it is unclear as to why there is an association with this particular variable. As early disruption to the attachment relationship, through loss of the attachment figure, predisposes to adult insecure attachment it was hypothesised that those patients who had been in extended institutional care would have more adverse representations of their parental behaviour and insecure states of mind. In keeping with this patients who had been in care beyond the age of 10 represented their maternal relationship as significantly less loving (p =.01) compared to those patients who had not been in care beyond ten years of age; they also perceived their mothers as more

rejecting, although this was a weak association (p = .02). The experience of ever being in care was associated with higher levels of anger, specifically involving the maternal attachment relationship (p = .02) and less likely hood of idealizing their maternal attachment relationship (p = .04), compared with those patients who had never been in care. Those patients who had been in care prior to age 10 were also less likely to have a cold and derogating state of mind with respect to their paternal attachment relationship (p = .01). Surprisingly, there were no significant associations for abusive experiences and the AAI scales indicative of Unresolved states of mind with respect to loss or trauma.

A history of conduct disorder was associated with higher levels of involving anger in the patients' view of their paternal relationships (p = .001) and, to a lesser degree, their mother (p = .01). There were two other weak associations between the scale scores and the presence of cd which, although make clinical sense, may well be chance findings; patients with a history of cd were more likely to be unable to recall their childhood experiences (p = .02) and to have a passive and overtly vague and wandering narrative style (p = .04).

There were no strongly significant associations between the forensic variables and the AAI scale scores, bar one. Patients with a sexual index offence were less likely to have the experience of an involving relationship with their mother (p = .000) or father (p = .000) or one where there was paternal pressure to achieve (p = .000) and were more likely to show passive confused and wandering discourse in their narrative (p = .000) compared to offenders with a non-sexual index offence (see Table 4.15). It appeared that patients with a previous offence of arson were less likely to have a derogative state of mind with respect to their maternal relationship (p = .00) compared to other offenders. Arsonists were also more able to both recall their childhood experiences (p = .02) and reflect on their own and others mental states (p = .04). Although the weak associations may be chance findings, the fact that there are several associations for patients with previous offences of arson suggests that these associations may not be type I errors. However due to the relatively low numbers of patients with a sexual or arson offence, the associations must be viewed with caution and are in need of replication

PBI dimensions: On post hoc testing those individuals who were either taken into care or abused perceived their parenting as less caring, with possibly the abused group experiencing their parenting as more overprotective and intrusive (see Table 4.16 for significant associations between demographic and developmental variables and the PBI dimensions). Those patients who were admitted to care were significantly more likely to perceive their mothers as less caring than those patients who did not experience care (p = .008 for care pre 10 years old; p = .009 for care post 10 years old). A similar pattern was observed with respect to physical abuse with those patients who had experienced physical abuse as children perceiving their mothers as significantly less caring (p = .04). Interestingly there was no significant association between patients who had experienced sexual abuse and any of the

PBI scales. In support of the 3rd subsidiary hypothesis, as predicted, there were no significant associations between age, gender, IQ, educational and employment history or cd and any of the PBI scales. There were only a few weak associations between the PBI scales and offending history; these were liable to be chance findings.

Table 4.15: Significant associations between offences and AAI scale scores for inferred parental experience and patients' states of mind reported as means and standard deviations (sd)

		Involving mother m (sd)	**Involving father m (sd)**	**Pressuring to achieve father m (sd)**	**Passivity m (sd)**
Index sexual offence	Yes (n = 10)	1.22 (.67)	1.00 (.00)	1.00 (.00)	3.70 (1.16)
	No (n = 56)	2.76 (2.20)	2.02 (2.00)	1.72 (1.41)	3.30 (1.60)
	t (df)	4.13 (42)*** p = .000	3.73 (53)*** p = .000	3.77 (53)*** p = .000	4.55 (50)*** p = .000
		Derogation mother m (sd)	**Lack of recall m (sd)**	**Reflective function m (sd)**	**Passivity m (sd)**
Previous offences of arson	Yes (n = 11)	1.18 (.60)	2.50 (1.25)	2.82 (2.35)	3.32 (1.13)
	No (n = 55)	2.23 (2.09)	3.69 (2.10)	1.52 (1.79)	3.36 (1.62)
	t(df)	3.12 (56)** p = .00	2.53 (23)* p = .02	-2.09 (64)* p = .04	.09 (64)

Table 4.16: Significant associations between demographic variables and the PBI dimensions reported as means and standard deviations (sd)

		PBI dimension			
		Maternal care	**Maternal protection**	**Paternal care**	**Paternal protection**
Care before age 10	Yes (n = 17)	12.34 (7.65)	21.29 (10.14)	17.64 (10.65)	18.29 (9.25)
	No (n = 47)	19.52 (9.70)	17.44 (7.91)	14.13 (9.62)	16.18 (7.51)
	t (df)	2.75 (62) ** p = .008	-1.59 (61)	-1.16 (55)	-.86 (55)
Care after age 10	Yes (n = 23)	13.48 (8.93)	18.00 (11.01)	14.04 (10.37)	17.96 (8.98)
	No (n = 41)	19.93 (9.41)	18.76 (7.09)	15.47 (9.77)	16.06 (7.41)
	t (df)	2.68 (62)** p = .009	.3 (33)	.51 (55)	-.85 (55)
Physical abuse	Yes (n = 34)	15.23 (8.46)	18.93 (10.06)	13.53 (10.58)	18.06 (8.30)
	No (n = 30)	20.03 (10.39)	17.95 (6.78)	16.62 (9.03)	15.17 (7.36)
	t (df)	2.15 (62)* p = .04	-.46 (58)	1.18 (55)	-1.34 (55)

* significant at 0.05 level (2-tailed); ** significant at 0.01 level (2-tailed)

Psychiatric domain

AAI classifications: SCID I: The literature reports a significant association between having a diagnosis of schizophrenia and having an AAI classification of Ds (Tyrrell et al. 1999). We were interested to see if this association held in the Broadmoor patients. On post hoc testing there was a significant association with respect to the two main categories of insecure attachment, Dismissing and Preoccupied (Ds v E) ($\chi^2 = 4.19$, df = 1, p = .02), as well as when Unresolved attachment status was considered (Ds v E v U) ($\chi^2 = 8.19$, df = 2, p = .02). Of the 12 (18.5%) patients with a diagnosis of schizophrenia, 11 (91.7%) had a Ds attachment status, while of the 53 (81.5%) non-schizophrenic patients 29 (54.7%) had a Ds attachment status. Due to the above association it was anticipated that patients with schizophrenia would be significantly less likely to have a CC classification on the AAI, which was the case ($\chi^2 \chi^2 = 4.44$, df = 1, p = .02). Having an Axis I diagnosis of alcohol dependency was also significantly associated with being Cannot Classify on the AAI ($\chi^2 = 5.2$, df = 1, p = .02). Of the 28 patients with alcohol dependency 16 (57.1%) were CC while of the 38 non-alcohol dependent patients 10 (26.3%) had a diagnosis of alcohol dependency.

SCID II: As associations are reported in the literature between BPD and ASPD and Preoccupied (E) and Dismissing (Ds) AAI classifications respectively (Patrick et al. 1994; Fonagy et al. 1996; Levinson & Fonagy 2004) we were interested to examine whether there were meaningful associations between particular personality disorder diagnoses and AAI classifications. A diagnosis of ASPD was significantly associated with being CC with respect to attachment ($\chi^2 = 3.45$, df = 1, p = .04). Of the 52 (78.8%) patients with a diagnosis of ASPD, 24 (46.2%) had a CC attachment status, while of the 14 (21.2%) patients with no diagnosis of ASPD (14.3%) had a CC attachment status. To date such an association has not been reported in the literature most likely because of the paucity of studies that report on the CC classification.

In view of the significant association between the Axis I diagnoses of alcohol dependency and having a CC attachment status we were interested to see whether the association between ASPD and a CC classification with respect to attachment was still present when this Axis I diagnosis was controlled for. Logistic regression (Forward Stepwise Selection) was used to examine the Axis I predictors of this AAI category. The Axis II variables were entered as a second block and backward deletion was used to remove the insignificant Axis II predictors to arrive at the most parsimonious model. The two diagnoses of alcohol dependence and schizophrenia predicted CC attachment ($\chi^2 = 13.01$, df = 2, p = .00) corresponding to an R^2 of .24 and an overall classification accuracy of 73% with 62% of CC patients being accurately predicted. In the second block, where all of the Axis II diagnoses were entered, two significant predictors remained; a diagnosis of alcohol dependence and ASPD. The overall significance was ($\chi^2 = 26.97$, df = 5, p = .00) which corresponded to an approximate R^2 of .45 and an overall classification accuracy of 80%, with 70% of CC patients being accurately predicted.

Table 4.17 shows the predictor variables, standardized regression coefficients (Beta), the significance of each predictor variable (p) for the best-fit model**.**

Table 4.17: Logistic regression of Axis I and Axis II diagnoses on CC category

Predictor variable	Beta	S.E.	p	R^2
Alcohol dependency	-1.69	.66	.01	.45
Anti Antisocial pd	-2.71	1.17	.02	

BPRS: There were no significant associations between the patients' scores on the BPRS and any of the AAI classifications.

SCL-90R**:** On post hoc analysis a CC attachment classification was significantly associated with patients rating themselves as more symptomatic for the externalizing factor than patients with more coherent attachment classifications ($F_{(1, 63)} = 3.90$, $p = .05$). Although not strongly significant and in need of replication this finding makes clinical sense as patients with a CC classification comprise the most disordered group with respect to attachment as they have no coherent, over-arching attachment strategy. This would be in keeping with these patients rating themselves more highly on the externalizing factor of the SCL-90-R which comprised a cluster of paranoid, hostile and psychotic symptoms.

AAI scale scores: SCID I; As previous research reports that patients with schizophrenia are more likely to have a Dismissing (Ds) attachment status it was of interest to see whether, on post hoc analysis, there was a significant association between those scales particularly associated with Ds status and a SCID I diagnosis of schizophrenia (see Table 4.18 for significant associations). Those patients with a diagnosis of schizophrenia experienced their fathers as significantly more neglecting than the non-schizophrenic group ($p = .01$); were significantly more likely to idealize their parental attachment relationships ($p = .01$ mother, $p = .04$ father) and were significantly more likely to actively block out or to fail to recall childhood experiences ($p = .001$) compared to the non-schizophrenic patient group. In keeping with this picture, the patients with schizophrenia were also less likely to have experienced involving anger in ($p = .03$), less likely to show high levels of passivity in their attachment narratives ($p = .05$) or to actively derogate ($p = .01$) their maternal attachment. In keeping with their higher scores on the lack of recall scale the schizophrenic group were also significantly poorer than the non-schizophrenic patients at monitoring their thinking processes throughout the interview, as evidenced by a lower meta-cognition score ($p = .02$). Although only some of these associations meet the more stringent significance level of .001, and are in need of replication, as a cluster of associations they make clinical sense.

Table 4.18: Significant associations between SCID I and AAI scale scores for inferred parental experience and patients' states of mind reported as means and standard deviations (sd).

		Neglecting father m (sd)	Idealizing mother m (sd)	Idealizing father m (sd)	Involving anger mother m (sd)	Derogation mother m (sd)	Lack of recall m (sd)	Meta-cognition m (sd)	Passivity m (sd)
Schizophrenia	Yes (n = 12)	5.57 (2.44)	5.25 (2.42)	4.08 (2.71)	1.50 (1.45)	1.25 (.62)	5.17 (1.99)	1.13 (.31)	2.58 (1.65)
	No (n = 54)	2.86 (2.30)	3.18 (2.37)	2.22 (1.80)	2.64 (2.00)	2.23 (2.11)	3.12 (1.85)	1.51 (1.02)	3.53 (1.50)
	t (df)	-2.87 (49)** p = .01	-2.73 (63)** p = .01	-2.27 (13)* p = .04	2.28 (22)* p = .03	2.90 (59)** p = .01	-3.42 (64)*** p =.001	2.32 (58)* p = .02	1.96 (64)* p = .05

* significant at 0.05 level; ** significant at 0.01 level; *** significant at 0.001 level (all 2-tailed)

SCID II: In general there were only weakly significant associations between the SCID II and the scale score. Those patients with an avoidant pd were more likely to experience their mothers' behaviour as rejecting (p = .05) and were more likely to both idealise (p = .03) and derogate (p = .04) their maternal relationship, typical of the Ds AAI classification. They were also less likely to be able to monitor their thinking process within the interview (p = .03). Patients with a paranoid pd were more likely to have experienced their fathers as rejecting (p = .01) and their maternal relationship as lacking in love (p = .02). These associations were found on post hoc analysis and did not meet the more stringent significance threshold. They are reported as they make clinical sense. In keeping with this patients with a cluster A pd were significantly more likely to have experienced their maternal relationship as lacking in love (p = .01) and both their parental relationships as rejecting (p = .01 for mother; p = .00 for father). Unsurprisingly there was a significant association between having a passive-aggressive pd and experiencing the paternal relationship as involving anger (p = .02).

There was a strongly significant association between those patients with a diagnosis of ASPD who were significantly more likely to claim lack of memory for childhood experiences and to use this inability to recall to actively block further discourse or exploration (p = .000).

BPRS: All the significant associations between the patients' global scores on the BPRS and AAI scale scores fell below the stronger probability criteria and so should be regarded with caution. They are reported as they are coherent clinically. There were significant negative associations between the BPRS score and the coherence scales indicating that those patients rated as having more psychopathology were more likely to have less coherent narratives (p = .03) and thought processes throughout the interview (p = .05). There was a negative correlation between the BPRS scores and experiencing maternal relationships as involving (p = .01) and paternal relationships as involving pressure to achieve (p = .02). Patients who experienced their paternal relationships in this way were rated as having less psychopathology

as measured by the BPRS. Those patients who derogated their paternal relationship (p = .03) and who actively blocked recall of childhood experiences (p = .01) were rated as experiencing more psychopathology.

SCL-90-R: There were no significant associations between the global indices on the SCL-90-R, the 3 SCL-90-R Factors and any of the AAI scale scores

PBI dimensions: SCID I and BPRS: There were only weak associations between the PBI dimensions and Axis I disorders as measured by the SCID I and psychiatric symptomatology as rated on the BPRS; these are most likely chance findings.

SCID II: The presence of a particular pd, as assessed by the SCID II, was not associated with how the patients perceived their parenting styles as assessed by the PBI dimensions.

SCL-90-R: When patients rated their own level of psychiatric distress there were no strongly significant associations between the Global Severity Index (GSI) or the SCL-90-R Factors and the PBI dimensions, although there was a cluster of weakly positive associations with the maternal protection dimension on the PBI. Those patients who rated themselves as more distressed on the GSI (p = .02), as experiencing more symptoms on the PST (p = .03) and as experiencing more internalizing (p = .02) and externalizing (p = .02) symptoms as measured by the SCL-90-R Factors perceived their mother as more protective and controlling compared to the group of patients who experienced less global psychological distress.

Perceived paternal care was negatively associated with the number of endorsed symptoms on the PST (p = .03) while paternal control was positively associated with the PST (p = .04). Those patients who perceived their fathers as less caring and more controlling endorsed a wider range of symptoms. Although most of these were weak associations and are in need of replication they are reported as they have a clinical coherence.

Interpersonal domain

AAI categories: IIP: There were no significant associations between the IIP factors or the overall IIP mean and any attachment classifications.

CIRCLE: Those patients who were classified as CC were rated higher on Factor 1 of the CIRCLE by the nurses, indicating that they were seen as being more hostile, coercive and non-compliant in their interpersonal interactions compared to those patients with more organised attachment representations ($F_{(1, 63)} = 6.23$, p = .02, n = 65).

AAI scales: IIP: only one AAI scale was associated with the IIP for Factor 1 and this association was weak. Patients who experienced their paternal relationship as pressurising

them to achieve rated themselves as being more isolating in their inter-personal relationships, finding it difficult to assert their own identity and finding it hard to be sociable or intimate (p = .02, n = 61).

CIRCLE: There were more significant associations between the AAI scales scores and the CIRCLE Factors compared with the IIP. As many of these associations were weak they may be chance findings. There was an inverse association between those patients who experienced their maternal relationship as rejecting and Factor 2 (p = .03, n = 60). The nurses rated these patients as being more sociable and friendly in their interactions. Likewise patients who experienced their maternal relationship as involving were also rated as having more sociable and friendly interactions (p =.01, n = 60). There was an inverse relationship between those patients who rated their maternal relationship as more loving (p = .05, n = 61) and involving (p = .02, n = 59) and Factor 3, the Internalizing Factor; these patients were rated as being less withdrawn and submissive by the nurses. Those patients who experienced a paternal relationship which was neglecting were less likely to be rated highly on Factor 1 and were seen as less hostile and coercive in their interactions (p = .03, n = 48). Patients who perceived their relationship with their fathers as involving anger were rated as being less submissive and withdrawn in on Factor 3 (p = .05, n = 60).

PBI dimensions: There was a weak association between patients' rating themselves as having difficulties in their interpersonal interactions, as measured by the mean IIP score, and their perception that their maternal care had been overprotective (p = .03). Both of the IIP Factors contributed to this association; the Isolating Factor where the patients found it hard to be assertive or intimate (p = .03) and the Externalizing Factor (p = .01) where the patients found it hard to be submissive and rated themselves as being too controlling.

Cognitive domain

AAI categories: Patients with a E status rated themselves as experiencing significantly more guilt about their index offence compared to those patients with a Ds attachment status ($F_{(1, 63)} = 4.15$, p = .05). Although this association make clinical sense as its strength falls below the probability criteria it needs replication.

AAI scales: There were only two significant associations between the AAI scale scores and the BAI. Those patients who rated themselves as experiencing more guilt for their index offence were more likely to have a higher rf score (p = .04) and have a U state of mind for loss (p = .04). Patients who could experience some guilt about their offence were more likely to be able to understand and interpret their own and others' behaviour as arising from particular mental states. These patients were also less likely to have fully resolved their experiences of loss and still demonstrated some disorganisation of thinking in this area.

PBI dimensions: Those patients who attributed blame for their index offence to external factors perceived their maternal relationship as being overprotective and controlling ($p = .01$). Those patients who perceived their paternal care as being absent or neglectful were more likely to attribute responsibility for their offence to their mental disorder ($p = .003$). Perceived parenting styles were not associated with the patients' rating of their capacity to feel guilt with respect to their offence.

4.3: Discussion

4.3.1: Description of participants

The patients' demographic and forensic variables were similar to those reported for other pd patients in high security (Coid 1992, 1999). The patients, as a group, had an established history of offending and violence, with a seriously violent offence generally having precipitated their admission into the high secure hospital. They were also costly in terms of resource usage, with long stretches of time spent in costly secure units.

Demographic variables evidenced the over-representation of adverse environmental threats to the developing attachment system in terms of separations, neglect and physical and sexual abuse in this population and are in keeping with the early experiences of children who subsequently develop personality disorder (Greer 1964; Reich 1986; Zanarini et al. 1989; Brown & Anderson 1991; Luntz & Widom 1994) and other high secure pd patients (Pert, Ferriter, & Saul 2004). The finding that 55 (83%) patients had a history of conduct disorder is consistent with the literature documenting that early-onset pre-adolescent conduct problems carry serious risks for the development of adult antisocial behaviour and violent offending (Moffitt 1993; Henry et al. 1996; Moffitt et al. 2002). All of the included Broadmoor patients had high levels of psychopathology across Axis I and Axis II disorders (Coid 1992; Blackburn et al. 2003). The mean number of categorically diagnosed personality disorders in the sample was 2.98, similar to Coid's sample with 2.7 (Coid et al. 1999), with BPD and ASPD being the most common.

The developmental profile of these patients with the numerous disruptions and threats to attachment processes supports the relevance of using the theoretical framework of Attachment Theory and empirical methods derived to measure attachment to further understand this population.

4.3.2: The use of the AAI and PBI in a violent pd group

The AAIs of disturbed psychiatric patients can present particular challenges to raters as it can be difficult to code the experience scales when individuals have been exposed to extreme attachment experiences and multiple 'care-givers' (Turton et al. 2001). Despite this it was possible to rate the AAI narratives in these disturbed and violent patients.

Only a few studies have reported data comparing the AAI and PBI. This paucity of data on construct validity has been flagged as a gap in the attachment literature (Crowell et al. 1996). Manassis (Manassis et al. 1999) reports a comparison but as this is in a group of disturbed adolescents the AAI may behave differently (Allen 2008; Lyons-Ruth & Jacobitz 2008). We wanted to investigate whether similar associations were present in the study group between the AAI and PBI as in the Manassis group. The profile of AAI classifications was different between the Manassis and the Broadmoor groups, with more Secure (F) and Unresolved (U) individuals in the Manassis's study. Manassis also found that individuals with U states of mind on the AAI reported higher PBI maternal protection than individuals with Dismissing (Ds) states of mind. There was no association between U attachment and the PBI dimensions in the Broadmoor group. The finding that PBI dimensions did not discriminate between U and non-U states of mind may be because of the unexpectedly low numbers of individuals with U states of mind in the Broadmoor group (27.3%) compared to the Manassis group (49%).

The associations between the PBI dimensions and AAI experience scales were broadly in line with those reported by Manassis. However in the Broadmoor group, Ds individuals perceived their parental experiences as caring. We propose that this positive association arises because of a distortion of thought where the individual keeps the reality of the actual parental attachment relationship deactivated by idealizing their parents and imagining that they would be ideally responsive should feelings of need arise.

Overall there were few significant associations between the AAI categories and PBI dimensions. More associations were found between the AAI scale sores and PBI dimensions but these were of low to moderate strength. Taken together these findings suggest that the AAI and PBI were tapping into different attachment constructs. Using both of these attachment measures together may enhance the assessment of attachment in individuals who have severe mental disorder. Manassis concludes that attachment information obtained from the AAI and PBI is comparable only in individuals with optimum attachment histories. In keeping with this there were few associations between AAI categories and PBI dimensions. In individuals with high levels of insecure attachments it is likely that attachment states of mind result from distortions of the organisation of thinking around attachment that either minimises parental flaws (by idealization) or exaggerates them (by current involving anger). In these people it is important to use an attachment measure such as the AAI which allows the rater to assess such discrepancies between represented and inferred attachment experience.

4.3.3: AAI and PBI profiles in a violent pd group; comparison with other pd groups

AAI categories and scale sores: It is only in the last two decades that attachment-driven research methods have been applied to violent personality-disordered groups of individuals (van IJzendoorn et al. 1997; Frodi et al 2001; Levinson & Fonagy 2004).

It was hypothesised that violent personality-disordered patients would show a significantly different distribution of attachment representations compared to non-violent personality-disordered individuals. As hypothesized, the distribution of attachment patterns in the Broadmoor group differed significantly from the non-violent pd groups. The differences were accounted for by an over-representation of patients with Dismissing (Ds) attachments and far fewer patients with secure attachment classifications. There was the unexpected finding of an under-representation of patients with Unresolved (U) states of mind. The finding that attachment distributions in the Broadmoor group differed from non-violent pd groups, but not from other violent pd groups, is in contrast to van IJzendoorn's findings (van IJzenzendoorn & Bakermans-Kranenburg 1996) and suggests that violent pd patients have a distinct attachment profile.

It was surprising that Unresolved status was significantly under-represented in the Broadmoor patients, compared to non-violent pd groups, as the study patients reported substantial levels of both early attachment disruptions and traumatic events. The possibility that the paucity of U status was due to the patients having resolved early traumatic experiences was considered but this seemed a clinically unlikely explanation as these were patients detained in high security as a result of them failing to contain violent and aggressive impulses and affects which had become converted into aggressive actions. More specifically the study patients perceived their parental experiences as being highly lacking in love and rejecting on the AAI scale sores compared to other psychiatric populations. The fact that the Broadmoor patients also had significantly lower scores on indices of coherence of mind and transcript across the whole AAI suggests that the lower numbers of U patients was not accounted for by the fact that the patients had cognitively and psychologically resolved any disorganised/disorientated thinking around loss and abuse.

An alternative, more parsimonious, explanation for the low numbers of Unresolved individuals was that these patients had psychologically disavowed and cut off from their loss and abusive experiences so that their capacity to represent these mentally was reduced. Consequently these experiences were expressed in different ways compared to non-violent populations and may not have been represented in a way that is detected by the U classification system. Support for this proposition comes from knowing that patients with a Ds classification, indicating a dismissing and devaluing state of mind with respect to attachment experiences, were over-represented in the study group. The very low rf scores in these patients lend further

support to the disavowal explanation, indicating that the patients had a diminished capacity to mentalize their own or other's mental states in terms of feelings, thoughts, beliefs or motivations. This finding is in keeping with Levinson (Levinson & Fonagy 2004) who also report fewer U individuals in a smaller prison population of violent offenders compared with a non-violent pd population; although the difference did not reach significance.

The finding that Unresolved patients had marginally significantly higher levels of rf was unexpected. However, although, this was a weak association and should be treated cautiously, it was never-the-less an interesting one. It may have arisen because the high level of disavowal of attachment in the group masked the AAI's capacity to pick up the true extent of U states of mind. In effect the weak positive association between U and rf would be consistent if these 'U' individuals were those who were in fact less Ds and therefore had a slightly greater capacity for reflection.

The over-representation of patients with a Dismissing (Ds) attachment status in the Broadmoor sample appears to be a characteristic feature of violent, pd patients. This is further supported by finding that the addition of the Broadmoor patient group to the studies in the original Ds v E meta-analysis increased the overall effect to statistical significance signifying that it was statistically more likely that Ds attachment status would be favoured in violent pd patient groups compared with control groups. Psychologically these individuals work pro-actively to limit the influence of attachment relationships and experiences in thought, feeling and daily interactions. Despite adverse early experiences and the lack of coherency in their thinking about their experiences these patients were not caught up in angry preoccupied states of mind; rather their attachment profile was one where attachment experiences were de-activated. Such de-activation can be accomplished by a variety of psychological mechanisms. One route is by idealization and imagining or believing, in contradiction to their history, that attachment figures would be almost ideally responsive and available should the emotional need arise.

AAI fragment:
"Even now she don't love me, she's never shown no interest in me, she's never loved me…. (later in the interview) Yeah, she comes up to see me nearly every week, I phone her nearly every night. It's like we're more friends than a mother and daughter now, do you know what I mean, the other day she turned round to me and said 'whatever happens, person 1, I'm behind you and I'm with you'"

Consequently autobiographical memories that might result in reality intruding and the contradiction of an idealizing stance are kept out of active recall. An alternative de-activation strategy is to directly devalue attachment figures experiences while the self is described as being unaffected by attachment. The Broadmoor patients' scores on the inferred parental

experience scales indicate why they need to employ psychological strategies that keep attachment experiences out of mind. Their mean score on the loving parental experience scale corresponds to the lowest anchor point and denotes a childhood that was characterised by an 'absence of emotional support and no evidence of any real affection or interest in the child'.

Interestingly the Broadmoor groups mean score on the rejecting and neglecting scales indicated that their inferred parental experience was only moderately rejecting and mildly neglecting. In the light of the extremely low loving scale score, higher scores might have been anticipated. It may be that the extent to which attachment experiences were disavowed in this group meant that active negative experiences of rejection and neglect are also kept out of mind. The Broadmoor group were rated as being highly incoherent with respect to both their mind and their attachment narrative. These scale scores, along with the low score on the loving scale, best fitted the descriptors of the Dismissing classification, even though the group as a whole did not have high states of mind scores on other markers of Ds, such as derogation and idealization of parents.

Coupled with the high rates of traumatic experiences both evident in the histories of the patients and as described in the AAI narratives it is proposed that the Ds attachment pattern is overrepresented in this population as a defence against traumatic and adverse early experiences. Unsurprisingly the current state of mind of these patients was one were they were largely unable to emotionally or cognitively think about or reflect on their own or other's mental states. It is further proposed that the pervasiveness of this attachment pattern, in limiting the effects of attachment, also restricts the representation of traumatic experience in the patients' minds so that within the AAI classification system they appear as non-U.

In the Broadmoor group 26 (39%) of the patients had a Cannot Classify attachment status and employed two disparate and opposing attachment strategies i.e. E and Ds. The finding of high numbers of CC individuals in this highly disturbed group adds validity to the CC category which, in other studies, includes individuals with psychiatric disorder and histories of violence and of sexual abuse. As CC status is rare in non-clinical populations it has been relatively under-investigated. It is only reported as a discrete category in two forensic populations. The distribution of CC on four-way comparison did not differ between forensic samples, suggesting that in addition to Ds attachment status, CC, attachment is also a unique feature of the attachment pattern in forensic populations.

PBI dimensions: The Broadmoor patients had a significantly different perception of how their parents related to them compared to both the normal and clinical samples. Overall it was the care dimension of the PBI that differentiated the groups most, with the Broadmoor group perceiving their relationship with both their parents as significantly lacking in care, compared to other psychiatric groups. In particular the Broadmoor patients perceived their parental care as significantly poorer than for patients with similar psychopathology i.e. non-violent pd patients

and as more rejecting and less loving than the offender group. Overall the study group experienced their parenting as falling into the most adverse style, that of affectionless control. This parenting style has been linked to psychiatric symptoms in adulthood and is characterized by low care and high control. It corresponds to Bowlby's (Bowlby 1977) description of pathogenic parenting, where the parent is uncaring and also inverts the parent child inter-relationship.

4.3.4: Validity of the AAI and PBI in a violent personality-disordered group

The lack of significant associations between demographic variables and the AAI classifications and the weak associations between particular scale scores and IQ and age provides some evidence for the discriminant validity of the AAI in highly disturbed populations. The association between being taken into care, being physically abused and maternal care support the validity of the PBI in this group.

Although particular associations between Axis II psychopathology and attachment classifications have been found in non-violent pd populations these systematic relationships between the type of insecurity and psychiatric diagnoses were not as evident in the Broadmoor group. These results validate van IJzendoorn's (van IJzendoorn et al. 1997) finding that; in general, clinical status was not associated with specific categories of insecure attachment. Although this was a broad finding, there were specific links between psychiatric symptomatology and psychopathology and patients who were Cannot Classify (CC) with respect to attachment. As the CC category is only found in highly disturbed populations it is under-researched. These findings will help to refine the CC category (Stalker & Davies 1995).

Cannot classify patients were significantly more likely to have history of childhood conduct disorder (cd) compared to patients who did not fall into the CC group. Although not predicted, as little is known about the CC attachment status, this result is interesting as it suggests a developmental continuity of the attachment system. Those children with cd, which attachment theory would conceptualise as being driven by a disorganised internal attachment system, mature to have the most unorganised attachment representation as adults. However, as this may be a chance finding it is in need of replication. Cannot Classify patients were also more likely to have Axis I and Axis II psychopathology compared with patients with other insecure attachments. A clinically unsurprising association was found between an Axis I lifetime diagnosis of alcohol dependency and the CC classification. This may be indicative of this groups need to place a heavy reliance on maladaptive coping strategies within the context of more unstable and chaotic interpersonal relationships. If anything the literature suggests an association between substance abuse and E attachment status (Fonagy et al. 1996), however Fonagy's study did not rate for CC. The association between a diagnosis of ASPD and CC, which remained after controlling for Axis I diagnoses, together with the association between conduct disorder and CC is in keeping with an attachment perspective that conceptualises

childhood attachment disorganisation developing into unorganised adult attachment with the concomitant externalising behaviour of cd leading to ASPD.

As attachment insecurity is postulated to be a risk factor for the emergence of adult psychopathology (Kobak et al. 2006) it was reasonable to expect specific associations between particular attachment classifications and specific psychiatric disorders in this severely disordered group. Overall there were few strongly significant associations between diagnoses made by the SCID I and II and other measures of psychiatric symptomatology such as the BPRS and the SCL-90-R and attachment as assessed by the AAI and PBI. Reasons for the lack of associations could be that there are several environmental and constitutional factors besides attachment that play a part in the emergence of psychiatric disturbance or that failure to find associations between particular attachment measures and adult psychopathology could occur if the presence of mental disorder disrupted the AAI. The latter possibility is unlikely as the AAI is a validity and reliability measure in adult psychiatric populations (van IJzendoorn & Bakermans-Kranenburg 1996); the distribution of attachment patterns was similar to that in other violent forensic samples (van IJzendoorn et al 1997; Frodi et al 2001; Levinson & Fonagy 2004) and the associations found appeared to validate the AAI in the Broadmoor population. Another possibility is that psychiatric classification systems and narrow symptom measures may not provide a sufficiently differentiated picture of the relationship between attachment classification and disordered functioning. Finally, the favoured explanation is that, although there were few associations between specific psychiatric diagnoses and attachment classifications, abnormal attachment status may still act as a vulnerability factor for the development of mental disorder. The literature links general attachment insecurity with the presence of greater levels of mental disorder (van IJzendoorn et al. 1997) so that while particular types of insecure attachment may not be closely associated with specific psychiatric conditions insecurity may be both a general risk factor and also act as a final common pathway for diverse forms of severe psychopathology (Allen, Hauser, & Borman-Spurrell 1996).

The affectionless control style of parenting on the PBI has been linked to BPD (Paris & Frank 1989; Byrne et al. 1990; Torgersen & Alnaes 1992; Nickell, Waudby, & Trull 2002). One possible explanation, provided by Fossati (Fossati et al. 2001), as to why this association was lacking is that the PBI dimensions were not able to discriminate between different pd subgroups in a severely pd group. The associations between the parental bonding styles in patients with ASPD have shown inconsistent results; Reti (Reti et al. 2002) reports that antisocial personality traits in males were associated with low maternal care and high maternal protectiveness and restrictiveness while Enns (Enns, Cox, & Clara 2002) found that parental overprotection conferred a reduced risk of antisocial and externalizing disorders. One reason why the PBI did not distinguish the antisocial patients in the Broadmoor group might have been because the majority if the group (76%) had this diagnosis leaving an underpowered group of only 14 without the disorder.

Further explanations as to the lack of associations between personality pathology and the PBI dimensions are that the effects of psychiatric symptoms, such as paranoid symptoms, could influence the patients' rating of the PBI. However most studies that have investigated the effect of psychiatric symptoms on PBI scores conclude that these have a minimal effect on how patients rate the PBI dimensions (Plantes et al. 1988; Brewin, Andrews, & Gotlib 1993). Another possibility is that other parental behaviours may be involved in the development of particular pds and that the PBI only covers a limited range of these or that the impact of parenting experiences on personality pathology may be non-specific, with these experiences acting as mediators in the developmental pathway.

Nurses rated those patients with Cannot Classify attachments as being more hostile and coercive in their interpersonal interactions. In contrast the CC patients rated their own interpersonal interactions on the IIP as largely unproblematic. Other outcome measures, such as the severity and frequency of incidents indicate that there were indeed problematic interactions for this group. As the IIP did not reveal these, one possible conclusion would be that self-rating instruments which ask the individual to rate their feelings and interpersonal interactions, such as the IIP, may have limited validity in highly disturbed populations. We propose that the validity of these instruments is compromised when used in patients with a very low level of reflective function. Having a compromised reflective capacity means that it is hard for these patients to answer questions about their usual affective states and styles of interpersonal relating so rendering them poor reporters of their problems and behaviour.

Attachment, violence and offending

None of the three studies which investigated attachment in offender populations (van IJzendoorn et al. 1997; Frodi et al. 2001; Levinson & Fonagy 2004) examined the relationship between attachment classifications and particular offences. The finding of only one significant association between offending behaviour and AAI classifications suggests that the attachment status does not predispose the person to a particular pattern or typology of offending. Likewise the PBI scales were not associated with criminogenic variables. These were expected findings as it is difficult to see how associations could be explained developmentally between early care and attachment experiences and the wide range of offending behaviour in the Broadmoor patients. However the highly significant association between a previous offence of arson and being Unresolved with respect to attachment, coupled with the associations between a previous arson and the AAI scale scores is interesting and will be discussed further.

Although there was a lack of associations between attachment patterns and specific offences this was a highly violent group. The finding that a Dismissing (Ds) attachment status was over-represented in the Broadmoor group compared to non-violent pd groups suggests a link between a state of mind that disavows and, at its extreme, denigrates attachment relationships and acts of interpersonal violence. Reflective function (rf), which develops within the context of

early attachment relationships, was significantly lower in the Broadmoor group and was also associated with a Ds attachment state of mind. Levinson (Levinson & Fonagy 2004) report that rf differentiated a more interpersonally violent group of prisoners. No such association was found between rf and the violence of the crime in this study. This is most likely due to an rf scaling problem which demonstrated a ceiling effect in the Broadmoor group. The rf scale was generated from non-clinical AAI narratives and although adapted for clinical samples its validity may well be questionable in violent psychiatric populations. To address this the rf scale may need further developed and validated in violent populations.

When the associations between Ds states of mind and rf are considered alongside the finding of high levels of trauma in the early experiences of these patients the pattern is consistent with the developmental model of violence suggested by Fonagy (Fonagy 2003b; Levinson & Fonagy 2004). They suggest that severe early trauma, in the context of attachment experiences, leads to a developmental line of psychopathology characterized by both a disavowal of attachment experiences and the capacity to think about them resulting in a deficit in rf and the capacity to mentalize. In the context of high levels of arousal non-mentalizing cognitive processes predominate and teleological or psychic equivalent modes of experiencing the self and others predominate, (the latter occurs when the person cannot differentiate between their own internal experience and external reality). The individual is then more prone to experience their own and the mental states of others in physical and bodily modes, predisposing the person towards committing violent acts. Such acts may occur as either a response to misperceiving the world, including the actions or intentions of others, or to evacuate intolerable mental affects or bodily sensations that cannot be thought about.

Although such a model is in keeping with much empirical attachment research it can only be inferred from this research, as the model assumes a developmental continuity of both Ds attachment and low rf from early life through to adulthood. We considered two other possible explanations to explain the over-representation of Ds attachment states in this violent population. First, that the AAI was reactive to violence. In other words that violent people may simply be expressing themselves in a violent way which is then coded as dismissing. In the light of similar findings in other studies we thought that the likelihood of this was low (Frodi et al. 2001; Levinson & Fonagy 2004). Second, although much attachment research supports a continuity of attachment organisation across the developmental trajectory (Kobak et al. 2006), as discussed previously, the potential confounder that psychopathology may disrupt attachment needs to be considered in this violent population. Ultimately the aims and research design of this study only allow for discussion of these possible models. However, a main aim of this research was to see whether attachment status predicted change in aggressive and violent behaviour and pro-social behaviour, psychiatric symptomatology and interpersonal relating of violent pd patients in a secure environment.

The attachment profile for patients with a previous arson offence suggests that, unlike the majority of the patients, they were less likely to dismiss their attachment relationships and were more able to both recall their childhood experiences and reflect on their own and others mental states. It appears that arsonists were unable to maintain such a high level of defensive disavowal of their attachment experiences, especially around previous trauma and loss, as evidenced by the fact that they were more likely to have Unresolved attachment representations. In less violent and psychiatrically disturbed populations, lower levels of disavowal would be seen as a marker of health, however in violent pd patients a more complex interpretation may be called for.

Although the arsonists were rated more highly on the reflective function scale compared with patients who had committed other crimes, their rf was still impaired. Inhibition of or failure to develop effective rf leaves the individual vulnerable to experiencing his or her own mental states and the mental states of others as overwhelming so that they may have to be externalized from the mind, resulting in the arson. In other words, the loosening of the Ds attachment state of mind may allow arsonists to have 'just enough' mental awareness of their previous traumatic experiences. However we propose that, in these patients, these memories disorganise thinking and ultimately behaviour, as the patients' fragile reflective capacity means that they can neither process and think about these experiences nor completely disavow them. Consequently they are externalised in the extreme behavioural reaction of arson.

There was a trend towards patients with a previous history of sexual offending having a Preoccupied (E) rather than a Ds attachment state of mind. Their AAI discourse was more likely to be passive and have a confused and wandering style which may allow the thinker to avoid more direct thinking and the linking of their thought to meaning. Although the small number of patients in this group means that this result needs replication it is worthy of comment as such thinking styles and the cognitive deficits which underpin them, such as an incapacity for seizing on exact meaning, may contribute to the cognitive distortions regarding the victim often observed in sex offenders (Walters 1995). If this association was found to be robust it is possible that rating of passivity may act as a proxy marker for assessing the extent of distorted cognitions in sex offenders.

Chapter 5: Change across time and the predictive validity of the AAI and PBI in violent personality-disordered patients

5.1: Introduction

This research aimed to examine whether attachment representations and patterns, as assessed by the AAI and PBI, could predict change in particular behaviours, symptoms and ways of relating in a group of violent personality-disordered patients across the first 16 months of their stay in a high secure hospital. In particular it was hypothesised that attachment measures would predict change in the patients' violent and pro-social behaviour; their psychiatric symptomatology and the distress that they perceived as arising from these; their interpersonal interactions and their cognitive stance with respect to their index offence. We looked to see if there were any significant interactions across time between the AAI categories, AAI scale scores, PBI dimensions and the outcome measures, especially the violent and pro-social behavioural primary outcome measures.

As in previous analyses, the atypical 'F' patients were regrouped. Categorical AAI data were investigated with respect to the main AAI classifications as follows a) Dismissing (Ds) v Preoccupied (E), b) Ds as a primary or secondary classification v E (Dst v E). As some of the E attachment group had Ds traits the patients were regrouped to yield a dismissing trait group (Dst) if they had a either a primary Ds classification or any secondary Ds traits and a pure E group, c) Ds v E v Unresolved (U), d) Cannot Classify (CC) v non-CC, e) U v non-U.

To investigate interactions across time for the AAI scale scores, composite variables were computed by combining the scale scores that contribute to the F, Ds and E categorical classifications as shown in Table 5.1**.** These composite scales were median split to yield a high and low scoring group for each composite. To investigate interactions across time the PBI scales were also median split to yield a high and low scoring group for each dimension.

The predictive validity of the attachment variables across time was investigated by subjecting the groups to within-subject analysis of variance using the multivariate solution to the repeated measures analysis provided by the SPSS General Linear Model program. Interactions across time are reported taking account of Mauchly's Test of Sphericity and using the more conservative Greenhouse-Geisser correction when Mauchly's test was significant and the normality assumptions of the ANOVA were violated. Trend tests, within the General Linear Model program, were used to examine whether the relationship between attachment variables and the outcome measures formed a significant pattern or trend across the follow-up period and to examine the nature of this trend i.e. was it linear or did the trend have a more complex pattern, rising and falling as in a quadratic or cubic trend. For example did the level of

aggressive and violent behaviour alter in a linear pattern (increase or decrease by a regular amount) across time depending on the nature of the patients' attachment relationship?

Table 5.1: Composites for the AAI scales

Composite name	Composite descriptor
F composite	Securely attached composite composed of the loving parental scales and the coherency of transcript, coherency of mind, metacognitive monitoring and reflective functioning states of mind scales.
Ds composite	Dismissing of attachment composite composed of the rejecting parental scales and the idealizing, derogating and lack of recall states of mind scales.
E composite	Dismissing of attachment composite composed of the involving/role reversing parental scales and the passivity of discourse and involving anger states of mind scales.

5.2: Change in the sample across time

Before investigating whether attachment measures had any validity in predicting change in this violent pd patient group we were interested in examining the pattern of change for the whole group, across the follow-up period, as measured by the primary and secondary outcome measures. A within-subject analysis of variance using the multivariate solution to the Repeated Measures Analysis provided by the SPSS General Linear Modelling program was used to look for main effects using the scores on the incident and seclusion scales of the antisocial primary outcome measure and the pro-social primary outcome measure scale and the global scales and factors derived for the SCL-90-R; the CIRCLE and the IIP as well as the scores on the BPRS and BAI.

5.2.1: Primary outcome measures; behavioural domain

Table 5.2 shows the mean standardized (z) scale scores for the follow up time points for the primary outcome measures across the whole group. There was no significant change across time for either the seclusion (Wilks' Lambda = .98, $F_{(2, 52)} = .43$, $p = .65$) or incident scale scores (Wilks' Lambda = .99, $F_{(2, 49)} = .51$, $p = .60$). Likewise there was no significant change across time for the pro-social scale scores (Wilks' Lambda = .98, $F_{(2,54)} = .05$, $p = .95$). Please see Figures 5.1, 5.2 and 5.3 respectively for graphical representations of these results.

Table 5.2: Whole group scores at the follow-up time points for the scales of the primary outcome measures where change across time was significant

Time point / Primary outcome measure	8 months; mean z score (standard error) n = 54	12 months; mean z score (standard error) n = 54	16 months; mean z score (standard error) n = 56
Antisocial index			
Seclusion scale	.05 (.13)	-.03 (.14)	-.02 (.14)
Incident scale	-.04 (.14)	-.06 (.15)	.02 (.14)
Pro-social index	-.004 (.14)	.03 (.13)	.04 (.13)

Figure 5.1:

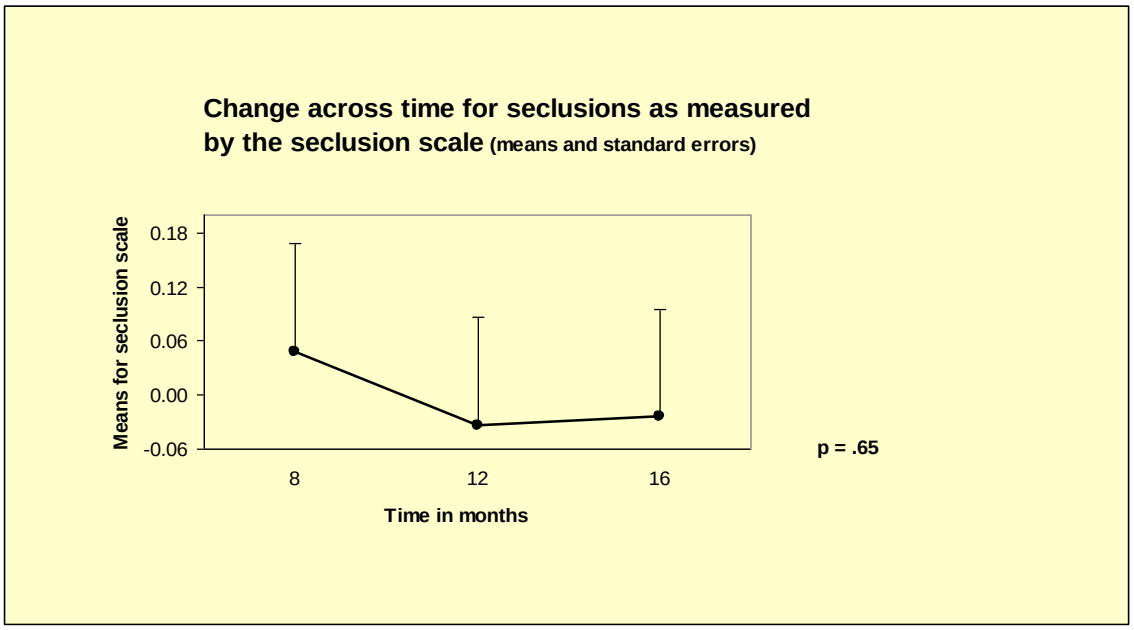


Figure 5.2:

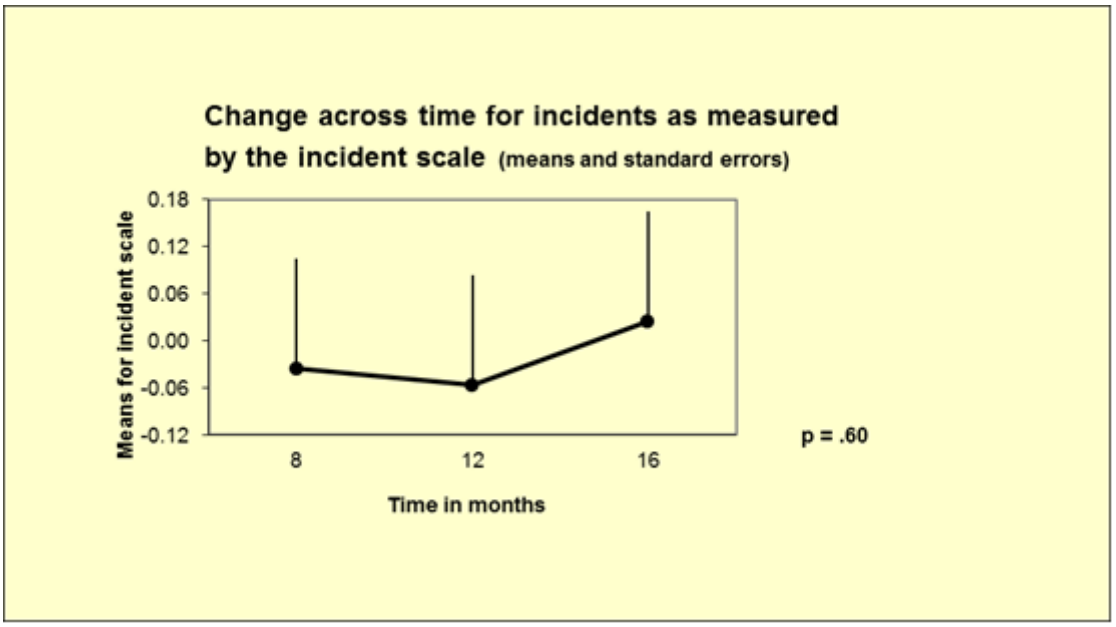
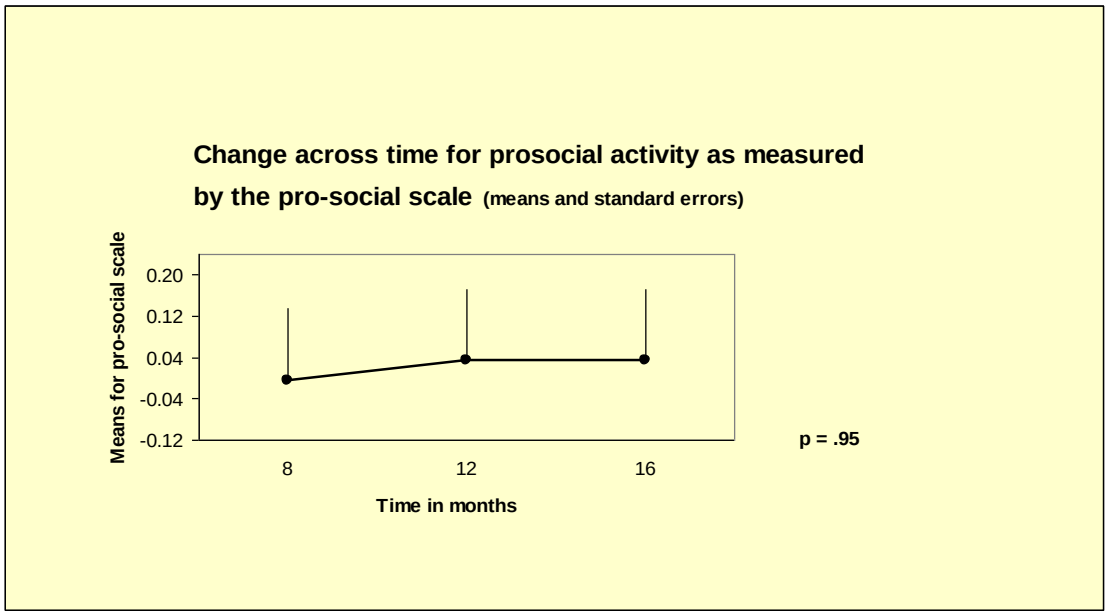


Figure 5.3:



5.2.2: Secondary outcome measures

Table 5.3 shows the mean scale scores for the follow up time points for the secondary outcome measures across the whole group.

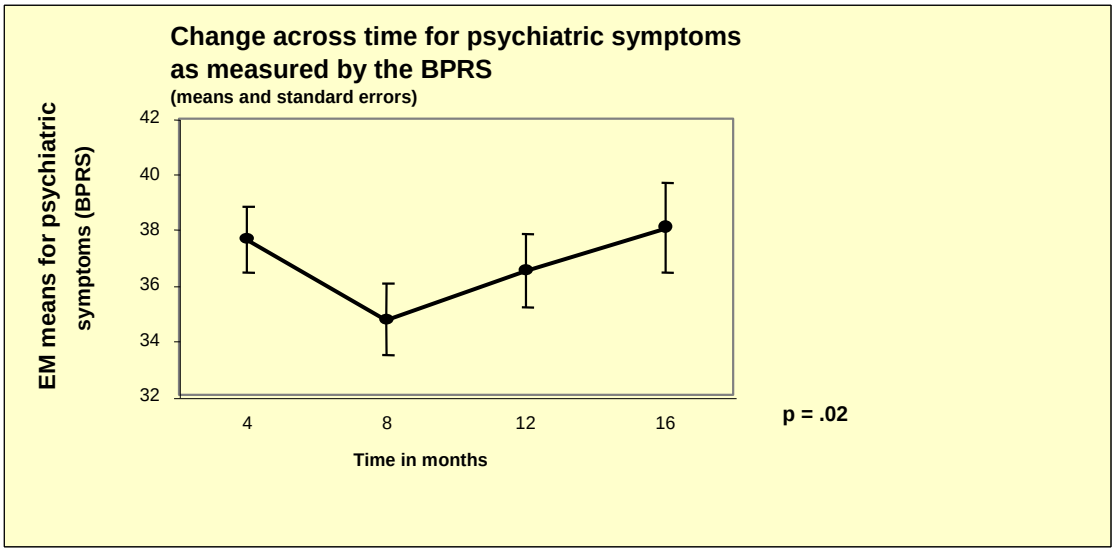
Table 5.3: Whole group scores at the follow-up time points for the secondary outcome measures where change across time was significant

Time point / Secondary outcome measure	4 months; Mean (standard error)	8 months; Mean (standard error)	12 months; Mean (standard error)	16 months; mean (standard error)
BPRS	37.62 (1.17)	34.75 (1.28)	36.52 (1.30)	38.06 (1.62)
GSI of SCL-90-R	1.32 (0.13)	1.03 (0.12)	1.01 (0.11)	0.94 (0.12)
PSDI of SCL-90-R	2.23 (0.10)	1.95 (0.10)	1.92 (0.11)	1.8 (0.10)
IIP	1.68 (0.11)			1.12 (0.11)
BAI	5.57 (0.54)			4.48 (0.55)

Psychiatric domain

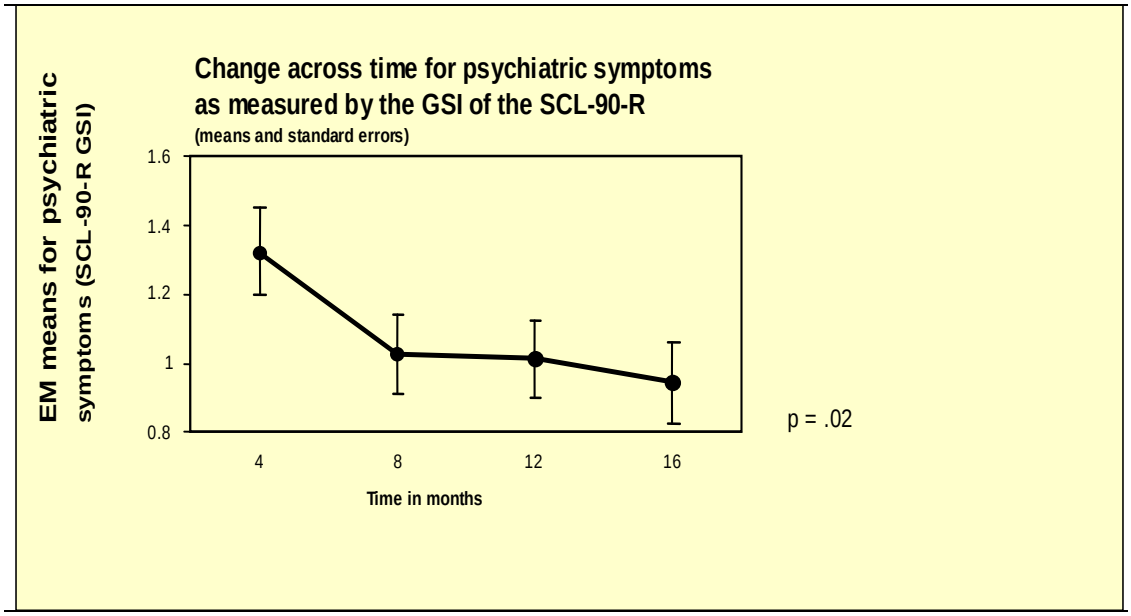
BPRS: There was a significant change across time for the BPRS scores (Wilks' Lambda = .82, $F_{(3, 49)} = 3.58$, p = .02). However, although there was an initial decrease in the scores of the group at 8 months, indicating an improvement in psychiatric symptomatology, there was a subsequent deterioration over the following 8 months with the patients' level of psychopathology worsening, as measured by the BPRS. Consistent with this the quadratic component of the interaction was significant for ($F_{(1, 51)} = 8.63$, p = .005). The change across time for the BPRS scores is shown graphically in Fig 5.4. We were interested to examine whether this significant difference in mean scores on the BPRS across time could be accounted for by the subgroup of patients who had a concurrent diagnosis of schizophrenia. There was no significant difference in the mean BPRS score between the patients with and without a diagnosis of schizophrenia ($F_{(1, 50)} = .52$, p = .47) and no significant group interaction across time ($F_{(3, 50)} = 1.09$, p = .35).

Figure 5.4:



SCL-90-R: There was a significant change across time on the Global Severity Index (GSI) of the SCL-90-R (Wilks' Lambda = .78, $F_{(3, 42)} = 3.90$, p = .02), with the GSI scores decreasing linearly ($F_{(1, 44)} = 10.30$, p = .002). Patients rated the distress they experienced from severity of their psychiatric symptoms as improving with time (see Figure 5.5) with their greatest degree of symptom improvement occurring between 4-8 months (p = .008).

Figure 5.5:



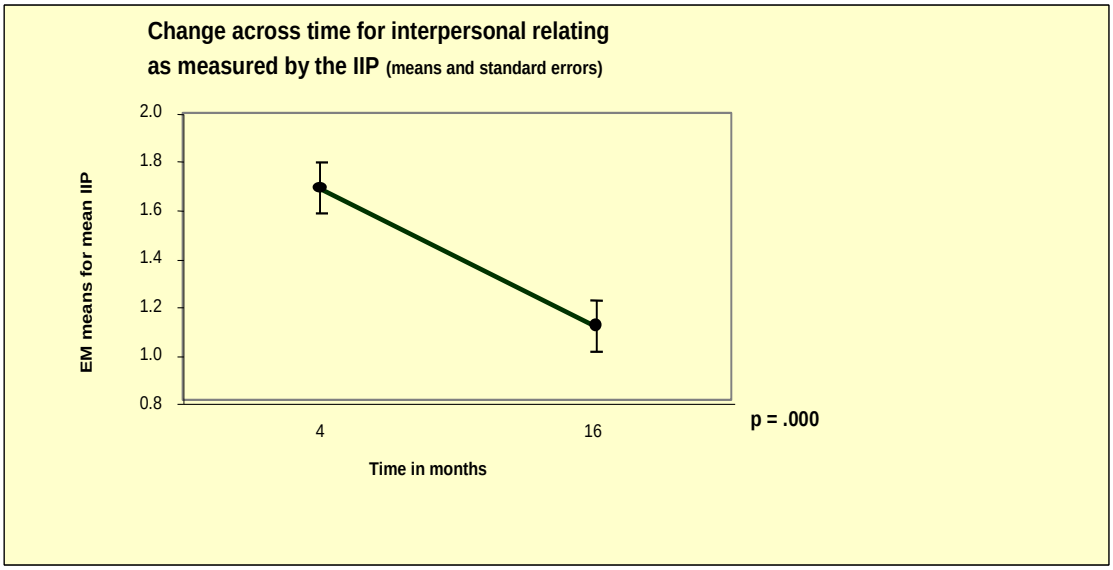
With respect to the two other SCL-90-R global indices there was a significant change across time for the Positive Symptom Distress Index (PSDI), while the Positive Symptom Total (PST) just failed to reach significance (p = .06). The PSDI scores decreased across time (Wilks' Lambda = .67, $F_{(3, 41)} = 6.63$, p = .001) indicating that patients' experienced a decrease in distress from their symptoms. Consistent with this the linear component of the interaction was significant ($F_{(1, 43)} = 17.94$, p = .000). The patients' rated their greatest degree of symptom improvement as occurring between 4-8 months (p = 0.005). There were no significant changes across time for either the Internalizing (Wilks' Lambda = .95, $F_{(3, 39)} = .71$, p = .55) or Externalizing (Wilks' Lambda = .95, $F_{(3, 39)} = .62$, p = .60) Factors derived from the factor analysis of the SCL-90-R.

Interpersonal domain

IIP: There was a significant change across time for the IIP overall mean score (Wilks' Lambda = .71, $F_{(1, 50)} = 20.82$, p = .000), with the IIP mean score decreasing linearly. Patients rated the overall amount of distress they experienced from problems in interpersonal relationships as significantly improved at 16 months compared to at 4 months (p = .000) (see Figure 5.6). There were no significant changes across time for either the Isolating (Wilks' Lambda = .99, F

$_{(1, 50)}$ = .39, p = .53) or Externalizing (Wilks' Lambda = .99, F $_{(1, 50)}$ = .35, p = .55) Factors derived from the factor analysis of the IIP.

Figure 5.6:

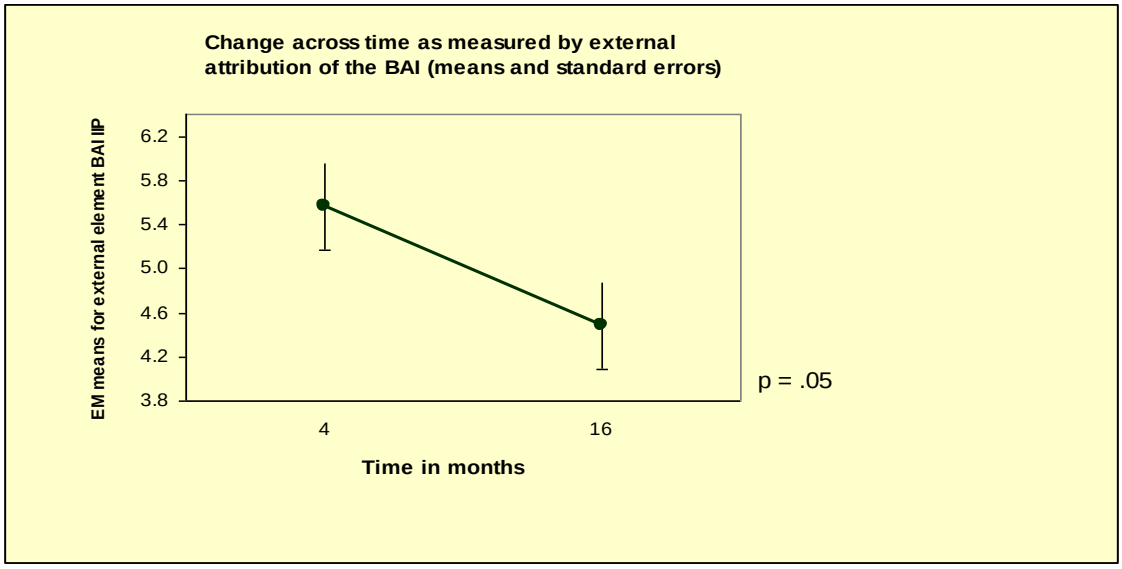


CIRCLE: In contrast to the improvement the patients perceived in the overall amount of distress they experienced in their interpersonal interactions, nurse ratings of the patients' interpersonal, as measured using the CIRCLE, showed no significant changes across time for either the Hostile (Wilks' Lambda = .97, F $_{(3, 43)}$ = .46, p = .71), Sociable (Wilks' Lambda = .97, F $_{(3, 43)}$ = .39, p = .76) or Internalizing (Wilks' Lambda = .98, F $_{(3, 43)}$ = .24, p = .87) factors of the CIRCLE.

Cognitive domain

BAI: There was a significant change across time for the external element of the BAI (Wilks' Lambda = .92, F $_{(1, 47)}$ = 4.15, p = .05). At the 16 month time point the patients were significantly less likely to attribute responsibility for their index offence externally, for example, onto either their social circumstances, victims and society (p = .05) (see Figure 5.7). There were no significant changes across time for either mental element attribution (Wilks' Lambda = 1.0, F $_{(1, 47)}$ = .26, p = .62) or guilt attribution (Wilks' Lambda = .97, F $_{(1, 47)}$ = .19, p = .66).

Figure 5.7:



5.3: Pattern of change across time predicted by the Adult Attachment Interview

The following Table 5.4 shows the scale and factor scores for the primary and secondary outcome measures for the significant interactions across time predicted by the attachment measures

Table 5.4: Scale and factor scores for the primary and secondary outcome measures for the significant interactions across time predicted by the attachment measures

Time point and outcome measure / Attachment predictor variable	8 months; incident scale mean (standard error)	12 months; incident scale mean (standard error)	16 months; incident scale mean (standard error)
AAI; Dst v E			
Dst (n = 40)	-0.13 (0.16)	-0.13 (0.16)	0.06 (0.16)
E (n = 11)	0.32 (0.31)	0.23 (0.31)	-0.10 (0.30)
AAI; CC v non-CC			
CC (n = 23)	-0.3 (0.21)	-0.08 (0.22)	0.05 (0.21)
non-CC (n = 28)	0.18 (0.19)	-0.04 (0.20)	0.00 (0.19)
AAI; CC+Dst v Dst v neither Dst or CC			
CC+Dst (n = 22)	-0.34 (0.22)	-0.16 (0.22)	0.06 (0.21)
Dst only (n = 18)	0.12 (0.24)	-0.16 (0.25)	0.06 (0.24)
Neither Dst or CC (n = 11)	0.03 (0.31)	0.22 (0.32)	-0.10 (0.30)
	8 months; pro-social scale mean (standard error)	**12 months; pro-social scale mean (standard error)**	**16 months; pro-social scale mean (standard error)**
PBI; paternal care			
Paternal care high scorers (n = 28)	-0.11 (0.20)	0.28 (0.20)	0.27 (0.20)
Paternal care low scorers (n = 28)	0.10 (0.19)	0.21 (0.15)	-.0.20 (0.14)
	8 months; IIP externalizing factor mean (standard error)		**16 months; IIP externalizing factor mean (standard error)**
PBI; maternal protection			
Maternal protection high scorers (n = 26)	1.23 (0.50)		0.16 (0.5)
Maternal protection low scorers (n = 25)	-0.80 (0.60)		-0.16 (0.56)

5.3.1: Primary outcome measures; behavioural domain

Incident scale: There was no significant interaction across time between having either a Dismissing (Ds) or Preoccupied (E) attachment representation and the frequency and severity of violence, irrespective of the whether the patient had either a primary Ds or E attachment status. However when the patients were regrouped to yield a pure E group and a dismissing trait group (Dst) there was a significant interaction across time for the Dst v E categories and the incident scale, ($F(2, 98) = 4.32$, $p = .02$) as shown in Figure 5.8. There was no significant difference in the frequency or severity of incidents between the Dst and E groups early in their admission, however the Dst patients improved in terms of committing fewer and less severe incidents, as can be seen by the rise in their scores (an increased score equates with fewer or less severe incidents). There was a significant difference between the scores on the incident scale for the Dst patients at 8 months compared with their scores at 16 months ($p = .05$) and

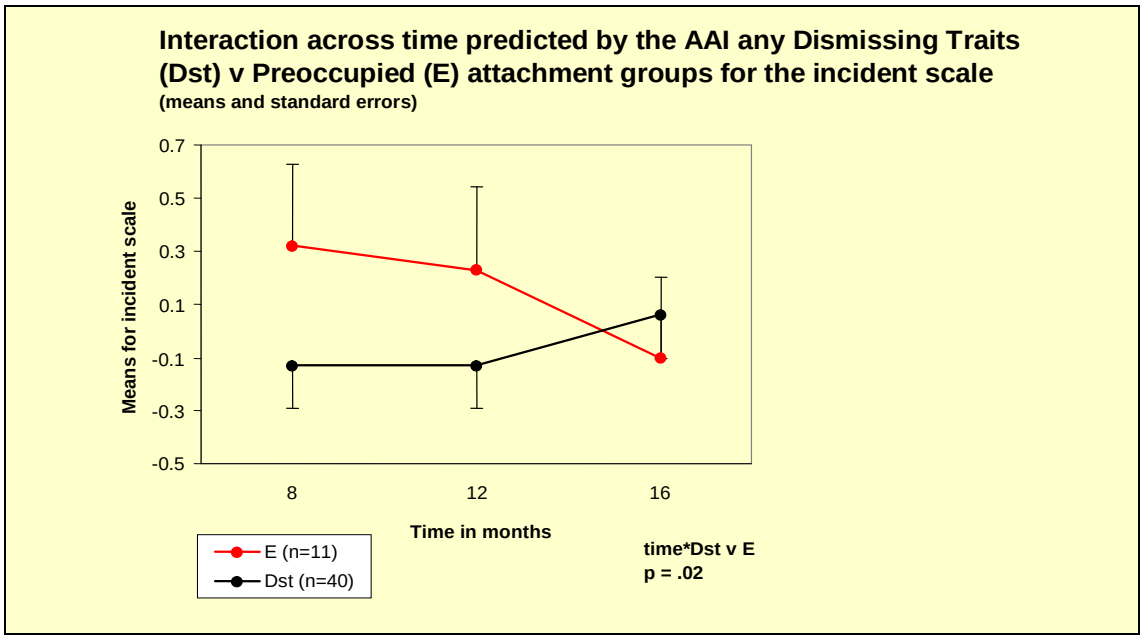
at 12 months compared to their 16-month score (p = .02). In keeping with this the linear component of the interaction was significant (F (1, 49) = 5.82, p = .02). In contrast the pure E patients remained the same, as there were no significant differences between the frequency and severity of incidents in this group across time. However this result should be interpreted with caution due to the low number of patients with an E classification.

We were interested to investigate what might account for the interaction between the Dst patient group and the incident scale. The baseline data were re-examined for significant associations between entry variables and the Dst variable. As there were some significant associations we investigated whether the Dst category predicted outcome, with respect to the incident scale, when these associations were controlled for.

The associations between the Dst patient group were that having a Dst attachment classification on admission was significantly negatively associated with having been taken into care before the age of 10 (χ^2 = 14.00, df = 1, p = .00). Those patients whose attachment representations were Dst as adults were less likely to have been taken into care compared with those who were E. Having a Dst attachment status was positively associated with having a current diagnosis of alcohol abuse (χ^2 = 9.09, df = 1, p = .01) and alcohol dependency (χ^2 = 5.08, df =1, p = .02) while Dst attachment status was negatively associated with both a previous offending history of arson (χ^2 = 5.36, df = 1, p = .04) and committing an acquisitive index offence (χ^2 = 6.65, df = 1, p = .02). With respect to continuous baseline variables, having a Dst attachment classification was positively associated with BPRS scores (F (1, 63) = 5.89, p = .02) indicating that the Dst group had a greater level of psychopathology compared with the patients who were Preoccupied (E) with respect to attachment.

There were no significant interactions across time the patient group with an adult diagnosis of either alcohol abuse (F (2, 98) = 1.23, p = .30), or alcohol dependency (F (2, 98) = .43, p = .63) and the incident scale. There was also no significant interaction for having been taken into care before the age of 10 and the incident scale (F (2, 98) = .36, p = .69). Furthermore, the Dst group's improvement on the incident scale was neither accounted for by the patients being less likely to have committed a previous offence of arson (F (2, 98) = .60, p = .53), nor an acquisitive index offence (F (2, 98) =1.01, p = .34). To control for any effect of the continuous baseline variables on the interaction between the Dst group and the incident scale, variables that had significant associations with the Dst group at entry, were entered as covariants in the within-subject analysis of variance of the repeated measures analysis. Only one continuous variable, the BPRS, was significantly associated with the Dst patient group. The interaction across time between the Dst group and the score on the incident scale still remained significant when the BPRS entry score was entered as a covariant (F (2, 96) = 3.26, p = .05) although significance fell from p = .02 to p = .05.

Figure 5.8:



Analysis of variance, using the Ds composite for the AAI scale scores as a covariant, showed a significant interaction with time with the incident scale (F (2, 98) = 3.27, p = .05). Examining the parameter estimates at 8 months there was a slight negative association between the Ds composite and the incident score (B = -.13, t <1, p = .38, 95% CI -.42 to .16) indicating that the more Ds patients had a lower incident score (a lower score on the incident scale equates with either more frequent or more severe incidents). At 12 months the strength of this negative association had decreased (B = -.04, t <1, p = .8, 95% CI -.33 to .25) and by 16 months there was a positive association between the Ds composite and the incident score (B = .10, t <1, p = .46, 95% CI -.17 to .38). In keeping with this the linear component of the interaction was significant (F (1, 49) = 5.05, p = .03). In other words, the Ds composite predicted a reduction in the frequency or severity of incidents across time. When the Ds composite was median split, although not quite reaching significance, there was a trend for those individuals whose scores fell above the split, and so were more Ds, to improve and have less severe and or less frequent aggressive incidents compared to the less Ds like group whose scores fell below the split.

There was a significant interaction across time for patients with a Cannot Classify (CC) attachment classification and the incident scale (F (2, 98) = 4.76, p = .01) (see Figure 5.9). There was no significant difference in the frequency or severity of incidents between the CC and non-CC groups early in their admission. However the CC patients improved in terms of committing fewer and less severe incidents, as indicated by the rise in their scores on the incident scale; consistent with this the linear component of the interaction was significant (F (1, 49) = 6.61, p = .01). There was a significant difference between the scores on the incident scale for the CC patients at 8 months compared with their scores at 16 months (p = .01). In

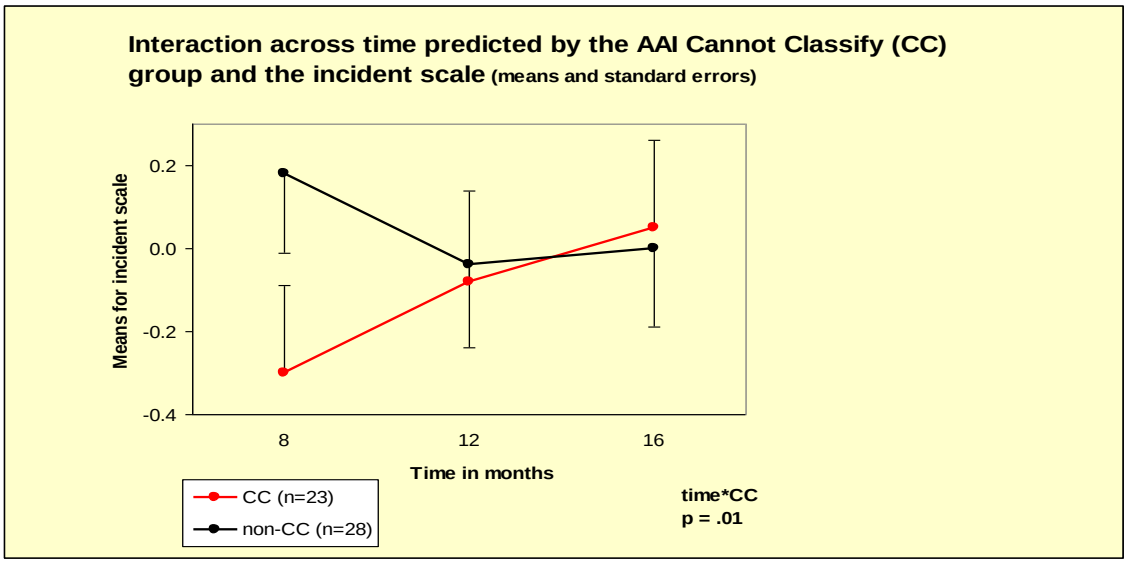
contrast there were no significant differences between the frequency and severity of incidents in the non-CC patient group across time.

As there were significant baseline associations between the CC group and some categorical and continuous variables we were interested to see if the CC category predicted the behavioural outcome of these patients, with respect to the incident scale, when these associations were controlled for. A CC attachment classification was significantly positively associated with a having a childhood diagnosis of cd and an adult diagnosis ASPD or alcohol dependency. CC attachment status also was significantly negatively associated with having a current diagnosis of schizophrenia; CC patients were less likely to have a current diagnosis of schizophrenia. With respect to continuous baseline variables, having a CC attachment classification was positively associated with the SCL-90-R Externalizing Factor and the Hostile Factor of the CIRCLE, with CC patients scoring higher on both.

There was no significant interaction across time for having a diagnosis of cd or having an adult diagnosis of ASPD and the incident scale ($F(2, 98) = 1.84$, $p = .17$) and ($F(2, 98) = 2.38$, $p = .10$) for cd and ASPD respectively. There was also no significant interaction across time for a diagnosis of alcohol dependency ($F(2, 98) = .43$, $p = .63$). Furthermore, the CC group's improvement on the incident scale was not accounted for by the group containing fewer patients with a current diagnosis of schizophrenia ($F(2, 98) = .61$, $p = .53$).

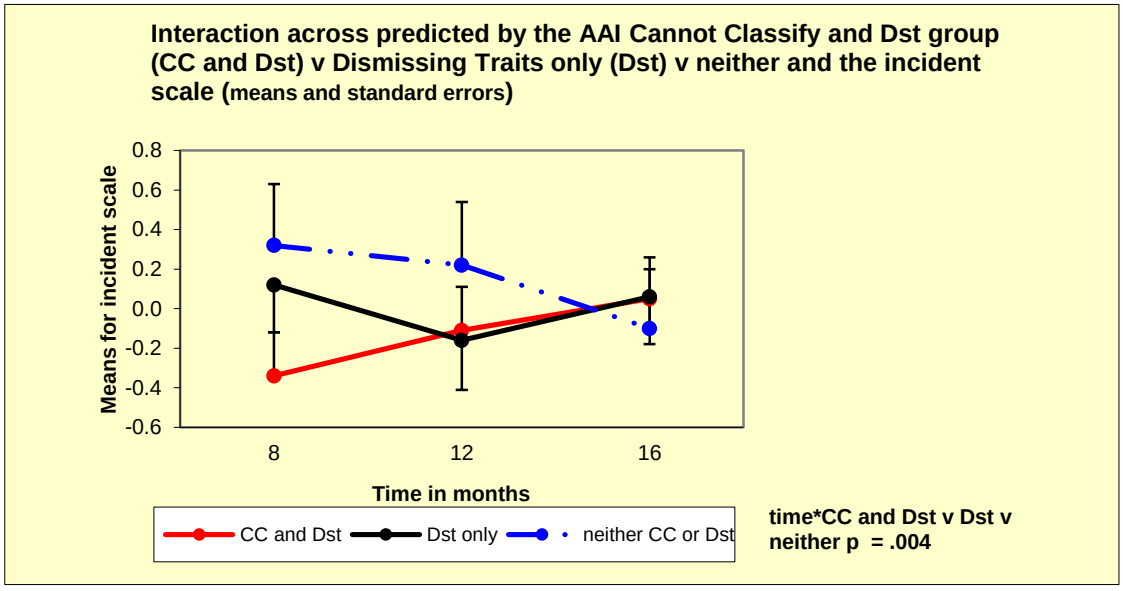
To control for any effect of the continuous baseline variables on the interaction between the CC group and the incident scale, variables that had significant associations with the CC group at entry were entered as covariants in the within-subject analysis of variance of the repeated measures analysis. When the Externalizing Factor of the SCL-90-R was entered as a covariant the interaction still remained significant ($F(2, 96) = 3.94$, $p = .03$). When the Hostile Factor of the CIRCLE was entered as a covariant the significance of the interaction between the CC group and the incident scale was reduced ($F(2, 90) = 2.55$, $p = .09$).

Figure 5.9:



Investigation of the relationship between the Dst and the CC patient groups revealed that the Dst and CC patients were not distinct groups, as evidenced by a significant association between the groups (χ^2 = 7.07; p = 0.01; df = 1). As the frequency and the severity of incidents improved across time for both the CC and Dst patient groups and as these two groups overlapped we were interested to see the strength of this interaction when patients who had the most insecure attachments, both a CC attachment status and a Dst state of mind, were considered. Patients were regrouped to according to whether they were CC and Dst with respect to attachment; Dst only or neither. There was a strongly significant interaction across time for the Dst and CC group v Dst group v neither (F (4, 96) = 4.27, p = .004) as shown in Figure 5.10.

Figure 5.10:



There was no significant difference in the frequency or severity of incidents between the CC and Dst group, the Dst only group and the group that were neither Dst nor CC, at 8 months. However the CC and Dst patients improved in terms of committing fewer and less severe incidents, as can be seen by the rise in their scores on the incident scale. There was a significant difference between the scores on the incident scale for the CC and Dst patients at 8 months compared with their scores at 16 months ($p = .005$). In keeping with this the linear component of the interaction was significant ($F (1, 21) = 9.91$, $p = .005$). In contrast the frequency and severity of incidents increased significantly in the pure Dst patient group between 8 and 12 months ($p = .004$) but then decreased between 12 and 16 months, consistent with this the quadratic component of the interaction was significant ($F (1, 17) = 6.75$, $p = .02$). Overall the frequency and severity of incidents in the pure Dst group did not change significantly across the follow-up period. Additionally there were no significant differences between the frequency and severity of incidents in the group that were neither Dst nor CC across time, however this result should be interpreted with caution due to the low number of patients that were neither Dst or CC.

Pro-social index: Although categorical E attachment did not predict any behavioural outcome the analysis of variance, using the E composite as a covariant, showed a significant interaction with time with the pro-social index ($F (2, 108) = 5.13$, $p = .01$). Examining the parameter estimates at 8 months there was a slight positive association between the E composite and the pro-social score ($B = .18$, $t > 1$, $p = .09$, 95% CI -.03 to .39) indicating that the more E patients had a higher pro-social score. A high score on the pro-social index equates with more engagement in rehabitational activities. At 12 months, however, the direction of this association had changed so that there was a negative association ($B = -.12$, $t <1$, $p = .28$, 95% CI -.33 to .10). At 16 months here was still a negative association between the E composite and the pro-social index, although its strength had decreased, ($B = -.05$, $t <1$, $p = .64$, 95% CI -.26 to .16). In keeping with this the quadratic component of the interaction was significant ($F (1, 54) = 7.51$, $p = .01$). In summary E composite predicted a decrease in pro-social activity over time. Although there was no significant interaction across time when the E composite was median split the trend was that those individuals whose scores fell above the median split, and so were more E like, fared worse in their pro-social engagement.

Having a U attachment status was not predictive of any behavioural outcome.

5.3.2: Secondary outcome measures

Psychiatric domain

BPRS: There were no significant interactions across time for any of the categorical AAI classifications or attachment composites and the BPRS scores.

SCL-90-R: There were no significant interactions across time for any of the categorical AAI attachment classifications and either the global indices or the factors of the SCL-90-R.

Although it was not possible to use security of attachment as a categorical variable, as there were so few F individuals, analysis of variance using the F composite of secure as a covariant showed a significant interaction across time with Factor 1, the Internalizing Factor ($F(3,120) = 4.60$, $p = .01$) and with Factor 2, the Externalizing Factor, of the SCL-90-R ($F(3,120) = 4.68$, $p = .01$).

Examination of the parameter estimates for the Internalizing Factor revealed no significant association between the F composite scores and internalizing symptoms at entry and 8 months ($B = .33$, $t < 1$, $p = .64$, 95% CI = -1.09 to 1.74) and ($B = -.36$, $t < 1$, $p = .61$, 95% CI = -1.74 to 1.03) for entry and 8 months respectively. However at both 12 and 16 months there was a relatively strong association between attachment security and internalizing symptoms ($B = 1.08$, $t > 1$, $p = .09$, 95% CI = -.21 to 2.37) and ($B = 1.46$, $t > 1$, $p = .03$, 95% CI = .17 to 2.75) for 12 and 16 months respectively. In line with this, when the F composite was median split, the pattern of scores across the four time points was significantly different. Consistent with this the cubic component of the interaction was significant ($F(1, 40) = 4.06$, $p = .05$). In the first half of the study period the more insecure patients had higher Internalizing Factor scores and rated themselves as suffering more distress from feelings of depression and anxiety; however in the second half their scores fell. Those individuals below the median in security scores shifted more in terms of internalizing symptoms compared to those above the median who remained relatively unchanged.

Examination of the parameter estimates for the Externalizing Factor revealed no significant association between the F composite scores and Externalizing symptoms at entry, 8 months and 12 months ($B = .31$, $t < 1$, $p = .63$, 95% CI = -.95 to 1.57), ($B = -.35$, $t < 1$, $p = .58$, 95% CI = -1.60 to .91) and ($B = .91$, $t > 1$, $p = .12$, 95% CI = -.25 to 2.08) for entry, 8 and 12 months respectively. At 16 months there was a relatively strong positive association between attachment security and externalizing symptoms ($B = 1.34$, $t > 1$, $p = .02$, 95% CI = .19 to 2.49). In line with this, when the F composite was median split, the pattern of scores across the four time points was significantly different. Consistent with this the quadratic component of the interaction was significant ($F(1, 40) = 4.45$, $p = .04$). In the first half of the study the more insecure participants had higher externalizing Factor scores indicating that they rated themselves as experiencing more distress from symptoms such as paranoid anxiety, feelings of anger and hostility and psychotic symptoms; however in the second half they had lower scores. Those individuals below the median in security scores shifted more in terms of externalizing symptoms compared to those above the median who remained relatively unchanged.

Analysis of variance using the Ds composite attachment as a covariant also showed a significant interaction across time with Factor 1, the Internalizing Factor ($F(3,120) = 4.13$, $p = .01$) and with Factor 2, the Externalizing Factor, of the SCL-90-R ($F(3,120) = 4.38$, $p = .01$).

Examination of the parameter estimates for the Internalizing Factor revealed no significant association between the Ds composite scores and internalizing symptoms at entry, 8 months and 12 months (B = -.20, t < 1, p = .77, 95% CI = -1.59 to 1.18), (B = .43, t > 1, p = .53, 95% CI = -.92 to 1.78) and (B = -.76, t < 1, p = .24, 95% CI = -2.05 to .52) for entry, 8 and 12 months respectively. However at 16 months there was a relatively strong negative association between Ds attachment insecurity and internalizing symptoms (B = -1.33, t < 1, p = .04, 95% CI = -2.60 to -.06). In line with this when the Ds composite was median split the pattern of scores across the four time points was significantly different. Consistent with this the quadratic component of the interaction was significant (F (1, 40) = 4.78, p = .04). At 8 months the more Ds individuals had higher Internalizing Factor scores; however in the second half of the study these shifted so that they had lower scores and reported experiencing less distress from symptoms of depression anxiety and feelings of inadequacy. Those individuals above the median in dismissing scores shifted more in terms of internalizing symptoms compared to those below the median who remained relatively unchanged.

The pattern of change across time for the Externalizing Factor was similar to that of the Internalizing Factor. Examination of the parameter estimates for the Externalizing Factor revealed no significant association between the Ds composite scores and externalizing symptoms at entry, 8 months and 12 months (B = -.26, t < 1, p = .67, 95% CI = -1.50 to .97), (B = .45, t > 1, p = .46, 95% CI = -.76 to 1.67) and (B = -.64, t < 1, p = .27, 95% CI = -1.80 to .52) for entry, 8 and 12 months respectively. However at 16 months there was a relatively strong negative association between Ds attachment insecurity and externalizing symptoms (B = -1.21, t < 1, p = .04, 95% CI = -2.35 to -.07). In line with this, when the Ds composite was median split, the pattern of scores across the four time points was significantly different. Consistent with this the quadratic component of the interaction was significant (F (1, 40) = 6.13, p = .02). At 8 months the more Ds individuals had higher Externalizing Factor scores; however in the second half of the study these shifted so that they had lower scores and reported experiencing less distress from symptoms of paranoid and phobic anxiety, psychotic symptoms and feelings of anger and hostility. Those individuals above the median in dismissing scores shifted more in terms of externalizing symptoms compared to those below the median who remained relatively unchanged.

Interpersonal domain

IIP: There was no significant interaction for either the mean IIP score or for the IIP factor scores and the AAI categories. Although it was not possible to use security of attachment as a categorical variable analysis of variance, using the F composite of secure as a covariant, showed a significant interaction across time with Factor 1, the Isolating Factor, of the IIP (F (1, 49) = 4.24, p = .05). Examining the parameter estimates there was a slight negative association between secure scores and IIP Factor 1 at entry (B = -.16, t <1, p = .72, 95% CI =

-1.06 to .74) indicating that the more secure patients rated themselves as having less difficulty in being appropriately assertive or in being sociable in their interpersonal interactions. At 16 months there was a positive association between secure composite scores and IIP F1 (B = .73, t >1, p = .11, 95% CI -.18 to 1.63) indicating that the more secure patients rated themselves as having more difficulty in being appropriately assertive or in being sociable in their interpersonal interactions. When the F composite was median split the pattern of scores across time indicated that it was the less secure individuals, whose scores fell below the median split, who improved across time finding it easier to become more intimate and sociable compared to the more secure group whose scores didn't alter.

CIRCLE: Although categorical attachment status did not predict change in how patients related to each other or staff as measured by the CIRCLE the E composite predicted change. Analysis of variance using the E composite as a covariant showed a significant interaction across time with Factor 1, the Hostile Factor, of the CIRCLE (F (3, 132) = 4.27, p = .01). Examining the parameter estimates there was a slight negative association between E composite scores and Factor 1 at entry (B = -.03, t < 1, p = .94, 95% CI -.78 to .73) indicating that these patients were rated as less hostile, coercive and non-compliant in their interactions by the nurses. At 8 and 12 months there was a positive association between E composite scores and the Hostile Factor (B = .50, t > 1, p = .18, 95% CI -.23 to 1.22), (B = .38, t > 1, p = .29, 95% CI -.34 to 1.10) for 8 and 12 months respectively indicating that these patients were rated as more hostile, coercive and non-compliant in their interactions by the nurses. By 16 months the association had become negative again (B = -.47, t < 1, p = .14, 95% CI -1.1 to .15) indicating that the preoccupied patients, as assessed by the E composite, were rated as less hostile, coercive and non-compliant in their interactions by the nurses. In line with this, when the E composite was median split the pattern of scores across the four time points was significantly different. Consistent with this the quadratic component of the interaction was significant (F (1, 44) = 4.98, p = .03). In the first half of the study the less preoccupied individuals were rated as less hostile however it was the nurses rating of this group that shifted more compared to their rating of the group whose scores were above the median which did not alter.

There was also a significant interaction significant interaction across time between the E composite and Factor 2; the CIRCLE Sociable Factor (F (3, 132) = 4.31, p = .01). Examining the parameter estimates there was a slight positive association between E composite scores and Factor 2 at entry (B = .38, t > 1, p = .12, 95% 95% CI -.01 to .85) indicating that the more preoccupied patients were rated as being more sociable and friendly in their interactions by the nurses. At 8 and 12 months there was a negative association between preoccupied composite scores and the Sociable Factor (B = -.41, t < 1, p = .12, 95% CI -.92 to .11), (B = -.10, t < 1, p = .71, 95% CI -.60 to .41) for 8 and 12 months respectively indicating that the more preoccupied patients were rated as being less sociable and friendly in their interactions.

By 16 months the association had become positive again (B = .35, t > 1, p = .19, 95% CI -.18 to .87) indicating that the more preoccupied patients were rated as being more friendly and sociable in their interactions. In line with this, when the E composite was median split, the pattern of scores across the four time points was significantly different. Consistent with this the quadratic component of the interaction was significant (F (1, 44) = 12.36, p = .001). The more E group was rated as being friendly and sociable by the nurses initially. However the nurses' rating of this group decreased so that, by 16 months, they were rated as being less friendly and sociable in their interactions compared to their rating at entry, whereas the nurses' rating of the group below the median did not alter.

Cognitive domain

There were no significant interactions across time for any of the AAI attachment categories and the BAI scores.

5.4: Pattern of change across time predicted by the Parental Bonding Instrument

5.4.1: Primary outcome measures; behavioural domain

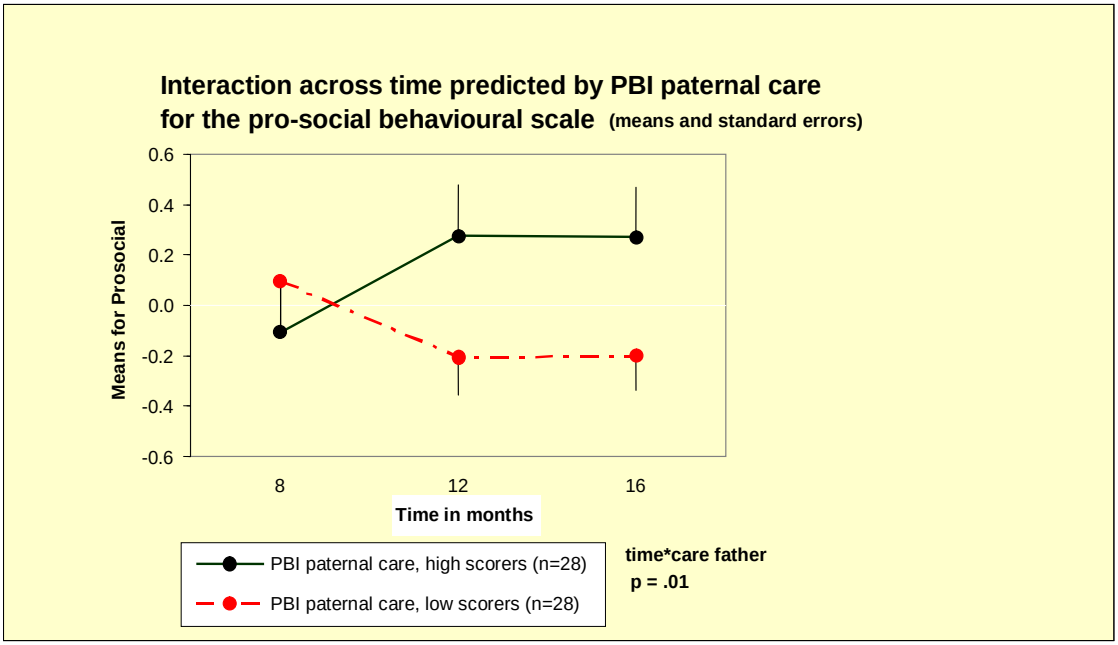
There was a significant interaction across time for the paternal care dimension and the pro-social outcome measure, (F (2, 94) = 5.16, p = .01) (see Figure 5.11). Those patients who perceived their fathers' parenting style as having been more caring were significantly more able to engage in pro-social activities such as attending occupational therapy, education and work areas over the follow-up period, compared to the patient group who experienced their fathers' parenting as less caring.

Early in admission there was no significant difference between the high and low scoring groups on the paternal care dimension to engage in pro-social activities. However, the high scorers, who experienced their fathers as being more caring, improved across time in terms of their engagement, as can be seen by the rise in their scores on the pro-social scale. An increased score equates with increased attendance at rehabilitational activities or being seen as well enough to be transferred to a lower level of security. There was a significant increase in the scores on the pro-social scale for the patients with high paternal care scores at 12 months compared with their scores at 8 months (p = .03). In contrast there was no significant difference across time for the pro-social scores for the patients who perceived their fathers as being less caring.

As there was a significant baseline association between paternal care and the PST entry score on the SCL-90-R we were interested to see if paternal care predicted pro-social outcome for these patients when this association was controlled for. When the SCL-90-R PST score was entered as a covariant in the within-subject analysis of variance of the repeated measures analysis the interaction between paternal care and the pro-social scale still

remained significant (F (2, 92) = 5.34, p = .01). There were no significant interactions across time for the anti-social outcome measures and any of the PBI dimensions.

Figure 5.11:



5.4.2: Secondary outcome measures

Psychiatric domain

There were no significant interactions across time for any of the PBI dimensions and the BPRS scores, the global indices of the SCL-90-R or the factors of the SCL-90-R.

Interpersonal domain

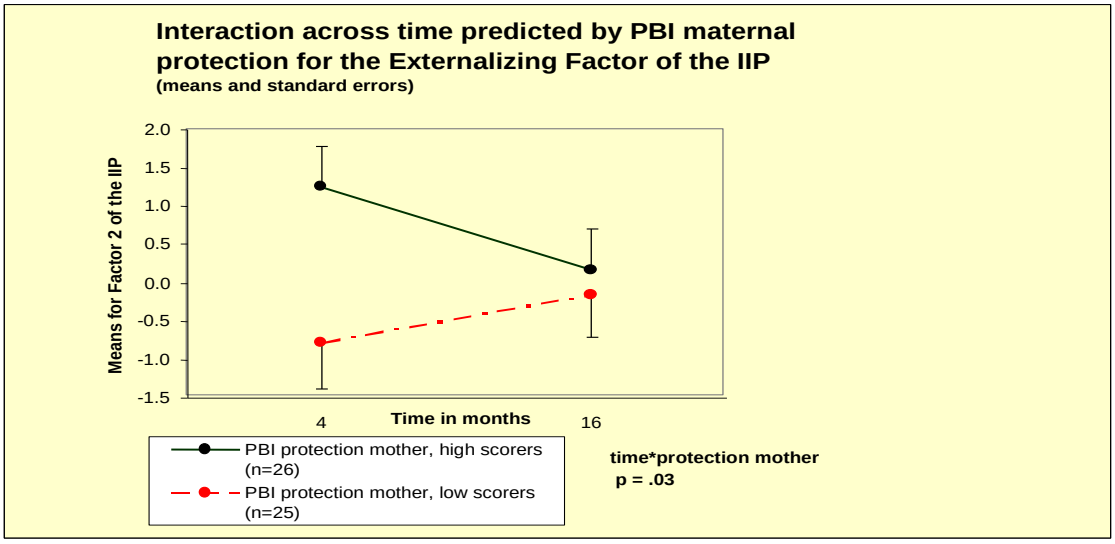
CIRCLE: There was no significant interaction across time for any of the PBI dimensions and the CIRCLE factors.

IIP: There was a significant interaction across time for the PBI maternal protection dimension and Factor 2, the Externalizing Factor, of the IIP (F (1, 49) = 4.89, p = .03) (see Figure 5.12). Those patients who perceived their mother's parenting style as overprotective experienced their interpersonal relationships as significantly improving in terms of the degree to which they perceived themselves as becoming less controlling and more appropriately submissive and responsible in their interpersonal relationships, compared to the group whose perceived maternal style was less controlling. There was a significant difference between the groups early in admission (p = .01) with the patients' who perceived their maternal relationship as overprotective rating themselves higher on Factor 2, indicating that they found it difficult to be appropriately submissive and as being more controlling in interpersonal relationships. There was a significant difference across time for these patients who rated themselves as becoming

more sociable in their interactions (p = .03) compared to the group who rated their maternal parenting style as less over-protective who showed no change across time.

We were interested in investigating what might account for this interaction. As there were significant associations at baseline between maternal protection and the PST entry score on the SCL-90-R and the external element of the BAI we examined whether the maternal protection dimension predicted outcome for these patients, with respect to Factor 2 of the IIP, when these associations were controlled for. The PST and external element variables were entered as covariants in the within-subject analysis of variance of the repeated measures analysis. The interaction across time between the maternal protection dimension and the score on the Externalizing Factor 2 of the IIP remained significant when the external element score of the BAI was entered as a covariant, although the level of significance fell (F (1, 48) = 4.15, p = .05). However the interaction failed to remain significant when the PST score on the SCL-90-R was controlled for (F (1, 48) = 3.53, p = .07).

Figure 5.12:



Cognitive domain

There were no significant interactions across time for any of the PBI dimensions and the BAI scores.

5.5: Discussion

5.5.1: Change in the sample across time

Overall the patients rated the distress arising from the severity of their psychiatric symptoms as decreasing across the first 16 months on two of the global indices of the SCL-90-R. This patient-rated significant improvement was not evident on the observer rated measure of psychiatric symptomatology, the BPRS. The psychiatric symptoms improved on both

measures between 4-8 months. Whereas the patients continued to experience an improvement in their distress, the independent raters of the BPRS chart a deterioration in the patients' psychopathology over the following 8 months. The most likely explanation for this diverging pattern is that the patients' symptoms may still be present and in evidence to the BPRS raters but that the patients experience their distress, arising from their symptoms, as lessening. Two further possibilities were considered.

First, that the early improvement in symptoms might have resulted from a medication response in those patients who had a dual diagnosis of schizophrenia. However there was no significant difference in the mean scores on the BPRS between the two groups and no significant group interaction across time. Second, that this discrepancy might be an instrument problem with the BPRS. However this is a robust instrument which has been used extensively in psychiatrically disordered populations and it was reliable in the Broadmoor population. It may also have been the case that pattern of change in the BPRS arose from a criterion shift on the part of the raters. In other words, the observers' rating of the BPRS in the 8-12 month period may have been influenced by the improvement they had already seen in the patient between 4-8 months. The raters may well have had an expectation of further improvement and when this could not be established their rating criteria shifted so that an iatrogenic effect occurred with the patients being seen as symptomatically worse than they were.

A discrepancy was present between the patterns of change across time for interpersonal interactions as measured by the overall IIP score compared with the CIRCLE. Patients rated their interactions as improving, however observer ratings failed to show any change. Each nurse completing the CIRCLE had observed their particular patient for at least a month. As such, their expectations about the patient's behaviour during the rating period may have been influenced by their pre-existing criteria, so that they did not pick up change in the patient's interpersonal interactions.

It is suggested that using the same raters may have rendered the observational measures vulnerable to a criterion shift at each time point and consequently the data became noisy. One way of addressing this would have been to have new independent observers at each follow-up point, although this would have been more resource intensive and required more extensive reliability testing.

Overall the group changed little across time. Significant changes were found only on the global scales for the SCL-90-R and the IIP and on one factor of the BAI. There was no overall change across time for the violence incident and seclusion scales and pro-social scale primary outcome measures. With respect to the seclusion data it may be that these data do not constitute an adequate outcome measure to look at improvement in aggressive behaviour as the nurses may well have had to make a 'forced' choice. In other words, as there is only a

single seclusion room per ward, the nurses may have had to seclude the most difficult patient while an equally difficult patient could then not be secluded because of the physical environment. Although there was no change in the patients' behaviour as measured on the seclusion scale over time, concluding that there was no improvement would be unwarranted. A more parsimonious explanation would be that seclusion data do not make a suitable outcome measure for picking up behavioural change in this environment. As the process for documenting incidents of aggression was not subject to the same physical constraints and procedural constraints were controlled for when collecting data for the pro-social scale (i.e. sessions which patients failed to attend due to failure of institutional processes were not counted) one explanation for finding that the patients did not change across time on these outcomes was that the group was very heterogeneous.

The lack of significant change across the whole group was disappointing in terms of failing to demonstrate benefit from treatment input to this group who are looked after in a costly and resource heavy service. The significant changes in the group were all reported using self-rating measures (SCL-90-R, IIP and BAI). As such the self-reported improvements may be prone to the limited capacity for introspection and perspective taking which characterises personality-disordered patients (Westen & Shedler 1999a; Westen & Shedler 1999b) consequently self-report approaches may yield a distorted response. In support of this a study of pd patients in Rampton High Secure Hospital found that male patients underestimated their worst aspects of interpersonal relating such as dominance and coerciveness and overestimated their best qualities such as nurturance on the CIRCLE compared with how nurses rated their interpersonal functioning (Milton et al. 2005). This study used the CIRCLE in a novel way by getting patients to rate themselves

The favoured explanation as to why there was so little significant change was that there was considerable heterogeneity within the group. It is probable that some patients' scores improved across time however, others failed to improve while the scores of others' deteriorated.

Although the lack of significant change was disappointing, it needs to be kept in mind that this group of patients are a chronic group both in respect of the duration and severity of their disorder. In terms of the degree of change that might be anticipated it would be optimistic to expect these patients to be able to experience guilt and remorse (as assessed by the BAI) for their offence and victim at this stage in their treatment; especially in the context of their poor reflective function. Likewise it may also have been too soon to expect these patients to locate responsibility for their actions within themselves as assessed by the Mental element attribution scale of the BAI. The patients reported experiencing less symptomatic distress from their psychiatric symptoms and their interpersonal interactions but the disappointing aspect was that this was not picked up by either the corresponding observer measures (the BPRS and

CIRCLE) and the primary outcome measures of violent and aggressive behaviour and pro-social activity. As discussed above, one possible explanation for lack of change was that the patient group was highly heterogeneous. However it may also be the case that some of the patients had not been able to translate the improvement they experienced in feeling less distressed by their symptoms into behavioural change in terms of a reduction in their violent and aggressive behaviour. Furthermore it is concerning that the 'security' in 'high security' which consists of relational, procedural and physical elements (Exworthy & Gunn 2003) was not able to contain the aggressive and violent behaviour of enough of the patients to result in an overall group improvement.

The main aim of this research, however, was to investigate whether attachment measures could predict change in the patients' violent and pro-social behaviour; psychiatric symptoms; interpersonal interactions and their cognitive stance with respect to their index offence across the first 16 months of their stay in high security.

5.5.2: The AAI as a predictor of clinical outcome

Those individuals who were Ds with respect to attachment were the group whose aggressive actions decreased in frequency and severity across time. This prediction only held when Dismissing states of mind were considered in their entirety and individuals who had a secondary Ds attachment classification were included. The patients in this study were a highly violent and disturbed group; such groups have rarely been researched with respect to attachment. Although the finding that the pattern of aggressive behaviour across time was unrelated to a particular primary insecure attachment category, either E or Ds, might appear unexpected, the finding that Dst states of mind were predictive suggests that a more complete consideration of Ds states of mind are needed in highly disturbed groups. The fact that the Ds composite also predicted an improvement in the frequency and severity of aggressive incidents lends further support for a more encompassing approach that considers all Ds traits in highly disturbed groups. In addition, the Ds composite predicted a reduction in aggressive incidents across time and it was the most Dismissing patients who changed most. Although the patient group with Ds attachment styles and traits was more likely to contain patients who were more psychiatrically unwell, as evidenced by higher BPRS scores, this only made a marginal contribution to the interaction, which was therefore not a proxy measure of psychopathology.

Although there has been an increasing interest in examining whether particular attachment patterns relate to treatment response this is an under-investigated area and the few available studies concentrate on non-violent, non-violent populations. The finding that Dst states of mind and Ds composite scores were predictive of improvement is in keeping with Fonagy's finding that pd patients, who had Ds attachments, were more likely to improve with respect to their

global level of functioning than patients with Preoccupied (E) attachments (Fonagy et al. 1996).

In summary, those individuals who were Dismissing with respect to attachment were the group whose aggressive actions decreased in frequency and severity across time. One interpretation of this is that Ds traits, as oppose to other attachment states of mind moderate aggressive incidents. The finding that having a Cannot Classify (CC) attachment discriminated a patient group whose aggressive incidents were more likely to improve across time was surprising. The fact that the CC patient group contained more patients who rated themselves as experiencing higher levels of hostility and increased distress from physical symptoms and were seen by nursing staff as less compliant and more coercive only made a marginal contribution to this interaction.

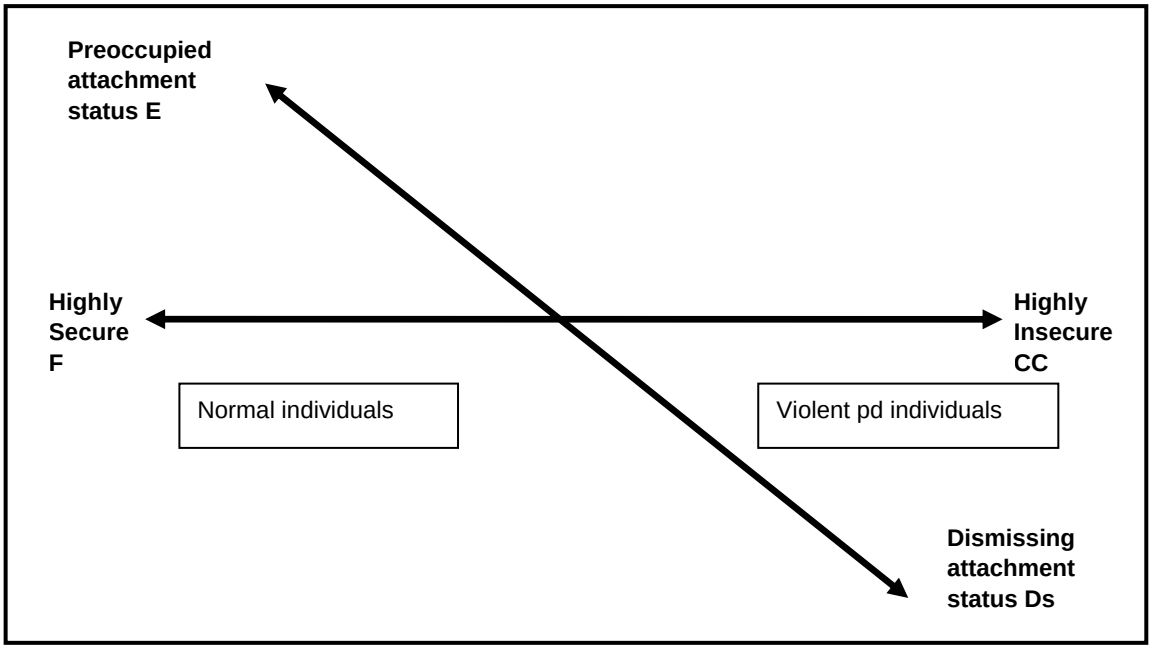
Cannot Classify individuals have mixed attachment representations and no single organising attachment strategy predominates. They may oscillate between two opposing strategies, in this case E and Ds strategies; or their pattern of attachment towards different attachment figures may vary dramatically. In terms of linking attachment states of mind to aggressive behaviour, patients will respond to other patients and staff based, in part, on their current mental state with respect to attachment. Patients who are CC will be both attempting to limit the effect of attachment by denigration of and distancing themselves from attachment stimulating situations. At other times they will seek to maximise closeness to others, especially in response to real or perceived threats of abandonment. The latter situation may result in threatening and aggressive behaviour to others and the self in response to perceived or real threats of loss, while dismissal of and denigration of attachment figures removes the inhibitory barrier to violence towards others as the ‘other’ ceases to be a person in the mind of the patient. When the attachment system is stimulated and the patient is affectively or physiologically aroused, coupled with poor rf, the patient may resort to aggressive action.

Although this provides an explanatory model as to why aggression may break through in those patients who oscillate between Ds or E attachment states of mind we suggest that it is more than the summative effect of combining these disparate strategies that leads to aggression in patients who have a CC attachment. We propose that aggression may erupt because combining disparate attachment strategies disorganises the attachment system, possibly lowering the threshold for an aggressive response. Additionally, as aspects of the attachment system are interacting with the care-giving environment, the propensity for the patient to react aggressively may be either enhanced or diminished by the response of that environment. It is suggested that it is easier for caregivers and staff to respond consistently towards an individual with an organised attachment strategy, albeit an insecure one, and thus minimise the risk of aggression. If a patient has an unstable and oscillating attachment state of mind, both understanding the individual’s state of mind and providing the optimal response is

altogether more difficult and the care-giving system may unwittingly respond inaccurately, precipitating aggression.

On further investigation it appeared that a particular combination of attachment representations best predicted improvement in violence. Those patients who had both CC and Dst attachment representations fared better that pure Dst patients, who in turn fared better than those who had E attachments. The emergent picture was one where the propensity to be violent depended more on the severity of and degree of attachment insecurity rather than on any one particular type of insecure attachment. This is in keeping with a model of attachment and psychopathology that proposes that attachment consists of two orthogonally related dimensions; one representing the type of insecurity, from E to Ds, the other representing the severity of insecurity from Secure (F) to CC individuals. As the severity of an individual's psychiatric disorder propels him or her from a normal towards a clinical population, secure attachment status decreases but tends to move towards being Ds or E (Fonagy et al. 1996; Barone 2003). As the severity of psychopathology increases in the clinical group and individuals require inpatient care, the person's attachment status is less likely to fall into a particular insecure category as it becomes more unstable. This instability, reflected in increasing numbers of individuals with a CC classification, is seen as a marker of the increasing severity of the attachment disorder. The results of this study suggest that, for violent personality-disordered patients, the relationship between these dimensions may be conceptualised as illustrated in figure 5.13, with the most insecurely attached patients moving towards an attachment state characterized by being CC with Dst traits.

Figure 5.13: Relationship between attachment security and degree of psychopathology



Unexpectedly, it was the patients who were CC and Dst who, although appearing more behaviourally disordered initially, were the group whose violence reduced. As those patients with pure Dst attachments did not improve, it appeared that, although the combined CC and Dst attachment pattern was the most problematic in relation to aggressive behaviour, it was this attachment pattern which responded to the therapeutic environment in Broadmoor. We considered two possible explanations as to why violence and aggressive behaviour diminished within the high secure environment in these severely attachment disordered and least stable patients.

First, we considered whether these patients' improved because the high secure environment made relatively few demands upon their unstable attachment system and consequently the violence these demands could evoke diminished and behaviour settled. On balance this was thought an unlikely explanation as it is difficult to support the contention that the high secure environment would make few attachment demands. Adshead (Adshead 1998) has argued that relationships between patients and psychiatric staff may resemble attachment relationships and that the institutional environment may stimulate both secure and insecure attachment behaviour. As the median length of stay of patients in high security is 6.3 years (range 0.01 - 52.3) (Butwell et al. 2000) it seems unrealistic to propose that the care-giving environment remains neutral, with respect to the attachment system, across such a long period. Adshead discusses how demands upon the attachment system may occur during the admission process which involves dislocation from a known setting and relocation in the unknown, locked environment of Broadmoor with its often frightening associations, stimulating the attachment system so that the patient may seek out staff members and relate to them according to their insecure attachment pattern. Further demands on the attachment system may be stimulated by ward changes, by multiple and sometimes abrupt changes in staff and by inconsistent responses by the care-giving environment (Adshead 2002).

A second, favoured explanation for the improvement in aggressive behaviour in this highly disorganised CC/Dst group, is that the particular environment and regime within high security acted as a stabilising influence upon the Unorganised CC/Dst attachment system and that the care-giving system became more expert at providing the optimal response for this patient group with its unstable and oscillating attachment patterns. This explanation is in keeping with the concept of environmental responsiveness developed by Bowlby (Bowlby 1979, p.104) which postulates that the attachment system is in a continuous state of interaction with the care-giving environment which in turn influences the attachment organisation. The 'security' in 'high security' consists of multiple ingredients, all of which are both needed and required to work alongside each other, to provide a safe and therapeutic environment. Physical security comprises the locks, walls, cameras etc; the procedural element consists of the systems by which patients are managed to maintain safety, such as staff, visitor and patient search procedures; relational security is concerned with staff and teams 'knowing' their patients and

developing a therapeutic alliance with them (Exworthy & Gunn 2003). Although ample opportunities exist in high security to stimulate the attachment system to increase insecurity it is proposed that all these 3 elements of security act to provide a stabilizing effect on the unstable attachment system of the CC/Dst patient group. Although these patients have a more unstable attachment pattern, the fluctuating nature of their attachment system may render it less rigid and more responsive to an environment which, overall, is more consistent than inconsistent.

It was not anticipated that indices of Preoccupied states of mind, such as the E composite, would predict a poorer outcome on the pro-social index. However this result is in keeping with Fonagy's study (Fonagy et al. 1996) in which E individuals failed to improve with psychotherapy treatment. The finding in the Broadmoor group sheds further light on the sequlae of Preoccupied attachment states. These individuals are unable to move beyond what Main has described as an excessive preoccupation or sense of involvement in attachment relationships or attachment-related experiences (Main & Goldwyn 1994). Fonagy concludes that psychotherapy fails to 'reach' these patients as it is hard to displace a well-formed, probably self-serving set of perceptions about past relationships and that E states of mind might well interfere with the patient-therapist relationship. These results suggest that the handicap of having a Preoccupied state of mind is more pervasive and as well as interfering with the therapeutic alliance in psychotherapy it interferes with the patient's capacity to form 'generic' therapeutic relationships and hinders their engagement in a wide range of rehabilitational activities. It is of interest that this engagement begins to decline between 8 to 12 months post admission. One interpretation of this phenomenon is that this is the time when there is an increasing expectation for patients to more actively engage in rehabilitation. Those patients, whose minds are the most overwhelmed and unfocussed or conflicted with respect to attachment, may simply not be able to respond. However such a finding is in need of further replication and must be interpreted with caution due to the relatively low number of E individuals in the sample.

It was of interest that attachment classification did not predict the frequency or severity of aggression as measured by episodes of seclusions, but predicted aggression as measured by violent incidents. One possible explanation lies in the architectural fabric of the hospital. Most wards have only one seclusion room so staff may have to make a forced choice of secluding the 'worst patient' at any one time. The next 'worst patient' or outbreak of aggressive behaviour may be documented as an incident or the patient transferred to a high dependency ward where the increased staff ratio can contain the patient's aggressive behaviour without resorting to using seclusion. In other words, there were procedural and physical constraints on initiating seclusion which did not apply to the recording of violent incidents. Another contributory and linked factor was that the relative infrequency of episodes of seclusion, compared with other violent incidents, may have produced a ceiling effect, so that there was

inadequate variation in the outcome measure to maximise the chance of obtaining a significant association.

Categorical attachment classifications did not predict outcome with respect to the psychiatric, interpersonal and cognitive secondary outcome measures suggesting that attachment does not moderate outcome with respect to these domains. Although this may be a plausible explanation for psychiatric symptomatology and cognitive constructs of offending it seems reasonable to hypothesize that attachment is associated with and may be predictive of inter-personal relating. Finding significant associations with these outcome variables, when attachment was described using continuous variables such as Secure and Dismissing attachment composites, suggests that the failure of some of the attachment categories to predict outcome may have been one of power.

When used as a composite, attachment insecurity was predictive of outcome for self-reported distress from psychiatric symptomatology as measured by the SCL-90-R. Those patients who were more insecure, either because they were less F-like or more-Ds like, were the group who registered more distress initially but whose scores shifted the most across time compared to their more secure counterparts who remained relatively unchanged. One explanation is that the treatment regime and hospital environment allowed these less secure and more Dismissing patients to establish a therapeutic relationship with staff and engage in treatment which resulted in symptom improvement as perceived by the patient. This explanation is in keeping with the finding that it was the less Secure individuals whose capacity to relate in a more sociable way improved most.

The extent to which patients were more E-like predicted aspects of their interpersonal interactions as assessed by others. Interestingly, the nurses rated the most E-like, preoccupied group more positively in the first half of the study. However the nurses' view shifted so that across the second half of the study the more E-like patients were seen as less sociable and friendly and more hostile and coercive in their interactions compared with how they had been seen initially. This finding both fits with and extends van IJzendoorn's general observation that insecurely attached violent patients had more angry and dominant patient-staff interactions (van IJzendoorn et al. 1997). One possible explanation for the nurses' rating shift lies in the nature of E states of mind. Preoccupied individuals may initially appear open in their capacity to talk about their parents and attachment experiences. However a hallmark of E is that this apparent openness does not lead to understanding and progression in terms of the person moving beyond a sense of being entangled and preoccupied by their early experiences. The nurses may have initially seen these patients as more open in their interactions but reformulated their view as they became aware of the underlying angry, conflicted or negative and confused states of mind underpinning E attachment.

Little is known about the how the traditional AAI categories perform in violent highly disturbed patients. AAI categories have the advantage that they have proven reliability and validity in psychiatric patient groups. Their disadvantage is that a purely categorical approach means that the finer grain detail of attachment in violent psychiatric patients may get lost. As well as using AAI categories the researcher combined the AAI scale scores that contribute to the F, Ds and E categorical classifications to form E, Ds and F composite scales. Although more reliability and validity work is needed on these composites there are advantages in using composite attachment classifications derived from combining AAI scales, particularly in highly disturbed populations.

In the AAI coding process (Main & Goldwyn 1994, 1998) a final categorical classification is assigned by the rater on the basis of the scale score ratings for the experience and state of mind scales. The rater makes this final classification by comparing the patterning of the scale scores for that particular transcript against a 'theoretically expected' pattern of ratings for each AAI category provided in the scoring manual. Although there is leeway in the scoring system in that ratings may vary by one point from those theoretically expected to fit the various classifications we have seen that the Broadmoor patients scale scores may not always comply with 'theoretically expected' ratings for each AAI category.

For example the pattern of the Broadmoor patients' scale scores was not prototypical of the Dismissing classification as their scores on the rejecting and neglecting scales indicated that their inferred parental experience was only moderately rejecting and mildly neglecting. In the light of the extremely low loving scale score, higher scores might have been anticipated. It may have been that the extent to which attachment experiences were disavowed meant that active negative experiences of rejection and neglect were kept out of mind. Also the group as a whole did not have high state of mind scores on other markers of Ds, such as derogation and idealization of parents.

It is likely that raters struggle to allocate categorical classifications for a proportion of individuals in these highly disturbed and violent groups. The higher number of CC classified individuals would support this. Although a next best classification needs to be assigned if a person is classified as CC this can also be a difficult judgement for the rater. Using AAI composites may provide a useful alternative approach. In the first instance the use of composites should be further explored alongside the use of traditional categories in future research. However the use of composite categories shows promise. The finding that the Ds composite predicted an improvement in the frequency and severity of aggressive incidents lends support for a more encompassing approach that considers all Ds traits when rating the AAI's of violent personality-disordered individuals. Composites may provide a useful alternative in other highly disturbed clinical populations where there is high rate of individuals

classified as CC and the patterning of AAI scale scores diverges to a greater extent from the theoretically expected pattern.

5.5.3: The PBI as a predictor of clinical outcome

In summary the PBI dimension of paternal care was found to predict engagement in rehabilitation while the maternal protection dimension predicted improvement in some aspects of interpersonal functioning.

The use of the PBI as a behavioural predictor is relatively under-investigated and the literature did not reveal any comparable studies. The finding that it was the patients' paternal, rather than maternal, perception of caring which predicted pro-social engagement was unexpected. On the whole, the perception of the paternal relationship has commanded less clinical and research attention compared to that of the maternal relationship, although low levels of paternal care have been associated with the development of antisocial traits in males (Reti et al. 2002). Although it makes clinical sense that patients who perceived their parental relationship as more caring were the group better equipped to engage in rehabilitational activities, it is unclear why paternal care, in particular, was predictive. As the two groups did not differ at entry, with respect to engagement, one plausible explanation is that the treatment regime at Broadmoor provided the necessary environment and care which allowed those patients, who perceived their fathers as more caring, to effectively engage in the rehabilitation programme. The combination of procedural and relational security could have acted in a paternal authoritarian manner, but exerted an influence that was benign and encouraging, allowing those patients, who had previously experienced some paternal affection and warmth to respond, compared to those who had little or no positive experience of paternal care. Although the high scoring group for paternal care contained more patients who endorsed a greater number of symptoms on the PST, this did not contribute to the improvement across time for this group on the pro-social scale. In other words the improvement shown by the high paternal care scoring patients on the pro-social scale was not simply a reflection of a decrease in the extent of their symptoms.

Patients who perceived their maternal relationships as being more protective and controlling registered more distress and problems in their interpersonal relationships, on admission, compared with the lower scoring group on the protection dimension. However, the higher scoring group improved across time. Maternal overprotection may impair the normal socialization process to independence and limit the individual's capacity to develop mature and flexible styles of relating. High maternal behavioural restrictiveness and maternal denial of psychological autonomy have been associated with adult antisocial traits (Reti et al 2002). One explanation for the improvement in some aspects of interpersonal relating is that the environment and therapeutic regime in the hospital encouraged the development of autonomy and appropriate boundaries to which patients, who have previously experienced a more

intrusive and dependency inducing maternal relationship, responded. However, the high scoring group for maternal protection contained more patients who endorsed a greater number of symptoms on the PST scale of the SCL-90-R. When this association was controlled for the group no longer significantly improved across time. It remains a possibility that their more sociable style of interpersonal relating could be accounted for by a decrease in symptom breadth.

The PBI predicted self-rated changes in some aspects of inter-personal relating but did not predict change in the patients' interpersonal styles of relating as assessed by an observer measure; the CIRCLE. A possible reason for this is that the self-rated changes in interpersonal relating occurred at a level that was not noticeable by observers. The PBI dimensions did not predict the frequency or severity of aggression as measured by episodes of seclusion or by incidents. One possible explanation as to why there was no relationship to the seclusion outcome measure has been outlined above and lies in the architectural fabric of the hospital which placed procedural and physical constraints on initiating seclusion.

Chapter 6: Overall conclusions and discussion

6:1: Attachment in violent personality-disordered individuals; summary of findings

The qualitative literature review on attachment and the development of psychopathology in adulthood presented in chapter 1 did not provide a clear answer to the question of whether specific types of attachment insecurity are associated with particular psychiatric disorders in adults. The quality of the literature and the limitations of the studies suggested that this question would be better addressed by undertaking a systematic review and meta-analysis.

The findings of this review and meta-analyses were that there were only a few weak associations between particular attachment states of mind and specific psychiatric disorders. The meta-analyses and systematic review were more supportive of the position that insecure attachment acts as a general vulnerability factor for the development of psychiatric disorder rather than particular insecure attachments being associated with specific forms of psychopathology (van IJzendoorn et al. 1997).

The results presented in chapter 3 showed that the distribution of AAI classifications, in the Broadmoor patients, significantly differed from non-violent personality-disordered groups of individuals. There was an under-representation of securely attached patients; an over-representation of patients with Dismissing states of mind and an under-representation of individuals who were Unresolved for loss and trauma; despite high levels of loss and trauma in the group. In common with other violent groups there were a high number of patients classified as Cannot Classify, indicating that they had no single organized attachment strategy.

As a group the Broadmoor patients had a highly impaired capacity to mentalize as evidenced by their low levels of reflective function (rf) which were significantly lower than non-violent pd patients. Those individuals with dismissing features as well as a categorical Ds classification i.e. the Dst group had significantly poorer rf compared to patients with other attachment classifications.

The AAI attachment results for the Broadmoor group were commensurate with those in other violent forensic populations (van IJzendoorn et al. 1997; Frodi et al. 2001; Levinson & Fonagy 2004). However there was a trend for individuals who had Unresolved (U) states of mind to be under-represented in the Broadmoor group, even when compared with other violent pd groups. When the Broadmoor study was added to the studies in the original meta-analysis of Ds v E for violent pd individuals there was an over-representation of individuals with Ds attachment states of mind in the violent pd group compared to non-violent pd group.

AAI scale scores have been infrequently reported in the literature. In the Broadmoor group it was the overarching scales that showed the most pronounced differences when compared to other groups. Broadmoor patients were more likely to have significantly lower scores on the combined coherence of mind and transcript scales compared to all the other comparison groups, even the violent pd prison population. A similar pattern was seen for the rf scores, with the Broadmoor group having a similar level of rf as the pd prison population but significantly poorer rf than other groups. This impaired capacity to mentalize was significantly associated with having a Ds attachment classification and most strongly associated with those patients whose attachment representations were coloured by dismissing traits, the Dst group. Unexpectedly rf was higher in those patients who were Unresolved for loss or trauma. The Broadmoor group was notable for representing their early parental relationships as extremely lacking in love and care on the AAI scales compared with all other groups, even their violent pd counterparts. Although the PBI differentiated the Broadmoor group from normal controls on all of the PBI dimensions it did not differentiate this violent pd group from a non-violent pd group on the protection dimension and only weakly differentiated it on the parental care dimension.

In general AAI categories and PBI scales were neither associated with particular types of violence or crimes nor with particular types of Axis I or Axis II psychopathology. There was an association between having a Unresolved attachment status and having a previous conviction of arson and a cluster of weak associations between the AAI scale scores, including a higher rf score, and arsonists. Specific associations were also found between having a diagnosis of conduct disorder and an Cannot Classify (CC) attachment classification. The latter was also associated with having a diagnosis of ASPD. Nurses rated those patients with CC attachment states as being more hostile, coercive and less compliant in their interpersonal interactions with others. In contrast the CC patients rated their own interpersonal interactions on the IIP as largely unproblematic. Other outcome measures, such as the severity and frequency of incidents, indicated that there were indeed problematic interactions for this group.

No one AAI attachment classification was predictive of improvement across all of the primary and secondary outcome measures. Cannot Classify attachment states of mind and the highly dismissing, Dst, attachment representations predicted improvement in the frequency and severity of aggressive and violent incidents. However, it was the combination of CC and Dst attachment representations that best predicted improvement in aggressive behaviour. Unresolved states of mind failed to predict outcome across any domains.

Patients with preoccupied states of mind, as assessed by the E composite, fared least well, showing no alteration in aggressive behaviours. Although E-like states of mind appeared to predict better engagement in rehabilitational activities, early on in the study, this effect was short lived and patients showed a decrease in pro-social behaviour over time. This was in keeping with the nurses rating of their interpersonal interactions where the level of hostility in

those patients who were most E-like did not alter across the study, however their interactions were seen as becoming less friendly and sociable as time progressed. The nurses' ratings of those patients who were less E-like shifted across the study so that their interactions were seen as becoming more hostile and coercive but their level of sociability did not alter.

Although there were too few securely attached patients to undergo statistical analysis those individuals who were more F-like, as assessed by the F composite, registered higher levels of symptom distress on the SCL-90-R factors and reported more difficulty in their interpersonal relationships on the IIP; in other words they seemed to be more in touch with and less split off from their symptoms. In keeping with this those patients who were more Ds-like reported less symptomatic distress on the SCL-90-R factors. However it was these patients, who were more insecure in their attachment representations, either because they were more Ds-like and less F-like, whose symptom profile altered most across time, both in terms of them reporting an improvement in externalizing and internalizing symptoms on the SCL-90-R and an improvement in their interpersonal relationships as rated on the IIP.

The PBI dimension of paternal care was found to predict engagement in rehabilitation as assessed by the pro-social index while the maternal protection dimension predicted improvement in some aspects of interpersonal functioning. Those patients who perceived their fathers' parenting style as having been more caring were significantly more able to engage positively in pro-social activities over the follow-up period compared to the patient group who experienced their fathers' as less caring. Patients who perceived their maternal relationships as being more protective and controlling registered more distress and problems in their interpersonal relationships on admission compared with the lower scoring group on the protection dimension. However, this higher scoring group was the group that improved across time.

Attachment measures were predictive and appeared to be able to differentiate a group of patients who fared better in high security as evidenced by a decrease in their level of violent and aggressive incidents as well as a group of E-like individuals who fared less well. However, overall the group changed little across time as assessed by the primary and secondary outcome measures. Significant changes were found only on the global scales for the SCL-90-R and the IIP and on one factor of the BAI. There was no change in the group on any of the factors of the SCL-90-R, IIP or CIRCLE. Additionally there was no overall change across time for the incident, seclusion and pro-social scale primary outcome measures.

6:2: Overall conclusions

The attachment profile on the AAI, rather than on the PBI, appeared to differentiate violent pd individuals from non-violent pd individuals. The finding that Ds attachment representations, extremely low levels of rf, and histories pervaded by loss and abuse differentiated the violent

pd group is coherent with the developmental model of violence suggested by Fonagy (Fonagy 2003b; Levinson & Fonagy 2004). This model proposes that severe early trauma, in the context of attachment experiences, leads to a developmental line of psychopathology characterized by both a disavowal of attachment experiences and the capacity to think about them resulting in a deficit in rf and the capacity to mentalize. In the context of high levels of arousal non-mentalizing cognitive processes predominate. The individual is then more prone to experience their own and the mental states of others in physical and bodily modes; predisposing the person towards committing acts of violence.

The results of the prospective limb of the study support the hypothesis that some AAI attachment representations predicted change in aggressive and violent behaviour in the patient group across their stay in high security. The strongest change in aggressive behaviour was seen in those patients who had both Dismissing and the disorganised CC attachment representations. These were the individuals who improved most in terms of a decrease in their aggressive behaviour. However, as there were no patients who were both preoccupied and CC, it is not possible to say whether the effect on aggressive behaviour is an additive effect of CC and Dst or whether the effect comes mainly from the CC group. However, those patients with pure Preoccupied states of mind failed to improve. In very disturbed groups, where there are high numbers of individuals with CC classifications, it appears that a more complete picture of the predictive value of Ds attachment states of mind is gained by consideration of those individuals with secondary Ds classifications as well as primary i.e. the Dst group.

The attachment pattern that best predicted an improvement in the frequency and severity of violent incidents was one where the propensity to be aggressive related more to the severity of and degree of insecurity rather than to any one particular attachment category. The proposed model that is that, as the severity of the psychopathology increases and individuals require inpatient care, the person's attachment status is less likely to fall into a particular insecure category as it becomes more unstable. It was this unstable attachment pattern which responded to the therapeutic environment in Broadmoor. The favoured explanation for the improvement in aggressive behaviour in this highly disturbed CC/Dst group is that the environment within high security acted as a stabilising influence upon the oscillating unstable CC and dismissing attachment system and that the care-giving system became more expert at providing the optimal response for this patient group. This explanation is in keeping with the concept of environmental responsiveness developed by Bowlby (1979 p.104) which postulates that the attachment system is in a continuous state of interaction with the care-giving environment which, in turn, influences the attachment organisation.

Continuous composite attachment variables appeared to predict outcome with respect to interpersonal interactions, however attachment did not appear to moderate outcome with respect to psychiatric symptoms and cognitive attributions associated with the index offence.

There are so few securely attached individuals in violent populations that an alternative approach to assessing security through the use of an F composite may be needed. This approach has clinical relevance as these less F-like, more Ds-like patients were the patients whose symptom scores responded most in the hospital environment. Additionally the more E-like patients were seen as less sociable and friendly as time progressed and their hostility surfaced as their stay progressed.

Overall it appeared that the AAI had greater predictive validity than the PBI in this violent group. The failure of the PBI dimensions to predict outcome with respect to change in psychiatric symptomatology suggests that adult psychopathology, in violent pd patients, operates independently of attachment dimensions. Although it makes clinical sense that patients who perceived their parental relationship as more caring were the group better equipped to respond and engage in rehabilitational activities, it is unclear why paternal care, rather than maternal care was predictive of pro-social outcome. Likewise, we can only speculate as to why those patients who perceived their maternal relationships as being more protective and controlling registered more distress and problems in their interpersonal relationships on admission but improved symptomatically across time compared the lower scoring group in this PBI dimension.

Again the explanation may lie in the hospital environment. The combination of procedural and relational security could have acted in a paternal authoritarian manner, but exerted an influence that was benign and encouraging, allowing those patients, who had previously experienced some paternal affection and warmth to respond, compared to those who had little or no positive experience of paternal care. Similarly the therapeutic regime in the hospital may have encouraged the development of autonomy and appropriate boundaries to which patients, who have previously experienced a more intrusive and dependent inducing maternal relationship, responded.

The finding that particular attachment classifications were not associated with a particular crime suggests that, although insecure attachment is over-represented in violent pd individuals, it does not influence the specific shape of the violence. However, Unresolved states of mind were associated with a previous conviction of arson. Although the number of arsonists in this patient group was too small to draw a firm conclusion a tentative mechanism is put forward relating rf and U states of mind to arson. It is proposed that, as these U individuals have less Dismissive traits, they were unable to maintain as high a level of defensive disavowal of their attachment experiences as the more Ds patients; especially when these were stimulated by thinking about loss and abuse. Such memories would then act as disorganisers of thinking and lead to the lapses in the monitoring of reasoning characteristic of U states of mind. Although arsonists had higher levels of rf compared to patients with other offences their rf was still impaired. It is proposed that the loosening of the highly Ds attachment

state of mind allows these patients to have just enough awareness of their previous abuse and loss experiences which, in the presence of impaired rf, they can neither process nor disavow and have to evacuate in the extreme behavioural action of arson.

There was little evidence of a developmental continuity between particular early adverse experiences and types of attachment classification suggesting that childhood adversity functioned as a non-specific vulnerability factor leading to insecure attachment. An exception to this was the weak association between a child diagnosis of conduct disorder and a CC classification. This suggests continuity between early behavioural disturbance, most likely driven by a disorganised attachment system, and the development of a disorganised CC attachment in adulthood.

The lack of associations between Axis II diagnoses and AAI classifications was in contrast to the literature mapping BPD and ASPD to E and Ds states of mind respectively (Patrick et al. 1994; Fonagy et al. 1996; Frodi et al. 2001; Levinson & Fonagy 2004). It remains a possibility that the level of co-morbidity for Axis I and Axis II disorders precluded finding specific associations. However, there was a specific association between Axis II diagnoses of ASPD and the CC attachment classification. In other words it was the most disordered patients in attachment terms that had arguably the more challenging and treatment resistant psychopathology of ASPD. They were also seen as more challenging by the nurses in terms of their hostile and coercive interpersonal interactions. In summary, in keeping with the literature, abnormal attachment status appeared to act as a general risk and vulnerability factor for the development of mental disorder (van IJzendoorn et al. 1997) with the most disordered attachment being associated with the more severe form of personality psychopathology.

The lack of associations between personality pathology and the PBI dimensions suggests that other parental behaviours may be involved in the development of particular personality disorders, outside the range of parental behaviours covered by the PBI or that the impact of parenting experiences on personality pathology may be non-specific, with these experiences acting as mediators in the developmental pathway.

Neither the AAI nor PBI predicted any shift in the patients' cognitive attribution with respect to their index offence as assessed by the BAI. One explanation is that attachment representations do not influence thinking about the offence. The group as a whole changed on only one element of the BAI, external attribution, across 12 months and this change was only weakly significant. This lack of change is concerning as one of the main therapeutic tasks is to decrease risk which, to be successful, requires that patients understand their agency in their offence so that they can make reparation and move towards feeling appropriately responsible and guilty. In the light of this finding other explanations are that the treatment regime is not intensive or focussed enough to help patients with low rf tackle this difficult psychological task.

Another possibility is that the BAI is not the best measure to assess thinking around the index offence in patients with poor mentalizing, who find it difficult to perspective take and accurately assess their own affective states and linked behaviour (Losel 1998). If so, clinicians may benefit from applying attachment methodologies to the offence narrative to see if this approach could provide a more accurate description of the significance, in the patient's mind, of aspects of their offence. An index offence related measure which yielded information about how the patient represents himself, his victim, his actions and the interrelationships between them would be relevant to risk prediction and management.

The following sections discuss the theoretical implications relating to the measurement of attachment in violent pd individuals and the clinical and research implications flowing from the conclusion that the developmental lens of attachment theory may help predict change in violent behaviour and interpersonal functioning in this group patient.

6.2.1: Theoretical implications

The study of attachment in violent personality-disordered populations is a young research field. As such, data relating to the reliability and validity of attachment instruments are scare. Questions remain as to whether attachment can be measured in these groups and, if so, how best it is assessed. Furthermore what, if anything, does the data yielded by such research add to our theoretical understanding of attachment?

This study reports adequate reliability and validity data for the AAI as well as the PBI in a severely personality-disordered and violent patient group. Rating the AAI requires time and considerable training compared to the rapid administration and scoring of the PBI. However the relatively few associations between these 2 instruments suggest that, to some extent, they are tapping different constructs of attachment in this group and that an adequate description of attachment in violent pd individuals requires the use of both measures. Furthermore, in populations with high levels of insecure attachment it is likely that attachment states result from distortions of the organisation of thinking that either minimises parental flaws (by idealization) or exaggerates them (by current involving anger). In such groups it is important to use an attachment measure, such as the AAI, which allows the rater to assess any such discrepancies between represented and inferred attachment experience.

Individuals with CC attachment classifications are often regarded as the 'most ill' group in attachment terms. However, it was these patients who appeared to change and were more able to benefit from the hospital's therapeutic programme. Although these patients have an unstable attachment pattern, the fluctuating nature of their attachment system may render it less rigid and more responsive to a hospital environment which overall is more consistent than inconsistent.

The finding of a high number of individuals with CC attachment classifications coupled with the decrease in aggressive behaviour shown by this group increases the urgency of further delineating the CC category. Since its emergence in the early 1990's several CC subtypes have been added to the AAI manual. However, as yet, these subtypes have not been identified in parents so that they can be compared with offspring attachment status (Hesse 2008). At present little is known about the childhood attachment experiences of adults with CC attachments and how these adult states of mind relate to the infant/child CC category is being researched (Abrams, Rifkin, & Hesse 2006). Although, not a longitudinal design, the finding that the CC patients were significantly more likely to have had a childhood diagnosis of cd and an adult diagnosis of ASPD and alcohol dependency suggests that the unstable attachment system manifests symptomatically in externalizing behaviours with alcohol dependency as a possible self-stabilizing strategy.

One CC subtype is characterised by very incoherent transcripts without elevated scores for insecure states of mind. Another subtype is where the speaker attempts to frighten the listener for example "with the sudden, unintroduced, detailed discussion of a murder" (Hesse 2008). One of the main difficulties is that the CC classification has not been subjected to psychometric testing, let alone its subcategories, and as such it may lack stability. However the high prevalence of CC individuals in this violent population coupled with their improvement across time suggests that there is a need to move this validation forward. Possible reasons as to why CC individuals are prominent in this group include aggression erupting because combining disparate attachment strategies disorganises the attachment system, lowering the threshold for an violent response. In CC subtypes with extremely low level of coherence, aggression may result because, just as the speaker cannot handle the discourse task within the AAI, the patient may not be able to handle any demand on their attachment system, perceived or otherwise, within their interpersonal interactions.

These patients had an extremely poor capacity to mentalize. This capacity is seen as a crucial inhibitory factor for interpersonal violence as a deficit in mentalizing is a critical mediating mechanism between Ds attachment states of mind and violent behaviour. Lack of a capacity to envision mental states in the self and others removes a critical inhibitory barrier for violence (Levinson & Fonagy 2004). In highly disturbed violent forensic patients it is not known whether the patient's capacity to mentalize has been irreversibly compromised or whether it can respond to therapeutic interventions. Although it is not known whether rf improved in this group, the finding that Dst states of mind and Ds composite scores predicted an improvement in aggressive behaviour is encouraging as this may indicate an underlying improvement in mentalization.

The finding that there were only a small number of patients with U states of mind in the Broadmoor group, despite high levels of loss and trauma, raises the question as to how these

patients process loss and abuse experiences. As a group they have experienced disruptions to their attachment system characterised by their attachment figures turning away their childhood attachment by either 'showing' a pervasive lack of love or an active rejection, which often included acts of cruelty The sequlae of these experiences, as proposed in chapter 3, is that they have resulted in adult states of mind characterized by high levels of disavowal of attachment experiences so that the individual's capacity to represent experiences of loss or abuse is de-activated. If so, it is possible that these experiences fall 'below the radar' of the AAI and remain undetected. In terms of the AAI the problem is that these individuals may then be coded as resolved and show as 'false' non-Us.

There is a further complication in coding U in violent populations which relates to the way the loss may have occurred. One of the AAI signifiers of U status is mental disorientation and disorganisation, as evidenced by lapses in the monitoring of reasoning, in the individual's narrative around the loss (Main & Goldwyn 1994). Such lapses are implied in beliefs, which surface in the AAI narrative, such as that the dead person is still alive or that they were killed by a failure or omission on the part of the narrator. Main and Hesse have proposed that these lapses originate in frightening experiences surrounding the loss or the way the loss occurred and indicate "the existence of incompatible belief and memory systems, which, normally dissociated, have intruded into consciousness simultaneously as a result of queries regarding the nature of the experience and its effects" (Main & Hesse 1990; Hesse 2008 p. 570). Some of these patients have really killed their attachment figure; that act was their index offence. Their belief systems surrounding the offence may still be frightening but may not be incompatible with reality and, as such, not picked up by the coding system. In highly dismissing, violent populations it is recommended that the coding of unresolved states of mind warrants close attention as some of the discourse markers of U may be masked either by the highly Ds nature of the individual's state of mind or some of the narrative markers of lapses of reasoning may be unavailable to raters.

The dynamic-maturational approach, developed by Crittenden (Crittenden 1995; Crittenden 2000) provides an alternative AAI classification system for use in psychiatric populations. It aims to differentiate psychopathology on the basis of how the speaker's narrative is illustrative of their mental processing. As this system provides a wider range of coding categories than the Main and Goldwyn one, individuals in disturbed samples are no longer predominately allocated to a small number of categories. Application of the dynamic-maturational coding system to the Broadmoor group should yield a greater differentiation of attachment patterns and would aid our understanding of the nature of U and CC states of mind in violent individuals. Currently the dynamic-maturational approach has only been used in a small number of studies and reliability of its extensive coding system needs to be established (Gullestad 2003). The Crittenden system still needs to be validated in the context of personality pathology which could be progressed by coding the Broadmoor AAI's using this system.

6.2.2: Clinical relevance

Risk and milieu: Enabling a more accurate prediction of treatment response, particularly with respect to behavioural outcomes, would be clinically helpful in pd violent populations where the incarceration needed for both risk prevention and ensuring treatment delivery is lengthy and costly in terms of both financial and human resources. Clinical teams need to assess the patient's progress with respect to both mental health restoration and risk reduction (Glorney et al. 2010) as progression to lower levels of security is, in part, determined by the stability of the patient's behaviour and is often assessed by an absence of aggressive behaviour. The clinical relevance of this research is discussed in terms of the following areas; the management of risk; the therapeutic environment and the delivery of psychological treatment.

The prediction and management of risk has seen major developments in the UK over the last decade and the use of structured clinical assessment of violence risk (SCAVR) is now standard in forensic clinical practice (Maden 2007). One of the most popular instruments for undertaking violent risk assessment is the Historical-Clinical-Risk management-20 (HCR-20) (Webster et al. 1997) which aids clinicians systematise their judgements about violent risk in a way that helps them to devise management plans. It has been suggested that HCR-20 prediction can be enhanced through the use of other measures that can provide a more in-depth assessment of certain areas of functioning, particularly dynamic risk factors (Strand et al. 1999; Douglas & Skeem 2005).

One of the clinical difficulties is that the main focus of SCAVR procedures is the prediction of distal risk i.e. the risk of re-offending. Clinicians have few measures to help them predict proximal risk i.e. the risk of violence whilst in a treatment program or on the unit (Doyle, Dolan, & McGovern 2002). Knowledge of attachment states of mind could help clinicians predict a group of patients who, although violent, have the capacity to respond to a therapeutic programme (those with CC/Dst states of mind) compared to patients with Preoccupied (E) attachment whose risk of aggression did not diminish and who fared less well. The addition of the patient's attachment status may augment HCR-20 risk prediction, especially for moderate HCR-20 scorers whose risk is more problematic to assess (Strand et al.1999).

As a generalization non-pharmacological based treatments can be grouped into either milieu approaches or formal interventions such as psychological therapies; occupational therapy and education. The observation that it was patients with CC/Dst attachments whose aggressive incidents lessened across time and that those patients who were more Ds-like were more open to change has clinical relevance in informing generic treatment approaches as well as the timing of the structured treatment programme. It is postulated that the physical, procedural and relational elements of the high secure environment provide a stabilizing effect on the unstable and dismissing attachment system of the CC/Dst group which, as it is less rigid, may be more responsive to an environment which is more consistent than inconsistent. However, much of

the shift observed in aggressive behaviour occurred between 12 and 16 months. This suggests that additional input, aimed at developing relational security and a therapeutic relationship with these patients, is needed between admission and 12 months. These patients may require the additional scaffolding of a more intensive treatment program initiated earlier in their stay.

It is possible that a therapeutic window has been missed for those patients with Preoccupied (E) states of mind as their 'apparent' openness and interpersonal interactions may have been taken as indicators of progress. If so, these patients may have lost out on both treatment and risk reduction opportunities. Early identification of E states of mind would alert clinical teams and allow treatment to focus on the conflicted and confused states of mind underpinning E attachment and the true extent of these patients' aggression and difficulties in engaging with the treatment program could be better addressed.

Drawing on the concept of environmental responsiveness (Bowlby 1979 p.104), the propensity for the patient to react aggressively may be either enhanced or diminished by the response of that environment. As such, strengthening the milieu component of the treatment programme may help stabilize the volatile attachment representations of the Dst/CC patients and minimise acting out. A strong milieu may also aid the development of rf and decrease non-mentalizing modes of thinking that can dominate E-like states of mind. Key to developing and sustaining relational security is the primary nurse relationship; this relationship may even act as a temporary attachment relationship (Adshead 1998). Providing primary nurse training and supervision aimed at understanding how the patient's attachment representations may be driving their behaviour and thinking about how to provide the optimal response may strengthen the therapeutic relationship and decrease inaccurate responses from the care-giving environment.

Sequencing and components of the treatment program: These patients had a severely reduced capacity to mentalize; especially those with Ds and Dst attachment representations. Knowing a patient's level of rf could guide the clinical team in deciding which type of psychological intervention to deliver to which patients when. In Broadmoor the early treatment pathway emphasises cognitively based treatments to enhance therapeutic engagement such as Psycho-education, Enhanced Thinking Skills and Reasoning and Rehabilitation (Perkins 2010). However if the patient cannot mentalize effectively then it is difficult for the patient to think about their own experience and to integrate this with what is being presented to him or her from their therapist. As such, they may only be able to recite rather than internalize their therapeutic experience. As the patient progresses they may be offered psychotherapies which make more demands on their capacity to mentalize such as Cognitive Behavioural Therapy; Dialectic Behavioural Therapy, Psycho-dynamic Psychotherapy as well as focussed, cognitively-based treatments for offenders such as victim-empathy and violent offender groups. To be effective these psychotherapies require the patient to consider their experience

of their own mind alongside a view of who they are and what they have done, as presented to the patient in their therapy. Meaningful change can only result when these two representations are integrated and the patient can understand behaviour in terms of its associated mental states in the self and other, i.e. when they can mentalize (Fonagy & Bateman 2006).

The level of the patient's rf could guide clinicians as to who receives which therapies when. If the patient has a very low rf then early intervention with a psychotherapy explicitly aimed at enhancing mentalization such as Mentalization Based Treatment (MBT) (Bateman & Fonagy 2006) could be trialled to see if mentalization could be improved. If so, the patient should be able to utilize other psychological therapies more effectively. Exposing the patient to cognitively based therapies that may make too great a demand upon the patient's capacity to mentalize can be psychologically iatrogenic (Fonagy & Bateman 2006). The patient might find it 'too hot to handle' and aggressively enact, act out or leave therapy. Clinicians would then have to work hard and may have to wait a long time before these difficult to engage patients risk another experience of psychotherapy. Alternatively, the patient may all too readily take on the explanations or perspective offered within their therapy resulting in pseudo-progress.

The results suggest that attachment measures, such as the AAI, can predict behavioural change in the group. Patients who had CC/Dst attachments appeared to follow a different clinical course to those who were E. Although it is not possible to establish the particular nature of the disruptions to the attachment system these two groups of patients experienced, the finding that aggressive behaviour in the CC/Dst patients improved and that they were more open to change whilst progress in the E patients declined suggests that different disruptions to the attachment system may need different therapeutic approaches. The low numbers of E patients in the study means that the following is a tentative suggestion. Patients with E states of mind might need to stay longer on the more structured high dependency wards rather than progressing too quickly to the rehabilitation wards where the expectation is that they are willing to work with the clinical team and are able to take more responsibility for their behaviour.

The low number of U patients in this highly traumatised group carries a particular implication for those treatments or components of treatment which specifically focus on the patient's experiences of trauma or loss. The interpretation of the findings is not that these patients have worked through their traumatic experiences to reach resolution but rather that these events have been so disavowed that they cannot be mentally represented and detected by the AAI system. Whilst in this state of mind, it is difficult to see how these patients could use psychological treatments such as bereavement work; guided mourning and treatment to help them address the sequlae of their early abuse and neglect. Those patients who appear resolved but who have scored highly on the AAI scale scores for adverse parental experiences and who have low rf and coherence of mind may need a carefully titrated psychological treatment intervention. This should be aimed at building a therapeutic relationship and

explicitly helping the patient explore his or her emotional responses across a wide range of situations therein strengthening mentalization and minimising the psychological and behavioural disturbance that results if disavowed traumatic experiences come back into awareness prematurely.

Assessing outcome: Good clinical and research practice advises professionals to use a range of outcome measures that include observer-rated as well as self-rated instruments in forensic populations (Dolan & Coid 1993). A difficulty is that the use of observer-rated outcomes is costly in terms of human resources and necessitates undertaking reliability testing, if more than one rater is used. In the face of these challenges many studies in violent psychiatric populations have relied heavily on self-report data. There are two concerns with this approach. Firstly, the validity data in this study showed low to moderate correlation coefficients between observer and self-report rated measures and, as such, supports the use of both types of measures in this group. Studies should not rely only on self-rated measures. An observer-rated measure is particularly recommended when assessing psychiatric symptomatology and inter-personal relating as the high correlation between the IIP and the SCL-90-R suggests that these instruments may fail to differentiate between these domains in violent pd patients.

Secondly the use of self-rating measures may be flawed when used with pd patients due to limitations in their capacity for introspection and perspective taking (Westen & Shedler 1999a; Marin-Avellan et al. 2005). This was a particular concern in this violent pd group because of their extremely compromised rf. There were discrepancies between observer ratings and self-ratings in patients who had the most unstable, CC, attachment states of mind. Nurses rated CC patients as being more hostile, coercive and less compliant in their interpersonal interactions with others. In contrast the CC patients rated their own interpersonal interactions on the IIP as largely unproblematic. The primary outcome measure of violent incidents indicated that there were indeed problematic interactions for this group. As the IIP did not reveal these, one possible conclusion is that self-rating instruments may have limited validity in individuals with low levels of rf. Having a compromised reflective capacity means that it is harder for patients to answer questions about their emotional states and styles of interpersonal relating rendering them poor reporters of their problems and behaviour.

All too often outcome for forensic patients is only assessed in terms of a diminution of anti-social behaviour. The development of a pro-social outcome measure that looked at patient driven attendance across a wide range of rehabilitational activities could be a useful measure for clinical teams.

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6.3: Limitations

The limitations of the meta-analysis reported in chapter 2 relate to its scope and the limitations of the included studies. The reader is referred to section 2.5 in chapter 2 for a full discussion.

Sample: Although this study comprises a reasonably sized sample compared to other AAI studies, it is small compared to the number of patients detained in high secure hospitals (approximately 1,175 for the 4 high secure hospitals in England and Scotland). In terms of generalizability the patients' demographic, developmental and forensic variables were similar to those of other high secure pd patients (Blackburn et al. 1990; Coid 1992; Pert, Ferriter, & Saul 2004). However, it remains an open question as to how representative the sample is compared to violent pd patients in other high secure hospitals and those detained in medium security. The fact that there were no significant differences between the distribution of the AAI classifications in the Broadmoor group and other studies of violent pd patients suggests that the Broadmoor patients were not unrepresentative in AAI terms. The comparison data are less robust for the PBI.

During the life of the study women were admitted to the hospital. This changed in 2007 when Rampton Hospital became the national centre for women patients needing high security. It could be argued that the inclusion of 11 women is not representative of the high secure population and, although this would be accurate today, it was representative at the time of the study. An important consideration is whether this small female sub sample may have introduced a bias. As there were no significant baseline associations between gender and the AAI categories and PBI scales it is likely that the inclusion of 11 women did not unduly bias the analysis.

The patients were a highly co-morbid group with several patients having an Axis 1 diagnosis. It is possible that these co-existing Axis 1 disorders may have acted as confounders however if there was a significant association at baseline between either of the attachment measures and an Axis 1 diagnosis then this was controlled for in any subsequent analysis.

Across the life of the study the attrition rate was 11 (16.92%) of the original 65 patients. Data across all domains were not available on a further 3 (4.62%) patients. While every attempt was made to trace those who were lost to follow-up their drop out introduces a possible source of bias.

Study design: The conclusion that violent pd offenders have a particular attachment profile, as assessed by the AAI, is limited by the lack of a comparison group. The inclusion of a non-violent, case-matched control group would have considerably strengthened the robustness of this conclusion. There were two obstacles to achieving such a design. The pragmatic difficulty is that it would have taken much longer to recruit an appropriate number of controls which was

not feasible within the funding and time structure of the study. Another difficulty is that they would be a hard group to match for severity of personality psychopathology as the severity and profile of pd diagnoses would most likely be different in a non-violent pd group. Using a case controlled design would be a recommendation for future attachment studies in violent pd patients.

The follow-up period was one year. In retrospect it would have been preferable if this could have been longer as the patient responses on some outcome measures were still altering. Patient responses on the BPRS were still changing across time as evidenced by the interaction across time showing an initial improvement followed by a deterioration in symptomatology (see Figure 5.4: chapter 5). It is possible that symptom severity would have levelled out or may even have improved if the patients could have been followed up for longer. A longer follow-up would have afforded a more complete picture of the patients' pattern of symptom response and behavioural interactions. It would also have provided a fuller picture of how particular attachment classifications were predictive of outcome. For example it would have been relevant to see whether the linear trend for improvement in violent incidents was maintained beyond 16 months for the patients with Dst and CC attachment representations.

Although the AAI is a robust instrument a study specific inter-rater reliability was conducted. A limitation of this reliability study was that, because of the scarcity of securely attached patients, a less than optimum number of 'F' transcripts were subjected to reliability testing. The abnormal distribution of attachment classifications meant that, when the CC attachment classification was taken into account, there were only a small number of patients who were neither CC or Dst i.e. had a pure 'E' attachment classification (n = 11). This small number means that any findings relating to this group are in need of replication and must be interpreted with caution. A further limitation, discussed previously, is that as the CC classification has not been subjected to psychometric testing it may lack stability. This therefore limits the strength of the conclusions that can be made with respect to its role in predicting behavioural change

6.4: Future research suggestions

Understanding the violent mind is a key task for clinicians, researchers and policy makers in the Health and Criminal Justice Systems. This research suggests that, viewed through the lens of attachment, the violent mind looks and behaves differently to the non-violent mind in individuals who have similar personality psychopathology. However researching the contribution that attachment can make to understanding violence is in its infancy and further studies are needed. Not withstanding the challenges discussed, a case-controlled study of violent pd individuals matched with non-violent pd individuals would provide more robust evidence to support this finding.

The finding that attachment status provided a predictive handle on behavioural change and that those patients who had the most unstable attachment representations were the individuals who were more available to change suggests the need for well designed psychological treatment trials for these patients. The abnormal attachment profile of this group gives rise to many questions about the nature of attachment representations in violent pd individuals which might be investigated to better inform future treatment trials. Some avenues for further study are suggested.

The finding of a high number of individuals with CC attachment classifications, while not unexpected, challenges attachment researchers to further elucidate the subcategories of CC, and subject them to further psychometric testing. The lack of individuals with Unresolved attachment classifications raises a question about the meaning of U and non-U attachment states of mind in violent pd individuals; in particular about how violent minds process loss by death and abuse. An additional question relates to how loss by death is represented psychologically when the perpetrator and the victim of the loss are the same person. A more detailed qualitative and quantitative analysis comparing and contrasting the U-ness of transcripts where the patient has killed an attachment figure may help tease out answers to these questions.

It was not anticipated that there would be any securely attached patients in the group. As such, the sub-group of atypical F's, most of whom had Preoccupied attachment traits, is interesting. A further inter-rater reliability study of these transcripts would shed light on whether there was coding variability. A qualitative analysis of the transcripts may provide more detail as to how homogeneous the group was in terms of satisfying the F descriptors and whether the attachment state of mind of these patients was able to 'fool' the AAI. An alternative approach to assessing attachment security and insecurity, using composite AAI scale scores, showed promise in delineating the patients whose symptoms and interpersonal interactions shifted most across time. However these composite measures need further reliability testing and further development.

Other studies have reported an association between interpersonal violence and poor mentalization as assessed by reflective function (Levinson & Fonagy 2004). Although no such association was found in this study this may be due to a scaling problem with the rf scale which demonstrated a ceiling effect in the Broadmoor group. To address this the rf scale could be further developed for use in violent pd individuals.

As a group the patients changed little over time on the primary and secondary outcome measures. Although this lack of overall change may have been due to the heterogeneity of the group it is concerning as it may indicate that the treatment programs in the hospital could be more effective. The evidence base for psychological treatment interventions in pd violent

patients is poor. Two systematic reviews (Duggan et al. 2007; Warren et al. 2003) failed to find any RCT's of psychological interventions for detained forensic patients and few studies had adequate methodological robustness. The National Institute for Health and Clinical Excellence (NICE) guidelines on ASPD (NICE 2010) concluded that there was only modest evidence for the effectiveness of group-based cognitive behavioral interventions delivered to adult offenders in criminal justice settings. However the effect sizes were small and not all of these offenders had a diagnosis of ASPD.

Mentalization Based Treatment (MBT), aimed at increasing mentalization, has been shown to be effective in BPD (Bateman & Fonagy 1999; 2001; 2004; 2006; 2008) although in non-violent patients. There is preliminary evidence that MBT may also be effective in ASPD (Bateman & Fonagy 2003). A future line of research would be a trial of MBT in violent pd offenders. In particular it would be important to see if attachment states of mind predicted response to MBT; whether MBT strengthened mentalization as assessed by rf and consequently whether the MBT treated group had a positive outcome in terms of a decrease in violence; increased pro-social behaviour and a more mature capacity for interpersonal relating. It is hoped that the empirical findings in this study might pave the way for such research.

The following AAI fragment is cited to illustrate how this particular patient's diminished capacity to mentalize and to think of his victim as a human being, removed any inhibitory barrier to further violence. For many violent pd patients treatment is too little and arrives too late.

AAI fragment:
"I got up and started stamping on his head and um another guy come up and dragged me off him….. I rang an ambulance 'cause I thought he'd, he was dead. I went back into the kitchen where he was and I kicked him in the ribs to see if he was dead or not.
(Asked later in the interview what he would wish for if granted three wishes)
…..I'd wish that I could have a normal life, normal job, normal girlfriend and I wish I could turn the clock back and start afresh."

A developmental perspective on violence would propose that normal developmental processes have failed for this man (Fonagy 2003b). Perhaps this patient is correct and that his best chance for having a normal life would have been achieved by a turning back of the developmental clock and the availability of secure attachment experiences to help him in his developmental task of taming his aggression and allowing him to acquire the capacity to mentalize. Sadly his wish cannot be realized. However if treatments borne from an attachment and a developmental understanding of the violent mind can help him recover a capacity to mentalize then he might be able to lead a more normal life outside high security and we, as members of society, may be more protected from his violence.

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Appendix A

Table 1: Characteristics of studies included in the meta-analysis

First author (year) *Studies of adolescents in italics*	**Attachment instrument**	**Clinical group(s)***	**Study design****	**Number of subjects**	**Number of controls**
Dozier (1990)	Q-set	MI	CC	42	38
Dozier (1991)	Q-set	MI	CC	40	38
Dozier(1994)	Q-set	MI	CC	27	18
Patrick (1994)[£]	AAI	PD	CC	12	12
Manassis (1994) [1]	AAI	MI (anxiety disorder)	CC	18	60
Stalker (1995)[2]	AAI	PD	CS	8	60
Adam (1996)[$]	*AAI*	*MI (depression)*	*CC*	*69*	*64*
Allen (1996)[*]	AAI	PD	CH	66	76
Cole-Detke (1996)[+]	AAI	MI (eating disorder and depression)	CC	9	16
Fonagy (1996)	AAI	PD and MI (depression and eating disorder)	CC	82	85
Rosenstein (1996)[3]	*AAI*	*MI*	*CS*	*33*	*64*
van IJzendoorn (1997)[#4]	AAI	PD	CC	40	140
Tyrell (1999)	Q-set	MI	CC	52	21
Frodi (2001)#[5]	AAI	PD	CS	14	44
Hughes (2001)	AAI	MI (depression)	CC	60	60
Ramacciotti (2001)[+5]	AAI	MI (eating disorder)	CS	13	76
Ward (2001)[$]	AAI	MI (eating disorder)	CC	20	12
Ammaniti (2002)[#]	AAI	MI (depression)	CC	23	27
*Schleiffer (2002)**[3]	*AAI*	*MI*	*CS*	*72*	*64*
Simonelli (2002)	AAI	MI	CC	28	40
Barone (2003)	AAI	PD	CC	40	40
Diamond (2003)[6]	AAI	PD (BPD)	CC	10	85
Stovall-McClough (2003)[£]	AAI	PD	CC	13	5
Van Emmichoven 2003)	AAI	MI (anxiety disorder)	CC	28	56
Levinson (2004)[$7]	AAI	PD/ MI (depression)	CC	22	44
Waller (2004)[+]	AAI	MI	CC	35	20
Adshead (2005)[*2]	AAI	MI	CS	67	60
Stovall-McClough 2006)	AAI	MI	CC	30	30

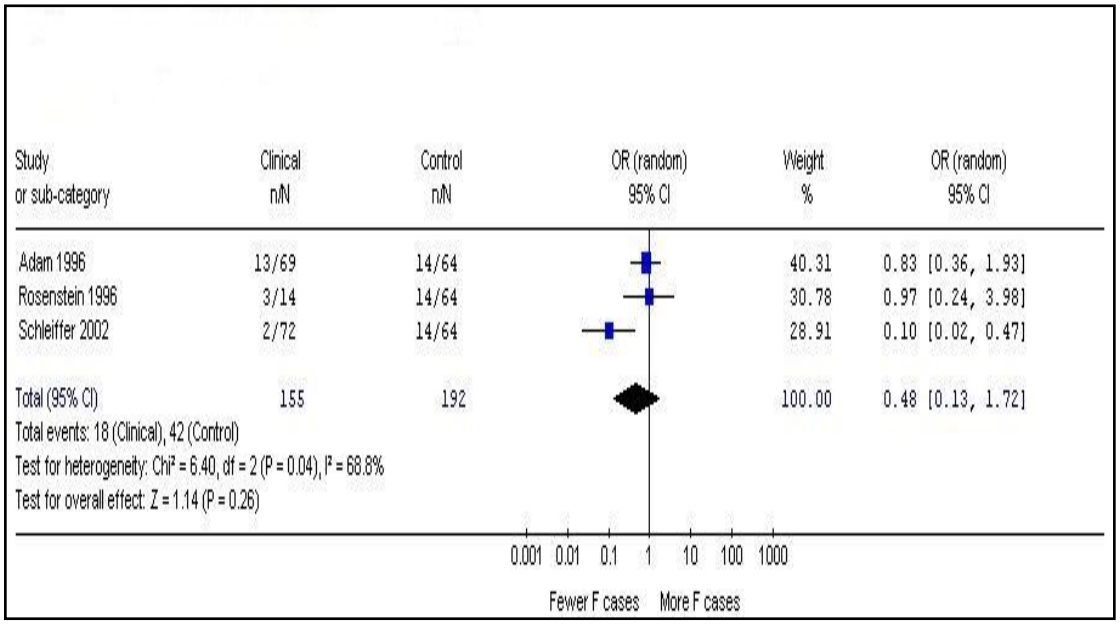
***** MI = Mental illness; PD = personality disorder
**CC = case control; CS = case series; CH = cohort

1 Controls from Hughes.
2 Controls from Hughes, 2001. Controls for CC comparison from Allen, 1996.
3 Controls from Adam, 1996.
4 Clinical control group used. Controls for CC comparison from Levinson, 2004.
5 Controls from Allen, 1996.
6 Controls from Fonagy, 1996.
7 Aggregated control group used.

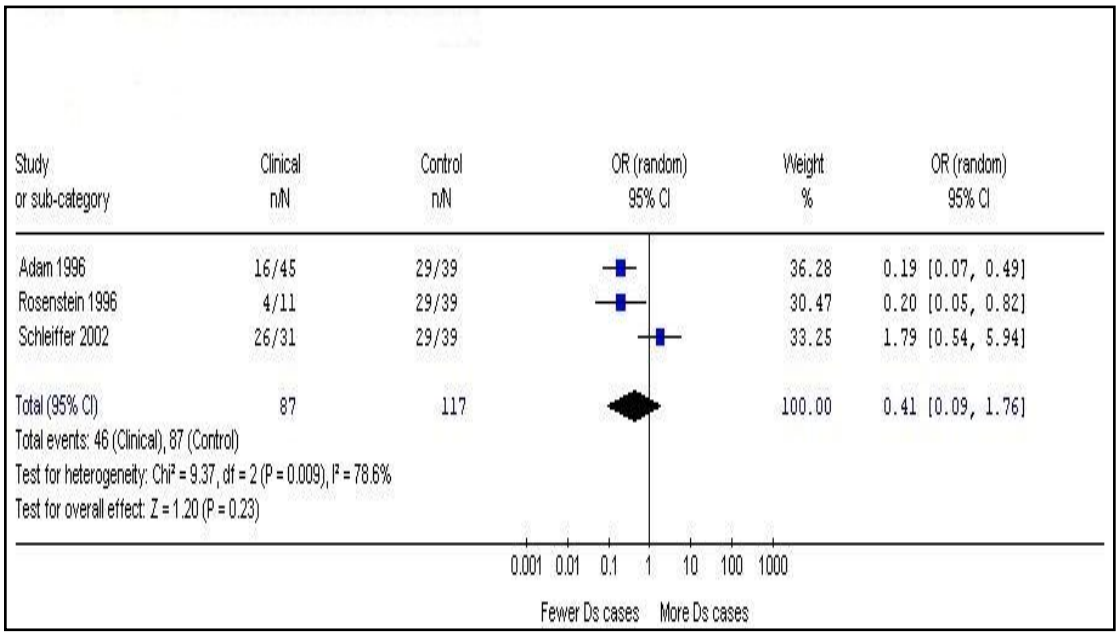
Data in AAI studies presented 4 ways (Secure v Dismissing v Preoccupied v Unresolved) apart from:
* Secure v Dismissing v Preoccupied v Unresolved v Cannot Classify.
# Secure v Dismissing v Preoccupied v (Unresolved or Cannot Classify).
$ Secure v Dismissing v Preoccupied v Cannot Classify; Unresolved v Resolved.
£ Secure v Dismissing v Preoccupied; Unresolved v Resolved.
+ No Unresolved data presented.

Adolescent studies sensitivity analysis

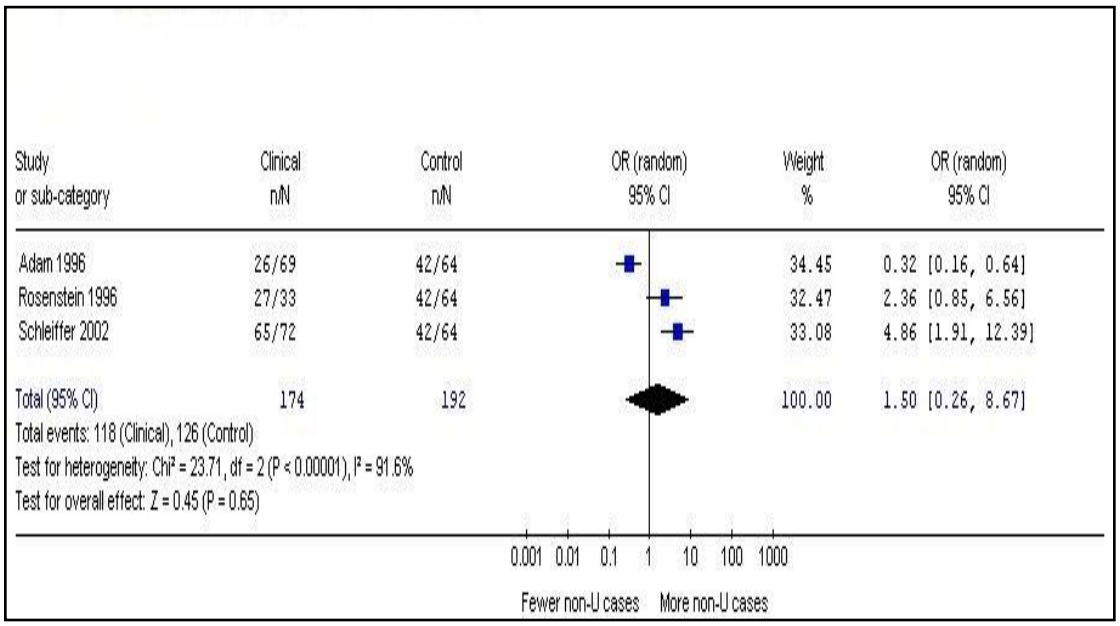
B.1 Forest plot of adolescent studies F v non – F



B.2 Forest plot of adolescent studies Ds v E

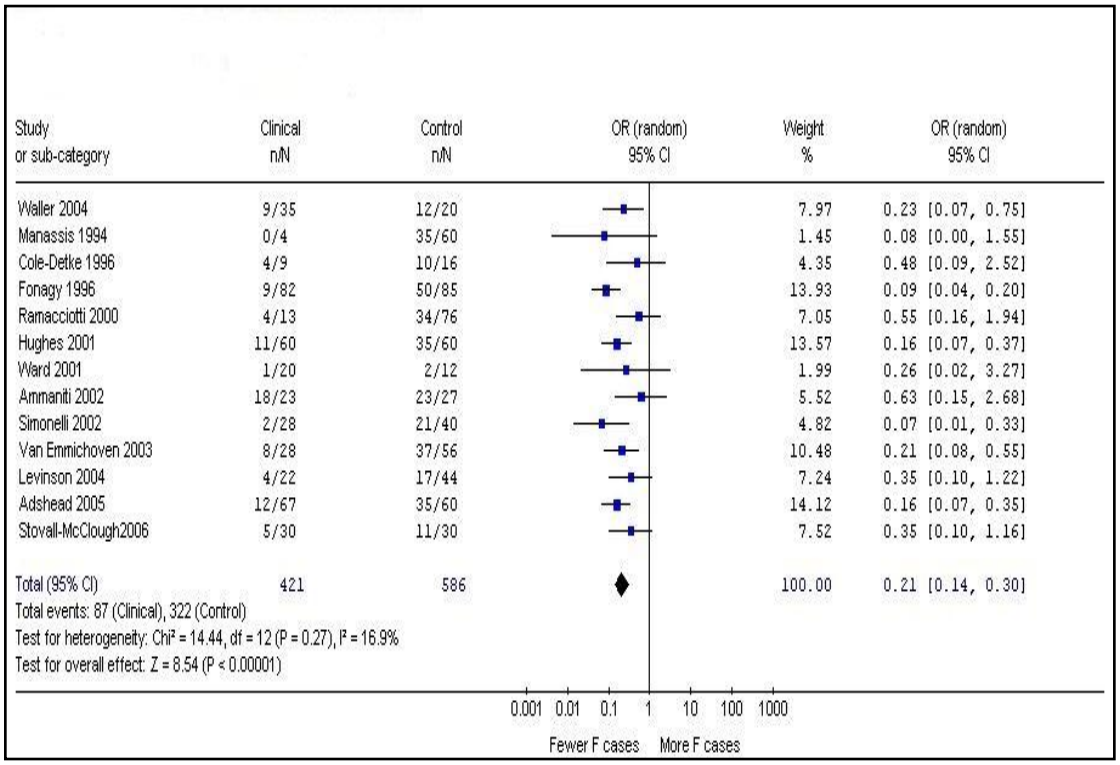


B.3 Forest plot of adolescent studies U v non – U

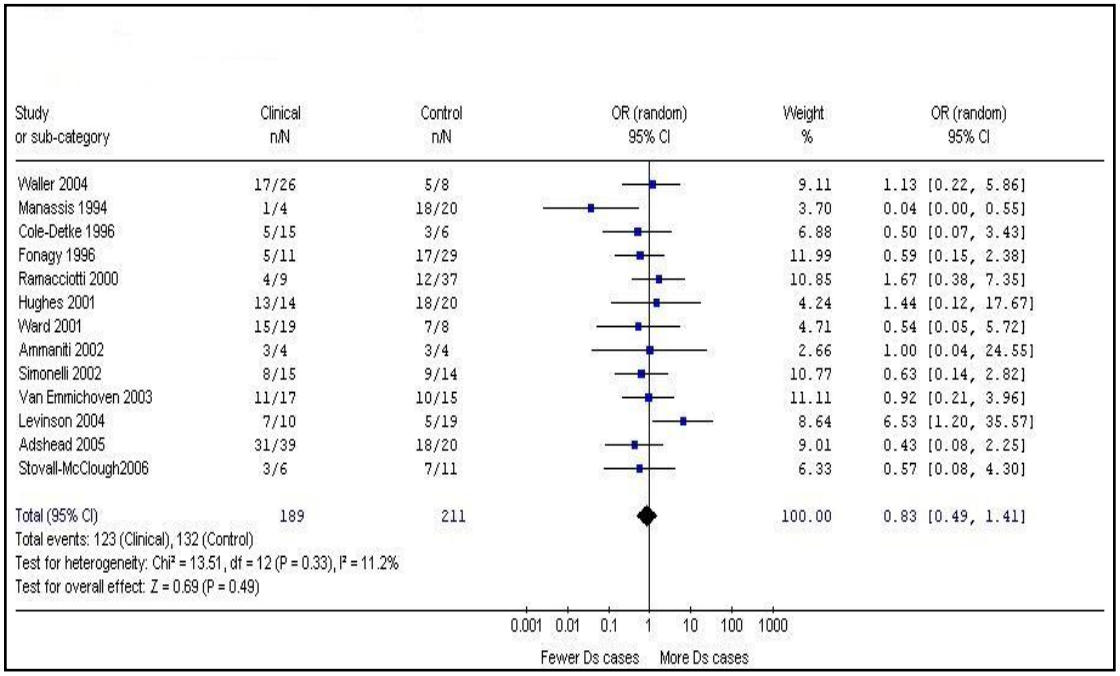


Forest plots for mental illness and attachment meta-analysis

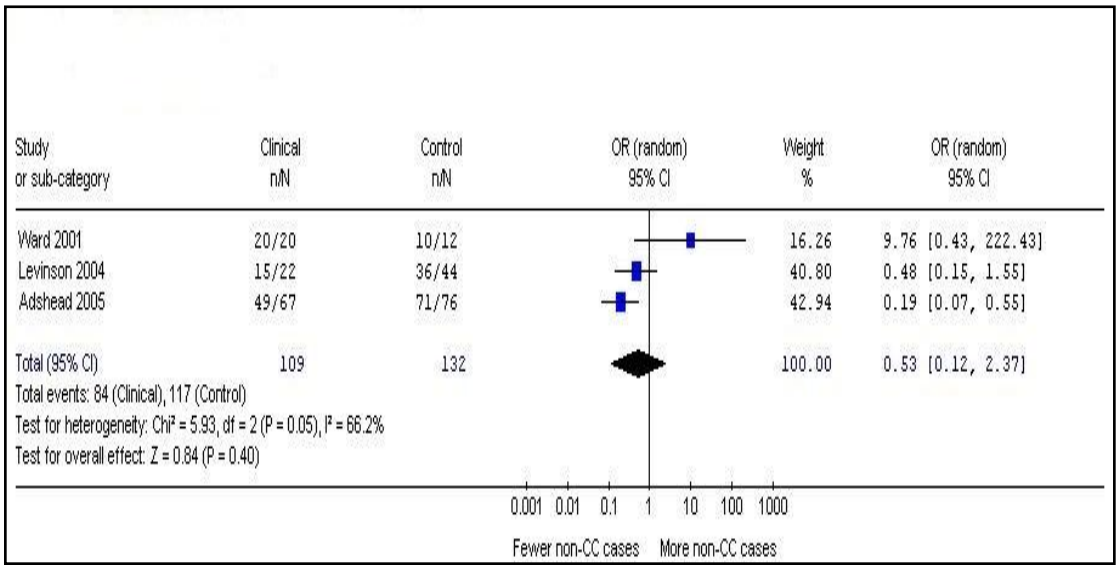
C.1 Forest plot of mental illness studies F v non - F



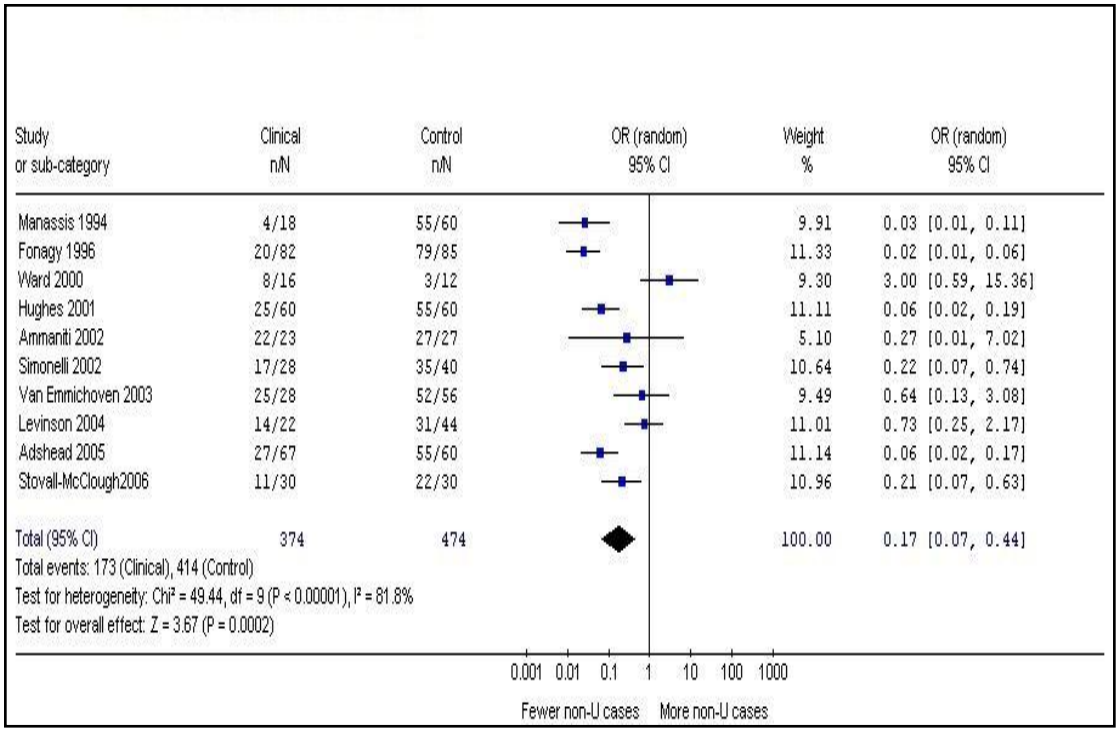
C.2 Forest plot of mental illness studies Ds v E



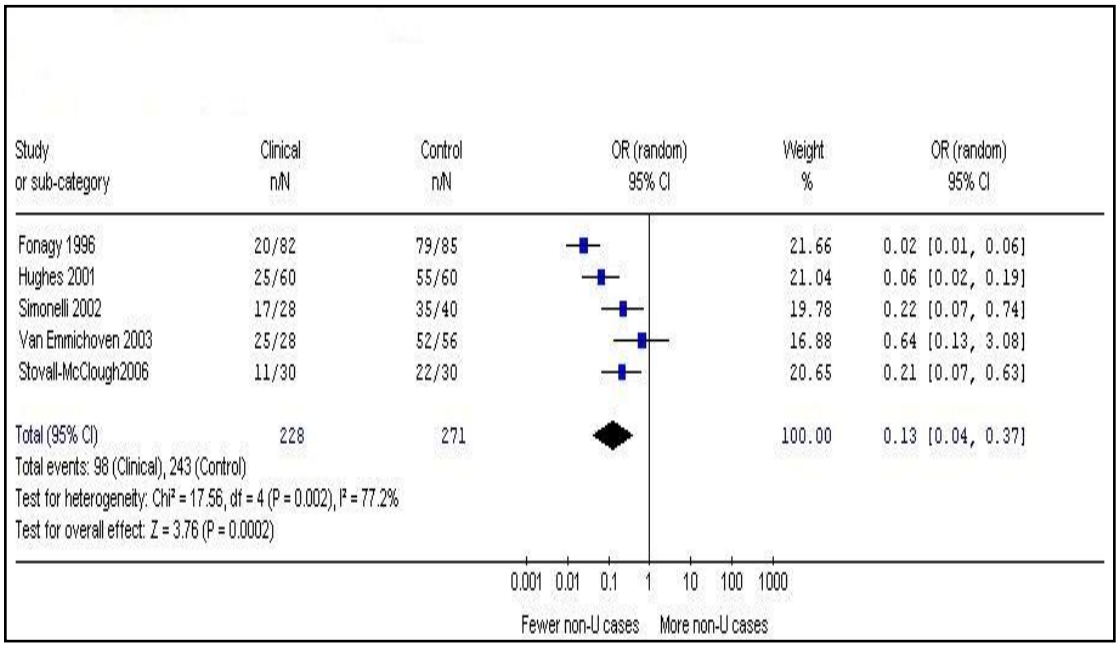
C.3 Forest plot of mental illness studies CC v non – CC



C.4 Forest plot of mental illness studies U v non – U



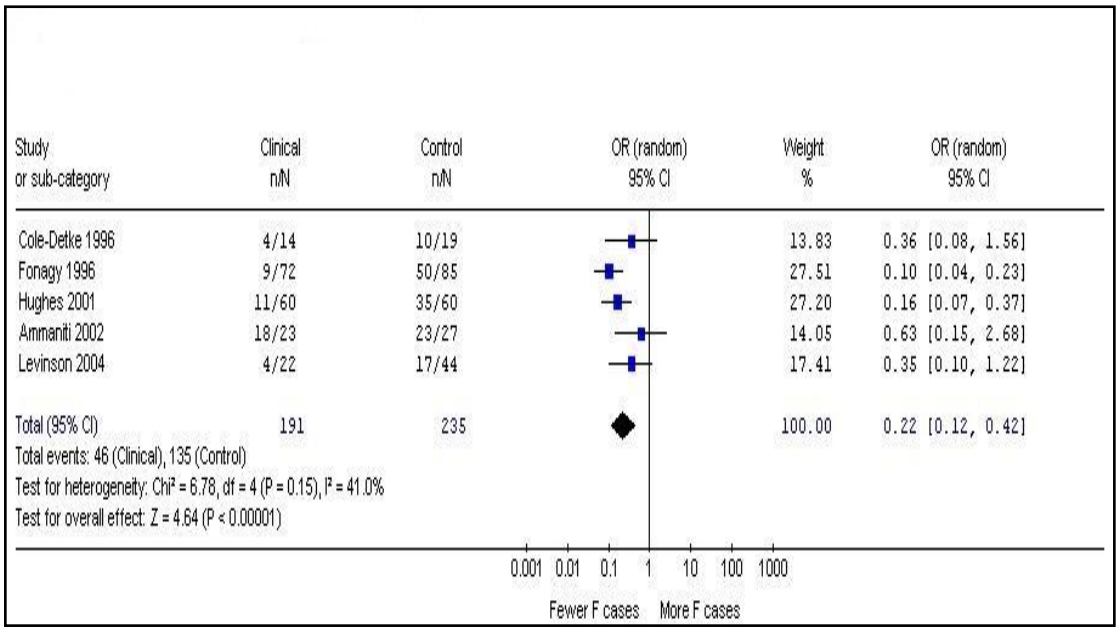
C.5 Forest plot of mental illness studies U v non - U (4-way)



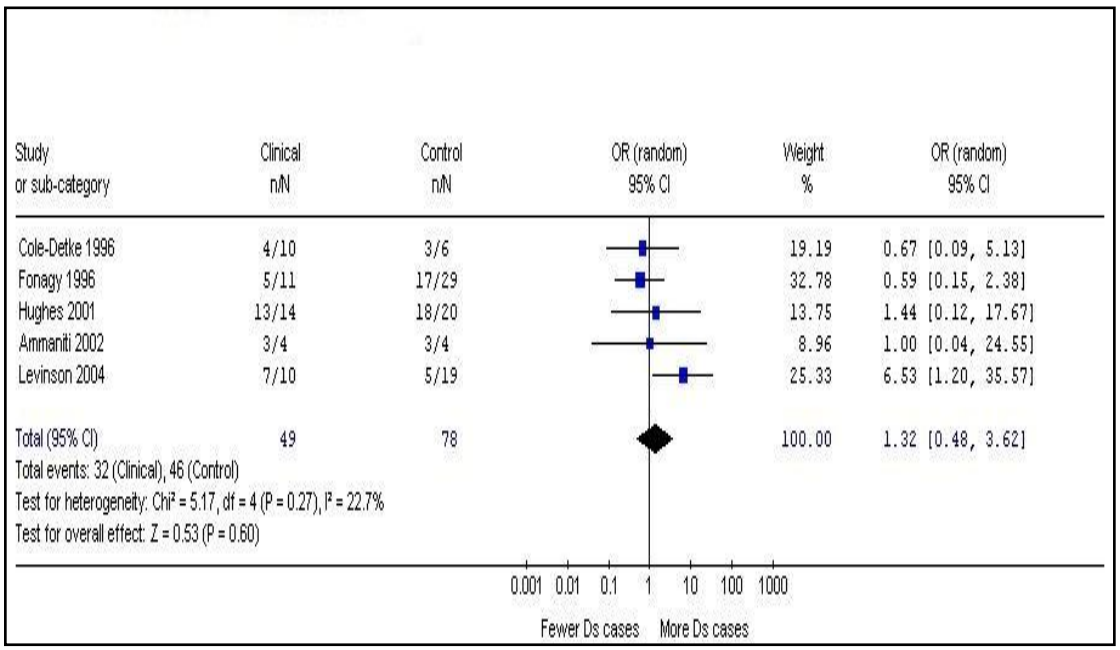
Appendix D

Forest plots for depression sub-group and attachment meta-analysis

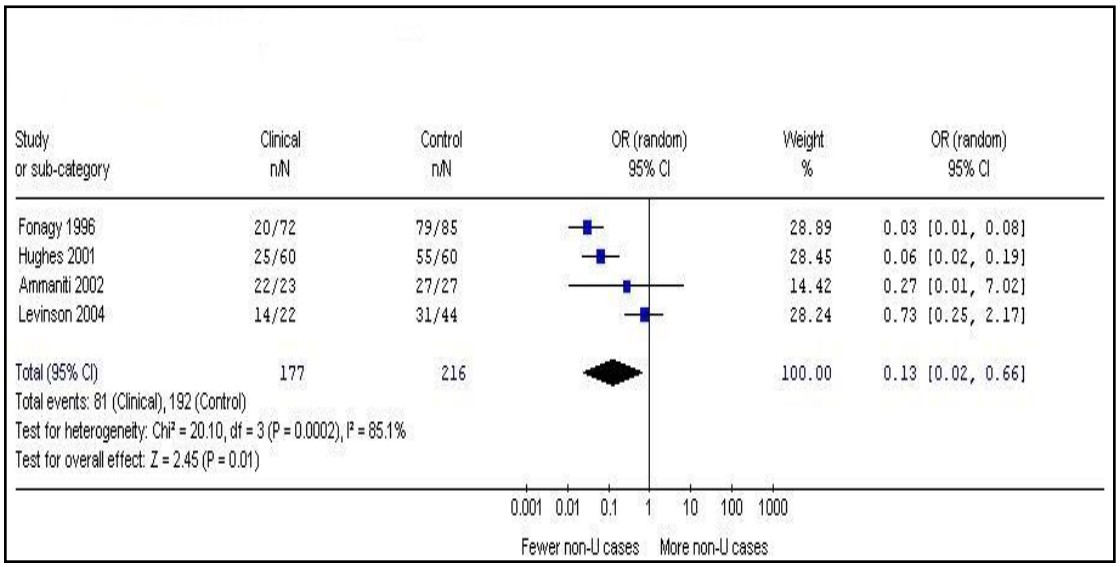
D.1 Forest plot of mental illness studies F v non - F



D.2 Forest plot of mental illness studies Ds v E



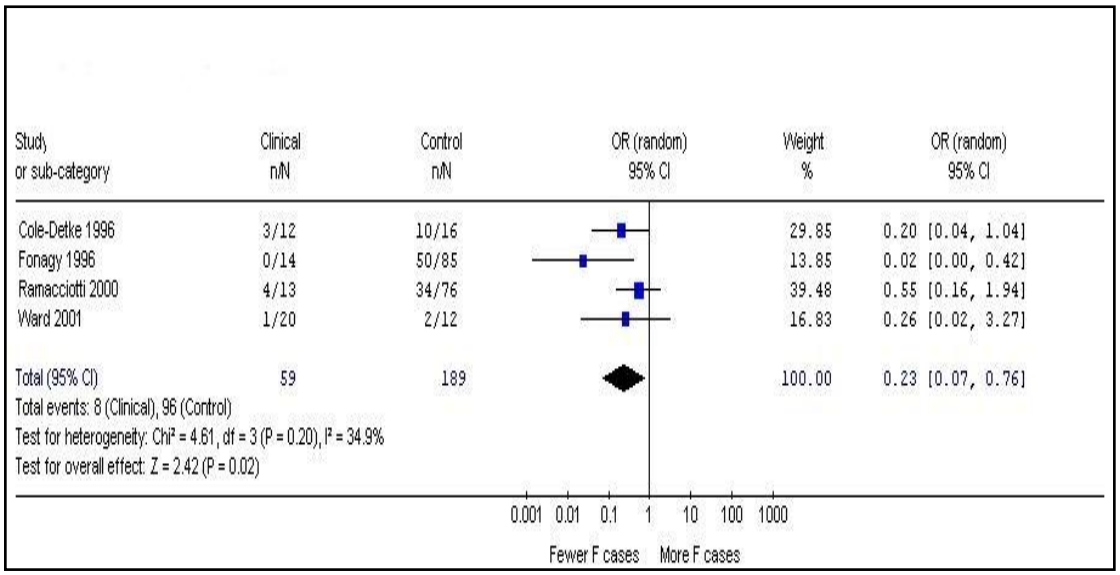
D.3 Forest plot of mental illness studies U v non - U



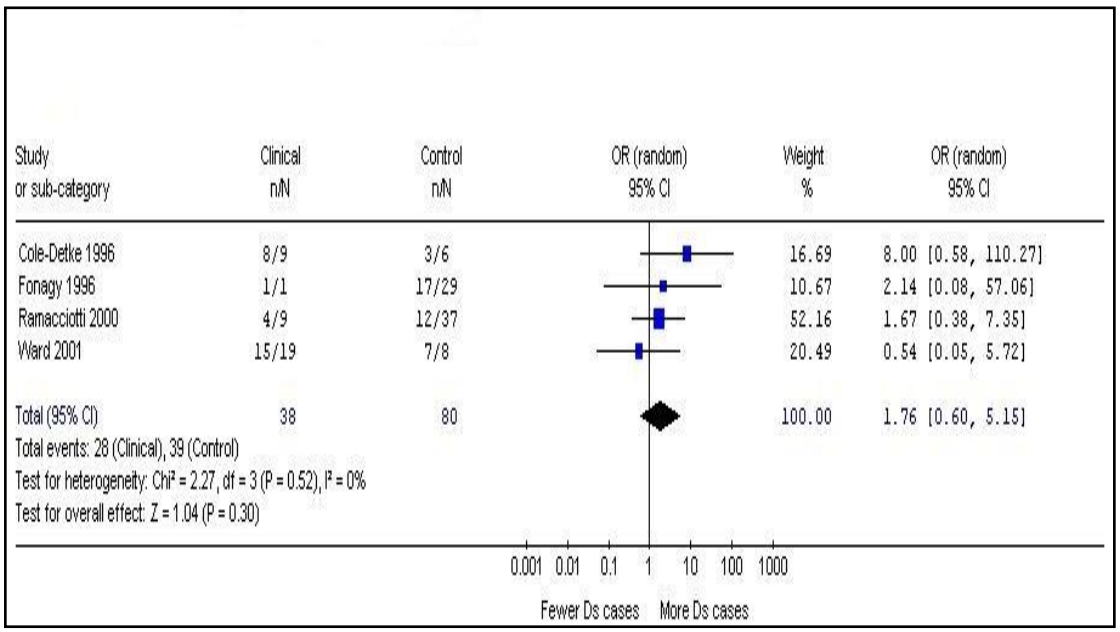
Appendix E

Forest plots for eating disorder sub-group and attachment meta-analysis

E.1 Forest plot of AAI studies for F v non - F for eating disorder studies



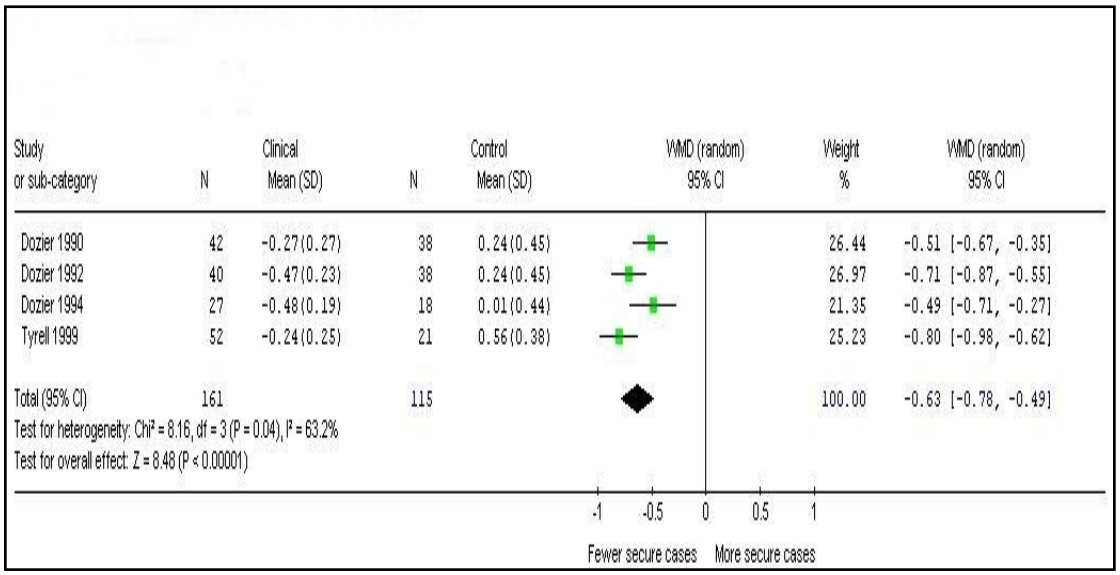
E.2 Forest plot of AAI studies for Ds v E for eating disorder



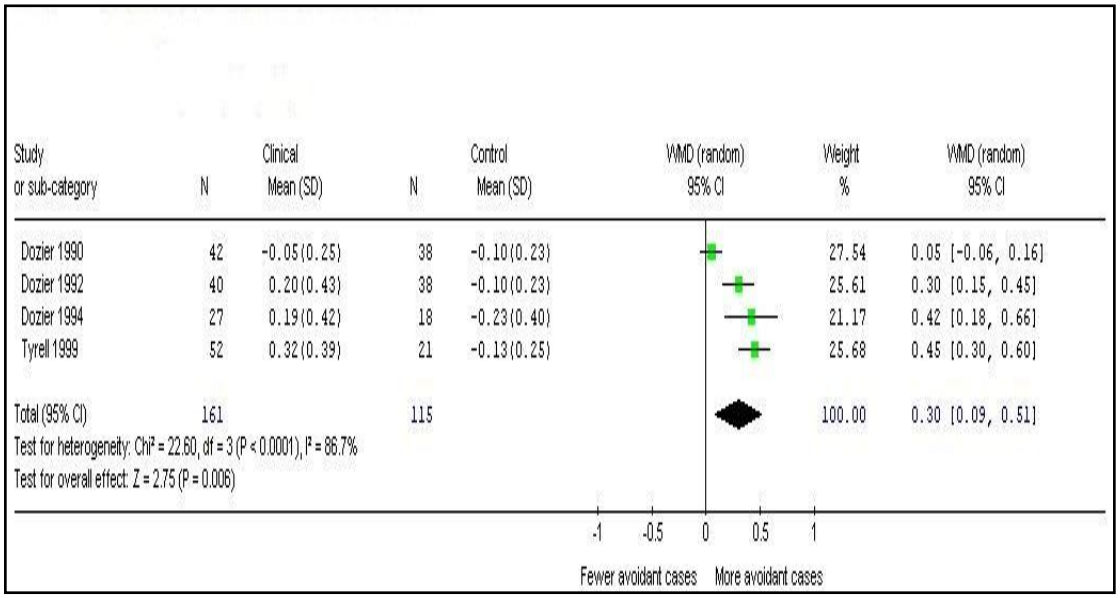
Appendix F

Forest plots for psychosis sub-group and attachment meta-analysis

F.1 Forest plot of Q-set studies for secure - insecure prototype for psychosis group

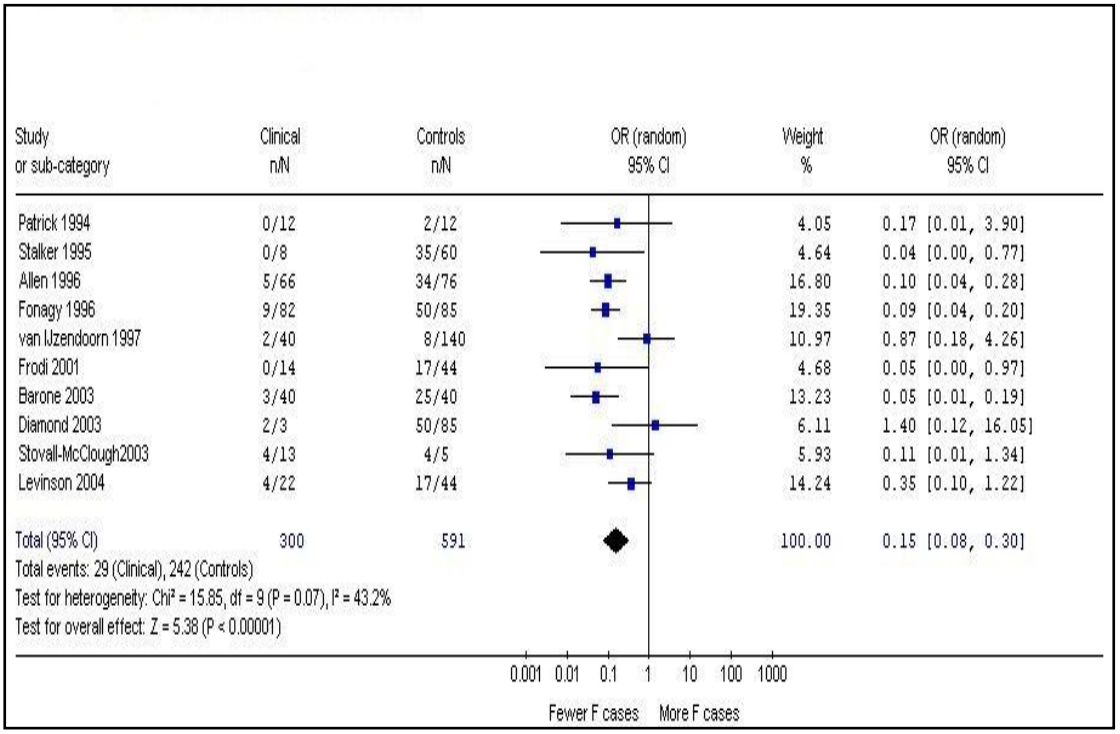


F.2 Forest plot of Q-set studies avoidance - preoccupation subtype for psychosis group

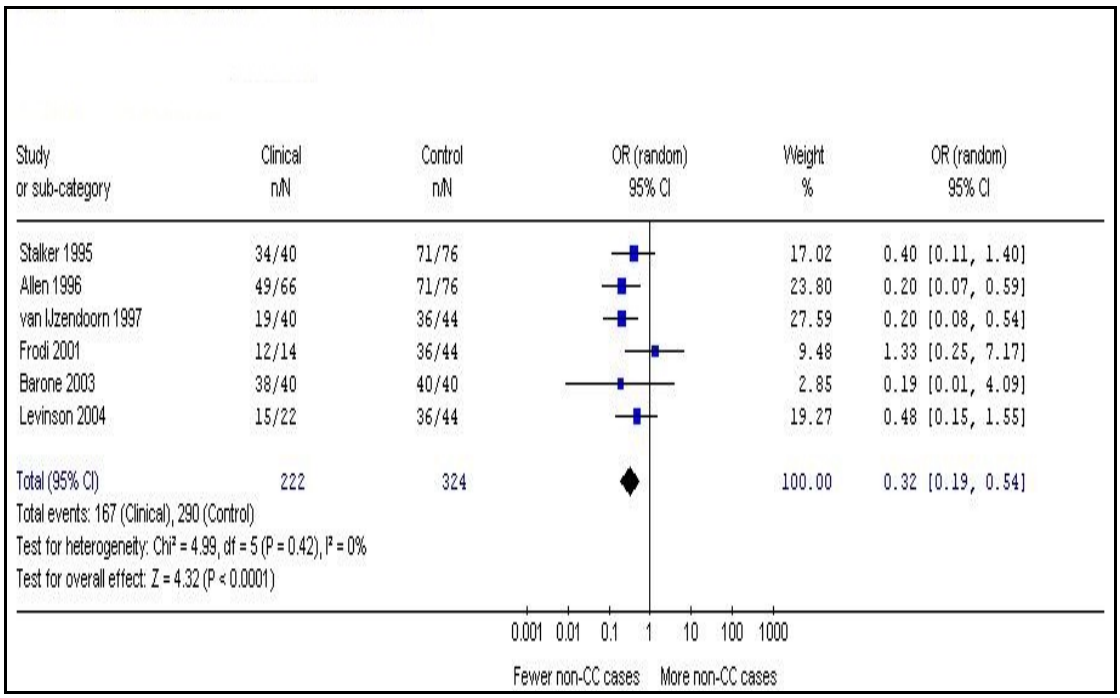


Forest plots for pd sub-group and attachment meta-analysis

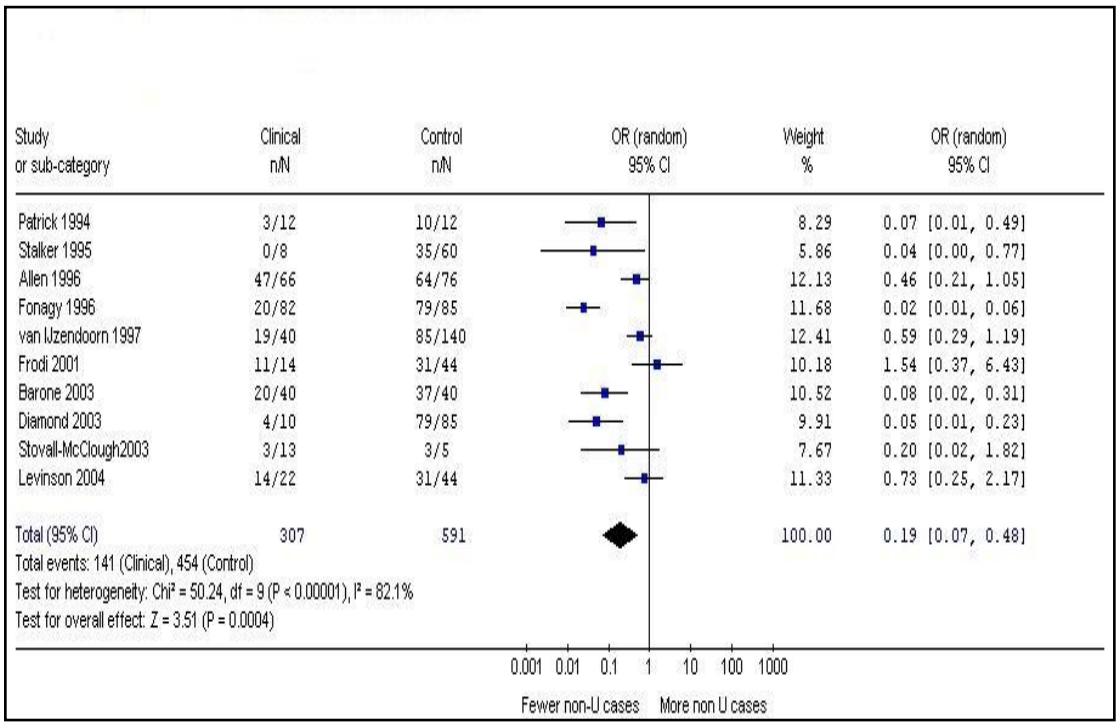
G.1 Forest plot of AAI studies for F v non - F for pd group



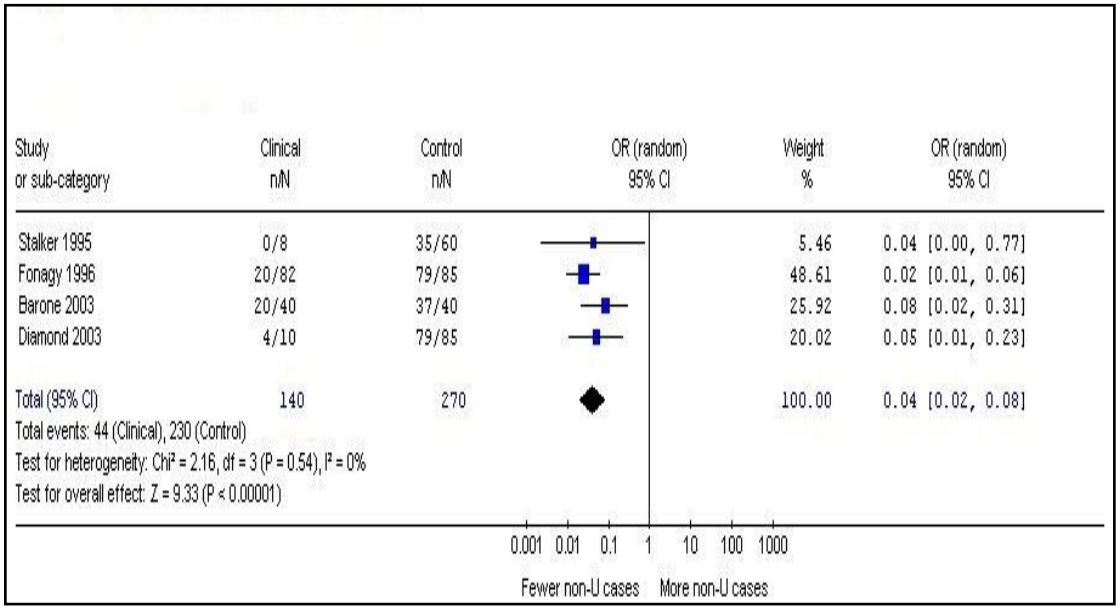
G.2 Forest plot of AAI studies for CC v non - CC for pd group



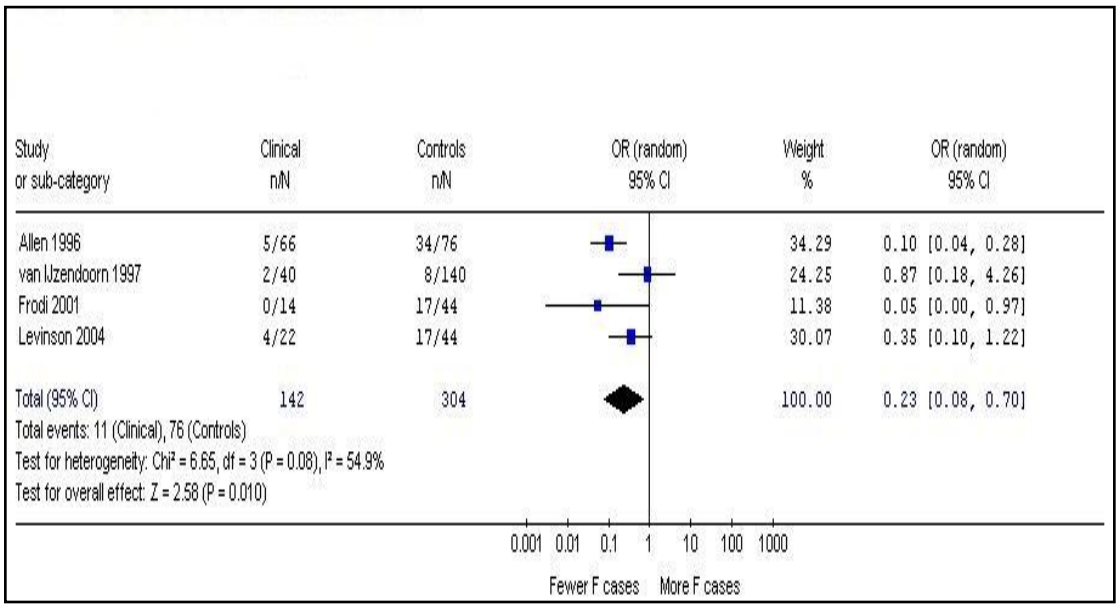
G.3 Forest plot of AAI studies for U v non - U for pd group



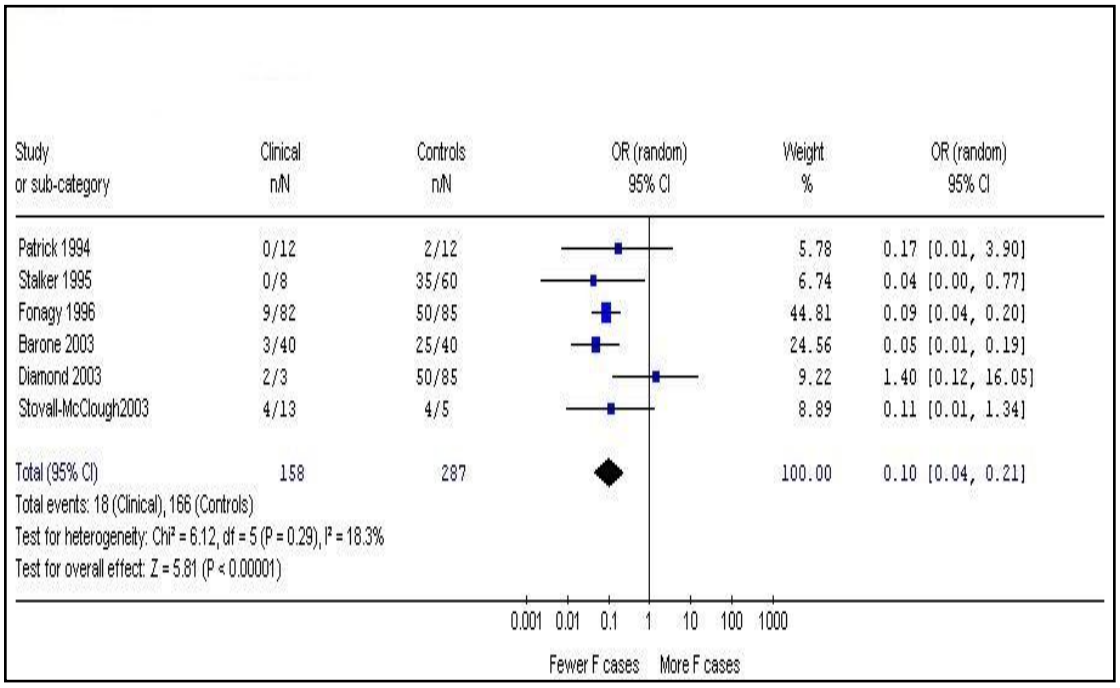
G.4 Forest plot of AAI studies for U v non - U (4 - way classification) for pd group



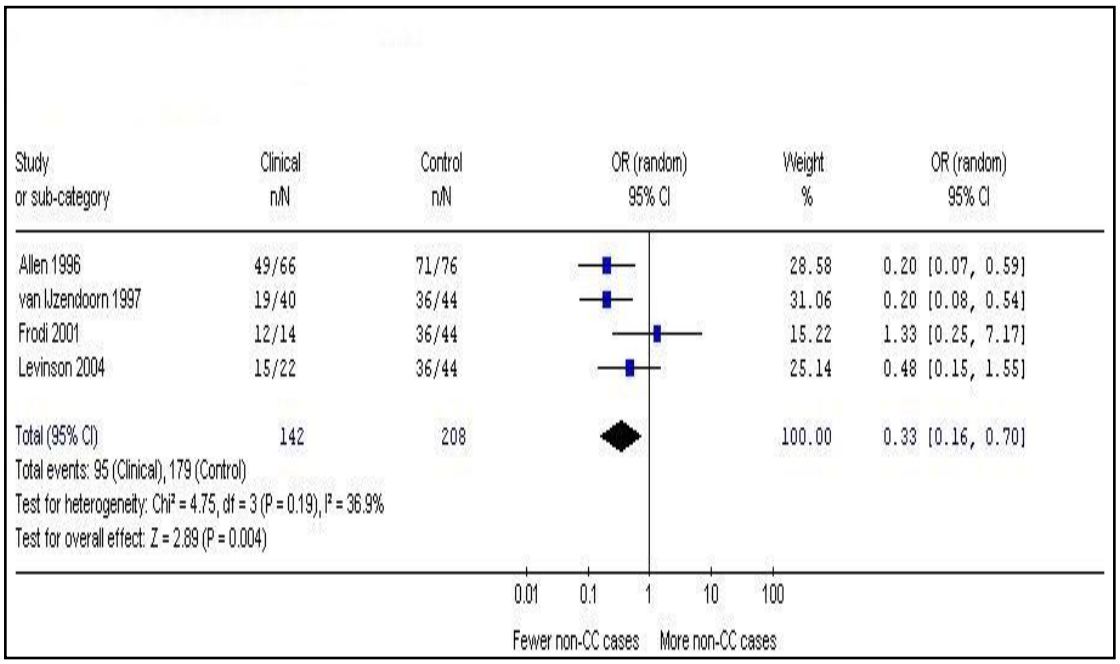
G.5 Forest plot of AAI studies for F v non - F for the violent pd group



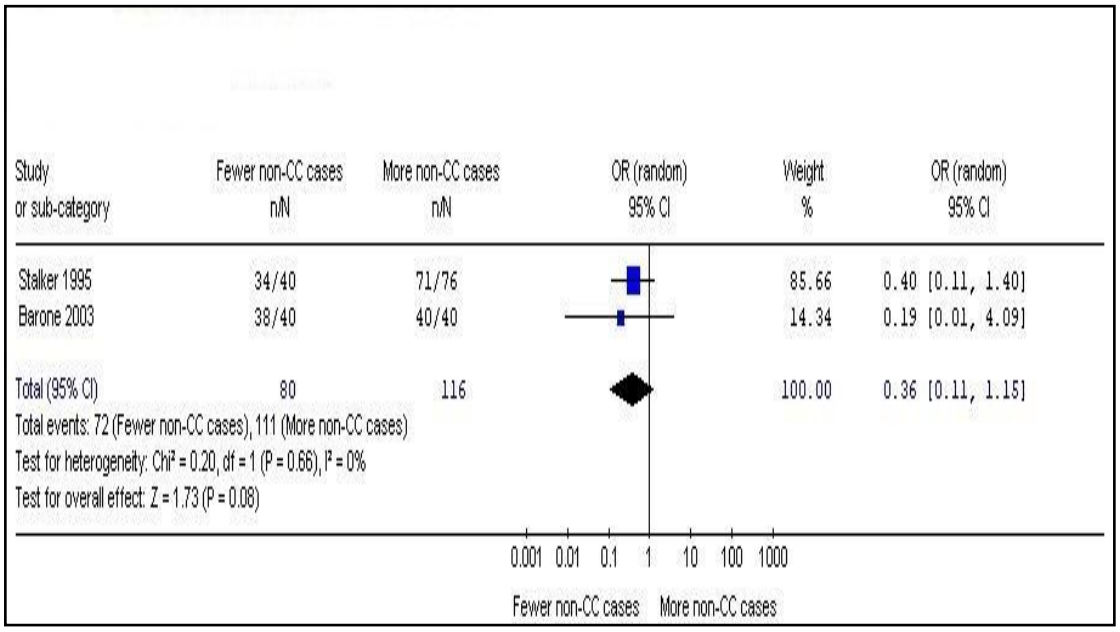
G.6 Forest plot of AAI studies for F v non - F for the non - violent pd group



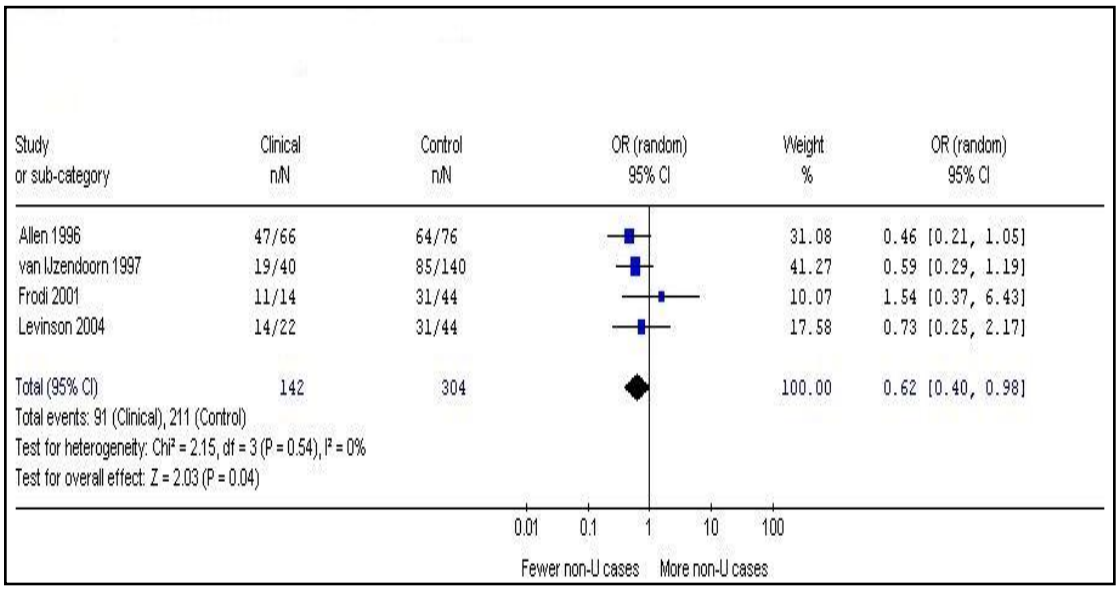
G.7 Forest plot of AAI studies for CC v non - CC for the violent pd group



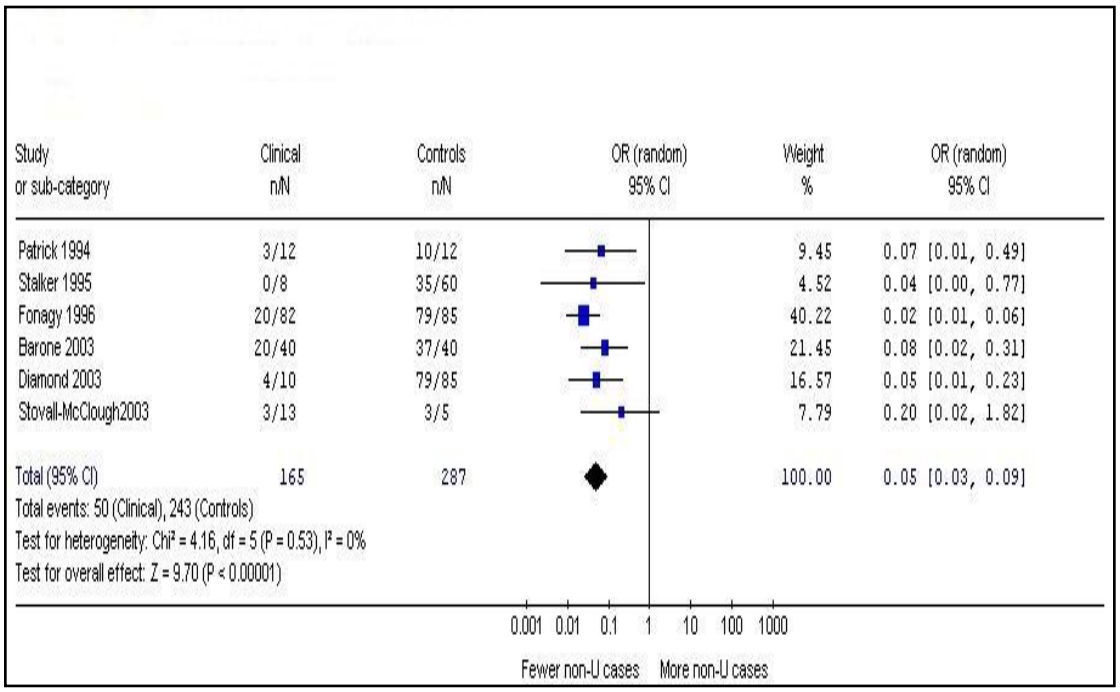
G.8 Forest plot of AAI studies for CC v non - CC for the non - violent pd group



G.9 Forest plot of AAI studies for U v non - U for the violent pd group



G.10 Forest plot of AAI studies for U v non - U for the non – violent pd group



H.1 Ethics Committee Approval Form

BROADMOOR
HOSPITAL AUTHORITY

Dr Gillian McGauley
Consultant Psychotherapist
Broadmoor Hospital

18 December 1996

Dear Dr McGauley

I am writing to inform you that, at its meeting on 17 December, the Ethics Committee approved your project entitled

'The predictive validity of attachment status and style of interpersonal functioning in assessing treatment response in personality disordered patients'.

Enclosed for your information is a copy of the comments on the scientific merit of your project.

Yours sincerely

Jackie Hayward
Secretary to the Ethics Committee

Broadmoor Hospital Crowthorne Berkshire RG45 7EG Tel 01344 773111 Fax 01344 773327

H.2 Information for patients and consent

INFORMATION FOR PATIENTS

Dr Gill McGauley, Consultant Psychotherapist, is carrying out a research project in collaboration with Broadmoor Hospital patients which involves approaching patients when they first come to Broadmoor.

The aim of the project is to find out more about how you build relationships with people around you and whether and how this contributes to your treatment.

I will ask you to complete some questionnaires over a couple of meetings. I would also like to ask you some questions about your relationships with important people in your life in an interview which will take between one to two hours. I need to record it in order to listen to what you say accurately.

I think it is important that you input and my work is protected within the limits of confidentiality. I need to see as many patients as I can so I get as complete a picture as possible of how treatment might help you. If you are interested we can now spend some time answering any questions you may have.

If you agree to take part in the project, can you please give your written consent below.

Consent to participate in Research Project which includes a recorded Interview for Research Purposes.

I .....agree to take part in the above programme and understand that the interviews will be tape recorded. I further understand the information gained will be used for research and that at no time will I be named or that any material used will identify me. the content of the interview remains confidential unless it indicates danger to myself or other people.

Signed..... Date.....

Signed..... Date.....

Signature of Researcher

West London Mental Health NHS
NHS Trust

Broadmoor Hospital
Crowthorne
Berkshire
RG45 7EG

PATIENT INFORMATION SHEET (10/09/04)

Title of research:	The Predictive Validity of Attachment Status and style of Inter-personal functioning in assessing treatment response in personality disordered patients.
Short title:	Attachment status and style of interpersonal functioning as predictors of treatment response.
Names of researchers:	Dr Gill McGauley, Ms Luisa Marin-Avellan and Dr Colin Campbell
Local contact details of principal researcher:	Dr Gill McGauley, Department of Forensic Psychotherapy, Richard Dadd Centre, Broadmoor Hospital.

Introduction

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. Thank you for reading this.

The purpose of the study

The current study is an extension of a study in which you have already participated. Because we are adding another interview to the original study we need to ask you again if you would be willing to take part. Originally, we rated this interview about your personality by listening to the audio-taped interview you

did for us and by looking at information in your case-notes. We are now asking patients who have already done a taped interview with us, to do a different type of psychological interview which will also be audio-taped. We want to compare whether the way we rate the information you give us is similar when we use two different procedures. This study does not aim to re-assess your personality but to see whether two researchers can agree on their ratings when one of them interviews you and the other listens only to the previous interview and looks at case-note information. The information obtained from this study will show whether this new psychological interview can be reliably completed using an audi-taped interview and case-note information. We estimate that the current study will last six to nine months.

Why have I been chosen?

You have been chosen because you have already participated in our study and did an interview that was audio-taped. We are contacting you again because we need to ask for your consent in order to do a new audio-taped interview with you. We plan to interview 10 patients in total for this study.

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 be asked 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. A decision to withdraw at any time, or a decision not to take part, will not affect your treatment or the standard of care you receive.

What is involved if I take part?

This research involves doing an interview about aspects of your family relationships, personality and life-style which we will record on an audio-tape recorder. The interview usually lasts approximately two and a half hours, although this may vary from one person to another. We would like to do the whole interview on the same day, but if it is more convenient for you it can be divided into two or three sessions (lasting between 45 to 75 minutes) at different times in the day. If this is not possible we can arrange to come back and see you again on a different day. You will be able to take breaks during the interview as you need. We may also

need to look in your hospital notes for some information about you. Once we have finished the interview your part in the research project is completed.

What are the possible disadvantages of taking part?

The interview that we wish to do with you will involve discussing many aspects of your life. You may find that remembering some of your experiences may be upsetting. If this happens, you do not have to discuss them with us. We will offer you some time at the end of the interview to discuss how you felt about doing this interview and to answer any questions you may have.

What are the possible benefits of taking part?

The information we get from this study may help us to treat future patients with personality difficulties better as we think that this new interview is better than ones that are currently used.

Is my information confidential?

All the information which is collected about you during the course of the research will be kept strictly confidential and separate from your hospital case notes and clinical team. We will only inform your clinical team if you indicate to us that your life or that of others is clearly in danger. All the information will be securely stored, and at no time will you be named or be identified from any information we have gathered about you. Any information about you which leaves the hospital will have your name removed so that you cannot be recognised from it.

Contact for further information.

If you need any further information you can contact Dr Gill McGauley, Department of Forensic Psychotherapy, Richard Dadds Centre, Broadmoor Hospital on extension 4396.

Who is organising and funding the research?

The NHS National Programme on Forensic Mental Health Research and Development is funding this study.

Who has reviewed the study?

This study has been reviewed by the NHS National Programme on Forensic Mental Health Research and Development and by the Local Research Ethics Committee at Broadmoor Hospital.

Thank you for your cooperation by reading this. If you are interested in joining the study we can discuss any questions you have. You will be given a copy of this information sheet and a signed copy of the consent form to keep.

Dr Gill McGauley (Consultant and Senior Lecturer in Forensic Psychotherapy), Ms Luisa Marin-Avellan (Research Fellow) and Dr Colin Campbell (Lecturer in Forensic Psychiatry)

CONSENT FORM

Study Number:

Patient Identification Number for this trial:

Title of Project: The Predictive Validity of Attachment Status and style of Inter-personal functioning in assessing treatment response in personality disordered patients.

Name of Researcher:

Please initial box

1. I confirm that I have read and understand the information sheet dated 10/09/04 about this 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 my hospital notes may be looked at by the researchers. I give permission for these individuals to have access to my records.
4. I agree to take part in the above study.

Name of patient _____ Date: _____

Signature _____

Name of researcher _____ Date: _____

Signature _____

Thank you for taking part in this study.

Appendix J

J.1. The Broadmoor Baseline Data Schedule

THE BROADMOOR BASELINE DATA SCHEDULE

Date of admission	
Legal classification	
Hospital no	
Patient no in trial	
Date of birth	
Female/Male	
Date screen started	
Date screen completed	
Researcher	

Contents	Page no.
Family data	3-6
History of losses, separations	7-9
History of abuse	10-12
Child and adolescent psychopathology	13-17
Adult level of functioning	18-19
Psychiatric history	20-22
Forensic history	23-24
Index offence	25-26

FAMILY DATA

HISTORY OF PSYCHIATRIC ILLNESS

		Yes	No	NK
(a)	MOTHER	☐	☐	☐

If yes, please specify:

- Diagnosis

_____

- Patient's age when mother became ill

_____

- Type of treatment received

_____

		Yes	No	NK
(b)	FATHER	☐	☐	☐

If yes, please specify:

- Diagnosis

_____

- Patient's age when Father became ill

_____

- Type of treatment received

_____

HISTORY OF PSYCHIATRIC ILLNESS (cont)

		Yes	No	NK
(c)	STEP/FOSTER MOTHER	☐	☐	☐

- Diagnosis

_____

- Type of treatment received

_____

- Patient's age when became ill

_____

		Yes	No	NK
(d)	STEP/FOSTER FATHER	☐	☐	☐

- Diagnosis

_____

- Type of treatment received

_____

- Patient's age when became ill

_____

		Yes	No	NK
(e)	OTHER FAMILY MEMBERS	☐	☐	☐

- Diagnosis

_____

- Type of treatment received

_____

- Relationship to the patient

_____

- Patient's age when became ill

_____

HISTORY OF CRIMINAL CONVICTIONS

	Yes	No	NK
a) MOTHER	☐	☐	☐

- Diagnosis _____
- Nature of detention if relevant _____
- Patient's age _____

	Yes	No	NK
b) FATHER	☐	☐	☐

- Diagnosis _____
- Nature of Detention if relevant _____
- Patient's age _____

	Yes	No	NK
c) STEP/FOSTER-MOTHER	☐	☐	☐

- Diagnosis _____
- Nature of detention if relevant _____
- Patient's age _____

HISTORY OF CRIMINAL CONVICTIONS (cont)

	Yes	No	NK
d) STEP/FOSTER FATHER	☐	☐	☐

- Diagnosis

_____

- Nature of detention if relevant

_____

- Patient's age _____

	Yes	No	NK
e) OTHER MEMBERS OF THE FAMILY	☐	☐	☐

- Diagnosis

_____

- Nature of detention if relevant

_____

- Relationship to the patient

_____

- Patient's age _____

Family size

Number of siblings/half sibs living in the same household. ☐

LOSSES AND SEPARATIONS

Patient age, 0-10	Yes	No	NK
Losses by death	☐	☐	☐

a) Relation to patient _____

Patient's age at death ☐

b) Relation to patient _____

Patient's age at death ☐

c) Relation to patient _____

Patient's age at death ☐

	Yes	No	NK	Patient's Age
Family breaks up/separations	☐	☐	☐	☐
• divorce	☐	☐	☐	☐
• parental illness/hospitalisations	☐	☐	☐	☐

specify: _____

• patient's illnesses/hospitalisations	☐	☐	☐	☐

specify: _____

• other (e.g. for the safety of patient or others)	☐	☐	☐	☐

specify: _____
_____
_____

Outcome for patient:

	Yes	No	NK
• remains with one parent	☐	☐	☐

comments (which parent, age, duration): _____

	Yes	No	NK
• looked after by a family member	☐	☐	☐

comments (which parent, age, duration)_____

	Yes	No	NK
• patient taken into care	☐	☐	☐
	Yes	No	NK
• foster care	☐	☐	☐
• adoption	☐	☐	☐
• institution	☐	☐	☐

specify:_____

	Yes	No	NK
• disruptive behaviour whilst in care	☐	☐	☐
• single episode	☐	☐	☐
• multiple episodes	☐	☐	☐

If patient was in care, record periods longer than 6 months:

NUMBER OF ARRANGEMENTS: ☐

- 1st arrangement:

  type of care _____

  Patient's age ☐

  length of stay _____

  reason for going into care: _____

  behaviour while in care: _____

- 2nd arrangement:

  type of care _____

  Patient's age ☐

  length of stay _____

  reason for going into care: _____

  behaviour while in care: _____

- 3rd arrangement:

  type of care _____

  Patient's age ☐

  length of stay _____

  reason for going into care: _____

  behaviour while in care: _____

ABUSE

		Yes	No	NK
1.	Sexual abuse	☐	☐	☐

If yes:

- Patient's age ☐
- abused by _____

	Yes	No	NK
• documented abuse	☐	☐	☐
• doctors involved	☐	☐	☐
• police involved	☐	☐	☐

Outcome

	Yes	No	NK
• Abuser convicted	☐	☐	☐
• Patient put on at risk register	☐	☐	☐

		Yes	No	NK
2.	Physical abuse	☐	☐	☐

If yes

- Patient's age ☐
- abused by _____

	Yes	No	NK
• documented abuse	☐	☐	☐
• doctors involved	☐	☐	☐
• social services involved	☐	☐	☐
• police involved	☐	☐	☐

Outcome

	Yes	No	NK
• abuser convicted	☐	☐	☐
• patient put on at risk register	☐	☐	☐
• other	☐	☐	☐

		Yes	No	NK
3.	Other abuse	☐	☐	☐

Specify:_____

Age ☐

4. History of harsh disciplining
(e.g. corporal punishment or extreme deprivation etc)

Yes ☐ No ☐ NK ☐ Age ☐

Specify _____

Relation to the patient _____

Patient's response _____
(e.g. hit back)

Frequency: Once ☐ Occasionally ☐ Regularly ☐

CHILD AND ADOLESCENT PSYCHOPATHOLOGY

Any record in the notes of the following:

	Yes	No	NK	Age
Reactive Attachment Disorder	☐	☐	☐	☐
Separation Anxiety Disorder	☐	☐	☐	☐
Attention Deficit/Hyperactivity Disorder	☐	☐	☐	☐
Conduct Disorder	☐	☐	☐	☐
Opposition Defiant Disorder	☐	☐	☐	☐
Disruptive Behaviours Disorder	☐	☐	☐	☐
PTSD	☐	☐	☐	☐
Childhood Disintegrative Disorder	☐	☐	☐	☐
Dyslexia	☐	☐	☐	☐
"Learning difficulties"	☐	☐	☐	☐
Attended child guidance clinic (Δ)	☐	☐	☐	☐
Admitted to psychiatric hospital (Δ)	☐	☐	☐	☐

History of :

	Yes	No	NK	Age
• pregnancy problems	☐	☐	☐	☐

Specify: _____

- congenital malformations ☐ ☐ ☐ ☐

Specify:_____

- birth complications ☐ ☐ ☐ ☐

Specify:_____

failure to thrive ☐ ☐ ☐ ☐

Specify:_____

- close observation by paediatrician ☐ ☐ ☐ ☐

Specify:_____

- early developmental problems ☐ ☐ ☐ ☐

Specify:_____

- low IQ ☐ ☐ ☐ ☐

- seen by educational psychologist at school ☐ ☐ ☐ ☐

- had special needs help at school ☐ ☐ ☐ ☐

- studied at special needs school ☐ ☐ ☐ ☐

<u>Screening questions for:</u>

a) HADD

	Yes	No	NK	Age
• purposeless running, being restless, fidgety, inattentive disorganisation (most of the time at school/home)	☐	☐	☐	☐

- "Hyperactive" ☐ ☐ ☐ ☐
- inability to wait one's turn ☐ ☐ ☐ ☐
- talk excessively (hoarse voice) ☐ ☐ ☐ ☐
- socially disinhibited, intrusive ☐ ☐ ☐ ☐

b) Conduct disorder/ODD: Antisocial behaviours - repetitive, persistent, serious of substantial duration, more than months or multiple episodes.

	Yes	No	NK	Age
• breaking into property	☐	☐	☐	☐
• stealing	☐	☐	☐	☐
• lying	☐	☐	☐	☐
• fighting	☐	☐	☐	☐
• suspended from school	☐	☐	☐	☐

Why? _____

• expelled from school	☐	☐	☐	☐

Why? _____

• bullying	☐	☐	☐	☐
• truancy	☐	☐	☐	☐
• running away from home	☐	☐	☐	☐
• disobedience	☐	☐	☐	☐
• vandalism	☐	☐	☐	☐

- exceptional defiance ☐ ☐ ☐ ☐
- tantrums for provocative behaviour ☐ ☐ ☐ ☐
- cruelty to animals ☐ ☐ ☐ ☐
- use of weapons ☐ ☐ ☐ ☐
- serious expressions of hatred (fire setting, poisoning) ☐ ☐ ☐ ☐
- failing to accept blame re misdeeds ☐ ☐ ☐ ☐
- precocious use of alcohol ☐ ☐ ☐ ☐
- precocious use of drugs ☐ ☐ ☐ ☐

c) Separation anxiety disorder (clinically significant impairment)

	Yes	No	NK	Age
• fears of separation since early childhood	☐	☐	☐	☐
• school refusal (because of fear of separation)	☐	☐	☐	☐
• persistent and excessive worry about losing or about possible harm befalling, major attachment figures	☐	☐	☐	☐
• fear of being alone	☐	☐	☐	☐
• repeated physical symptoms	☐	☐	☐	☐

- when separation from major attachment figures occurs or is anticipated ☐ ☐ ☐ ☐

d) Reactive attachment disorder

	Yes	No	NK	Age
• frozen watchfulness	☐	☐	☐	☐
• resistance to comfort	☐	☐	☐	☐
• mixture of approach & avoidance	☐	☐	☐	☐
• indiscriminate sociability	☐	☐	☐	☐

e) Other

	Yes	No	NK	Age
• self harm	☐	☐	☐	☐
- required hospital treatment	☐	☐	☐	☐
• serious suicidal attempts	☐	☐	☐	☐
• conversions	☐	☐	☐	☐
• dissociative reactions	☐	☐	☐	☐
• bullied at school	☐	☐	☐	☐
• enuresis	☐	☐	☐	☐

- hobbies/interests:
- personal achievements (exams, awards etc).

ADULTHOOD 18+

Patient's family history

1. Romantic relationships or friendships:

   none ☐; lasted 1 to 6 months ☐; lasted 6 months or more ☐

   List each relationship and their duration:

   a) _____

   b) _____

   c) _____

		Yes	No	NK
2.	Has any children	☐	☐	☐

List children's sex and ages:

a) _____

b) _____

c) _____

		Yes	No	NK
3.	Abused his/her children?	☐	☐	☐
	Abused by other family member	☐	☐	☐
	Abused by others who?_____	☐	☐	☐

4. Socio-economical data

	Yes	No	NK
Frequent change of address	☐	☐	☐

Why?

_____

	Yes	No	NK	Never had a job
Frequent change of jobs	☐	☐	☐	☐

Why?

_____

(e.g. disciplinary actions, conflicts etc)

Longest period of job held _____
(specify job title and duration)

Longest period of unemployment _____
(specify age and duration)

PSYCHIATRIC HISTORY

		Yes	No	NK
1.	Previous Δ of personality disorder	☐	☐	☐
	Age	☐		
	If yes, list diagnosis_____			
2.	Obsessive Compulsive Disorder	☐	☐	☐
3.	Generalised anxiety disorder	☐	☐	☐
4.	PTSD	☐	☐	☐
5.	Mood disorder	☐	☐	☐
6.	Substance abuse related disorder	☐	☐	☐
7.	Alcohol abuse related disorders	☐	☐	☐
8.	Schizophrenic	☐	☐	☐
9.	Delusional disorder	☐	☐	☐
10	Epilepsy	☐	☐	☐
11.	Sleep disorder (exclude insomnia)	☐	☐	☐
12.	Other Specify _____			

MEDICAL/PSYCHIATRIC HISTORY

IQ (assessed in adulthood): Full ☐ Verbal ☐ Performance ☐

	Yes	No	NK
• outpatient treatment	☐	☐	☐

if yes Δ , dates _____
_____
_____
_____

	Yes	No	NK
• inpatient treatment	☐	☐	☐

if yes Δ & dates:_____
_____
_____
_____

	Yes	No	NK
• inpatient involuntary treatment	☐	☐	☐

if yes Δ & dates:_____
_____
_____
_____
_____

	Yes	No	NK
• involuntary in a secure setting	☐	☐	☐

Type of setting and dates:
a) _____
b) _____
c) _____

INCIDENTS WHILST IN PRISON/SECURE HOSPITALS

	Yes	No	NK	Specify setting, dates and incident
violence to staff	☐	☐	☐	_____
absconding	☐	☐	☐	_____
taking hostages	☐	☐	☐	_____
fire setting	☐	☐	☐	_____
multiple self harm	☐	☐	☐	_____
suicidal attempts	☐	☐	☐	_____
violence to patients	☐	☐	☐	_____
violence to inmates	☐	☐	☐	_____

FORENSIC HISTORY

	Yes	No	NK	Age
Homicide	☐	☐	☐	☐
Specify victim _____				
Murder	☐	☐	☐	☐
Specify victim _____				
Manslaughter	☐	☐	☐	☐
Specify victim _____				
ABH	☐	☐	☐	☐
GBH	☐	☐	☐	☐
Drug related offences	☐	☐	☐	☐
Alcohol related offences	☐	☐	☐	☐
Arson	☐	☐	☐	☐
Acquisitive offences	☐	☐	☐	☐
Sexual Offences	☐	☐	☐	☐
Other	☐	☐	☐	☐

Specify:_____

Total number of convicted Offences: ☐
(including current offence)

List of Convicted Offences (include: disposal and duration of disposal i.e. Probation, Fines, Treatment Orders; Prison). *If more than 5, list the most serious and/or recent ones.*

1) _____

_____

2) _____

_____

3) _____

_____

4) _____

_____

5) _____

_____

INDEX OFFENCE

Offence: _____

Date: _____

Description of the Offence: _____

_____

_____

Other forensic acts associated with the Offence: _____

_____

Number of victims: ☐

Specify: age, sex, known/unknown and link to the patient:

1) _____

2) _____

3) _____

4) _____

Disposal

	Yes	No
	NK	
• prison	☐	☐
	☐	

Which prison and the length of sentence: _____

• hospital order	☐	☐
	☐	

Which hospital: _____

- prison then hospital transfer ☐ ☐ ☐

Specify: _____

Diagnosable mental illness at the point of offence:

	Yes	No	NK
	☐	☐	☐

Diagnosis: _____

At the point of index offence had following symptoms:

	Yes	No	NK
• delusions	☐	☐	☐

Specify:_____

• disorders of perception	☐	☐	☐

Specify: _____

• mood disorder	☐	☐	☐

Specify: _____

• amnesia of the events	☐	☐	☐
• substance induced intoxication	☐	☐	☐
• alcohol induced intoxication	☐	☐	☐

Appendix J

J.2 The Broadmoor Baseline Data Schedule: Coding Template

1) Age.

2) Sex: M=1; F=2.

3) Mental Health Act Classification: 1=mental illness; 2=psychopathic disorder; 3=both.

4) History of major psychiatric illnesses in the mother (natural, foster or adoptive): schizophrenia; affective disorder; personality disorder; substance misuse; epilepsy. For each answer: 0=none; 1=yes.

5) History of major psychiatric illnesses in the father (natural, foster or adoptive): schizophrenia; affective disorder; personality disorder; substance misuse; epilepsy. For each answer: 0=none; 1=yes.

6) History of criminal convictions in the mother (natural, foster or adoptive) with disposal of at least a suspended sentence: 0=none; 1=probable; 2=definite.

7) History of criminal convictions in the father (natural, foster or adoptive) with disposal of at least a suspended sentence: 0=none; 1=probable; 2=definite.

8) Number of siblings lived with when subject was growing up.

9) Losses by death before the age 10: 0=none; 1=mother (natural, foster or adoptive); 2=father (natural, foster or adoptive); 3=siblings or other close people who were in a caring position; 4=mother and father.

10) Care before the age of 10:

    a) Taken into care: 0=no; 1=fostered; 2=put into an institution; 3=adopted; 4=family member; 5=several types of care.
    b) Reason for being taken into care: 1=due to parents' incompetence; 2=due to the subject's behaviour (e.g. conduct disorder); 3=both; 4=unclear.
    c) Number of living arrangements:

11) Care after the age of 10 (including any pre10 care):

    a) Taken into care: 0=no; 1=fostered; 2=put into institution; 3=adopted; 4=several types of care.
    b) Reason for being taken into care: 1=due to parents' incompetence; 2=due to the subject's behaviour (e.g., conduct disorder); 3=both; 4=unclear.
    c) Number of living arrangements:

12) History of physical abuse: 0=none; 1=reported by the subject only; 2=professional involvement; 3=perpetrator convicted; 4=not known.

13) History of sexual abuse: 0=none; 1=reported by the subject only; 2=professional involvement; 3=perpetrator convicted; 4=not known.

14) Other type of abuse: 0=none; 1=reported by the subject only; 2=professional involvement; 3=perpetrator convicted.

15) Psychiatric symptoms in childhood (before 18):

a) Psychotic symptoms: 0=no; 1=probable; 2=definite
b) Eating disorders: 0=no; 1=probable; 2=definite
c) Anxiety/OCD: 0=no; 1=probable; 2=definite
e) Self-harming/suicide attempts: 0=no; 1=probable; 2=definite
f) Major depression: 0=no; 1=probable; 2=definite
g) Conduct Disorder: 0=no; 1=probable; 2=definite; 3=exceptional defiance.

16) Intelligence: IQ =

17) Level of education: 0=primary school only; 1=incomplete secondary school and no professional training; 2= incomplete secondary school but some professional training; 3=secondary school completed; 4=college education.

18) Stable partner (for at least 1 year): 0=no; 1=yes.

19) Number of children.

20) Abused his/her children: 0=no/NA; 1=yes.

21) Ethnicity; 1=White; 2=Asian or Asian British; 3=Black or Black British; 4=Mixed.

22) Occupation, following HMSO categories: 1=professional; 2=intermediate; 3=skilled 4=semiskilled; 5=unskilled; 6=armed forces.

23) Number of jobs that lasted longer than 6 months in the last 5 years.

24) Employment during the past 5 years: 0=in prison/hospital more than 50% of the time; 1=unemployed more than 50% of the time; 2=employed in casual work more than 50% of the time; 3=employed in permanent work more than 50% of the time.

25) Inpatient psychiatric treatment (excluding this admission):

a) Number of admissions.
b) Longest period in the last 5 years in months.
c) Total length of admissions in the last 5 years in months.

26) Involuntary inpatient psychiatric treatment (excluding this admission).

a) Number of admissions.
b) Longest period in the last 5 years in months.
c) Total length of admissions in the last 5 years in months.

27) Involuntary psychiatric treatment in a secure setting (excluding this admission).

a) Number of admissions
b) Longest period in the last 5 years in months.
c) Total length of admissions in the last 5 years in months.

28) Behaviour whist in prison/hospital;

a) Suicide/self-harm: 0=no; 1=yes.
b) Violence to others: 0=no; 1=yes.
c) Violence to objects: 0=no; 1=yes.
d) Other: 0=no; 1=yes.

29) Number of previous convictions.

30) Previous convictions, for each of the following, 0=no; 1=yes.

a) Major violence (i.e., homicide; GBH; attempted murder; infanticide).
b) Minor violence (i.e., ABH; threats; assaults; making an affray; wounding; false imprisonment).
c) Sexual offences (e.g., rape/attempted rape; indecent assault; buggery; unlawful sexual intercourse; gross indecency with a child).
d) Acquisitive offences (e.g., burglary; theft; fraud; robbery)
e) Arson
f) Criminal damage
g) Other offences

31) Total time in prison in the last 5 years (months) up-to admission to Broadmoor.

32) Index offence, for each of the following 0=no; 1=yes.

a) Major violence (i.e. homicide; GBH; attempted murder; infanticide).
b) Minor violence (i.e. ABH; threats; assaults; making an affray; wounding; false imprisonment).
c) Sexual offences (e.g., rape/attempted rape; indecent assault; buggery; unlawful sexual intercourse; gross indecency with a child).
d) Acquisitive offences (e.g., burglary; theft; fraud; robbery)
e) Arson
f) Criminal damage
g) Other offences

J.3 The Broadmoor Follow-up Data Schedule

FOLLOW – UP DATA COLLECTION SCHEDULE:

FOLLOW-UP POINT and DATE COMPLETED ☐

SECTION A: DEMOGRAPHIC

PATIENT NAME _____

PATIENT NO IN TRIAL _____

DATE OF ADMISSION _____

DATE OF FOLLOW-UP PERIOD _____

WARD AT FOLLOW-UP POINT _____

WARD CHANGES IN FOLLOW UP PERIOD

(A) WARD MOVE FROM _____ TO _____

DATE _____

(B) WARD MOVE FROM _____ TO _____

DATE _____

(C) WARD MOVE FROM _____ TO _____

DATE _____

SECTION B: SECLUSIONS

NUMBER OF SEPARATE SECLUSIONS IN THE LAST 4 MONTHS ☐

LIST EACH SECLUSION PERIOD BELOW.

(a) DATE _____

REASON FOR SECLUSION _____

SEEN BY DOCTOR YES / NO / NK

LENGTH OF TIME IN SELECTION _____

(b) DATE _____

REASON FOR SECLUSION _____

SEEN BY DOCTOR YES / NO / NK

LENGTH OF TIME IN SELECTION _____

(c) DATE _____

REASON FOR SECLUSION _____

SEEN BY DOCTOR YES / NO / NK

LENGTH OF TIME IN SELECTION _____

SECTION B: SECLUSIONS cont

(d) DATE _____

REASON FOR SECLUSION _____

SEEN BY DOCTOR | YES / NO / NK |

LENGTH OF TIME IN SECLUSION _____

(e) DATE _____

REASON FOR SECLUSION _____

SEEN BY DOCTOR | YES / NO / NK |

LENGTH OF TIME IN SECLUSION _____

(iii) ANY TIME ON PARAGRAPH 16

SECTION C: INCIDENTS

NUMBER OF INCIDENTS IN LAST 4 MONTHS ☐

LIST EACH INCIDENT BELOW.

(a) DATE _____

DESCRIPTION OF INCIDENT _____

_____

_____

(b) DATE _____

DESCRIPTION OF INCIDENT _____

_____

_____

(c) DATE _____

DESCRIPTION OF INCIDENT _____

_____

_____

SECTION C: INCIDENTS cont

(d) DATE _____

DESCRIPTION OF INCIDENT _____

_____

_____

(e) DATE _____

DESCRIPTION OF INCIDENT _____

_____

_____

SECTION D: INDICATORS OF RESPONSIBILITY

- LIGHTER GRANTED Y/N/NA ☐

  DATE _____

- PAROLE Y/N/NA ☐

  DATE _____

  LEVEL _____

- WARD WORK Y/N ☐

  START DATE _____

  DESCRIPTION _____

  PAYMENT RATE _____

- OTHER WARD RESPONSIBILITIES ☐

  STATE DURATION START AND TYPE _____

- OFF WARD WORK Y/N ☐

  STATE DURATION SINCE _____

  START AND TYPE _____

  PAYMENT RATE _____

SECTION E: ACTIVITY

- WORK AREAS ATTENDED Y/N/NA ☐

  TYPE OF AREA _____

  LENGTH OF TIME SINCE START OF ATTENDANCE (weeks) ☐

  HOURS PER WEEK IN TOTAL ☐

  NO OF SESSIONS MISSED ☐

  (FROM NOTES OR RECORDS) (AVERAGE PER MONTH) ☐

- EDUCATION Y/N/NA

  TYPE OF CLASSES _____

  _____

  LENGTH OF TIME SINCE START OF ATTENDANCE (WEEKS) ☐

  HOURS PER WEEK IN TOTAL ☐

  EXAMS TAKEN Y/N ☐

  OUTCOME OF EXAMS _____

  COMPLIANCE

  NO OF SESSIONS MISSED (FROM NOTES OR RECORDS) (AVERAGE PER MONTH) ☐

SECTION E: ACTIVITY cont

- OCCUPATIONAL THERAPY Y/N

LENGTH OF TIME SINCE START OF ATTENDANCE (WEEKS)

HOURS PER WEEK IN TOTAL

COMMENTS FROM NOTES _____

_____

NO OF SESSIONS MISSED (FROM NOTES OR RECORDS)

- OTHER ACTIVITY Y/N

STATE TYPE i.e.
PATIENTS COUNCIL _____
PATIENT MAGAZINE
BROAD HUMOURIST _____

LENGTH OF TIME SINCE START OF ATTENDANCE

(WEEKS)

HOURS PER WEEK IN TOTAL

NO OF SESSIONS MISSED (FROM NOTES OR RECORDS)

SECTION G: UNTOWARD EVENTS

- DRUG SCREENS

  POSITIVE SCREENS Y/N ☐

  NUMBER ☐

  TYPE OF DRUG ☐

  WITH DATES OF SCREEN _____

  _____

  OUTCOME_____

  FOUND IN POSSESSION OF PROHIBITED ITEMS Y/N ☐

  IF YES STATE ITEM, DATE _____
  AND OUTCOME

  _____

  _____

- OTHER UNTOWARD INCIDENTS <u>IF NOT ALREADY COVERED</u>
  STATE TYPE, DATE, NATURE
  AND OUTCOME

  _____

  _____

SECTION H: MEDICATION

- LIST REGULAR ORAL PSYCHOACTIVE MEDICATIONS AND TOTAL IN MG PRESCRIBED PER 24 HOUR PERIOD

  i) _____

  ii) _____

  iii) _____

  iv) _____

  v) _____

- CALCULATE FOR EACH ORAL PSYCHOACTIVE MEDICATION TOTAL IN MG PRESCRIBED FOR 1M PERIOD PRIOR TO FOLLOW UP DATE

  i) _____

  ii) _____

  iii) _____

  iv) _____

  v) _____

- LIST DEPOT MEDICATION WITH DOSE AND FREQUENCY OVER LAST MONTH PRIOR TO FOLLOW UP DATE

  i) _____

  ii) _____

  iii) _____

SECTION H: MEDICATION cont

- LIST PRN PSYCHOACTIVE MEDICATIONS AND TOTAL IN MG TAKEN IN LAST 1/12 PRIOR TO FOLLOW UP DATE

  i) _____

  ii) _____

  iii) _____

  iv) _____

  v) _____

- COUNT NON COMPLIENT EPISODES RE MEDICATION i.e. REFUSALS IN THE LAST MONTH PRIOR TO FOLLOW UP PERIOD

  i) ORAL MEDICATION (X OUT OF Y) | |

  ii) DEPOT MEDICATION (X OUT OF Y) | |

  iii) PRN | |

  - ECT yes/no (if yes list no of treatments)

Appendix J.4

The Broadmoor Follow-up Data Schedule Coding Template

FOLLOW-UP DATA SCHEDULE CODING TEMPLATE

88 = not known; 99 = not applicable

1. Number of moves, to/from.
2. Number of seclusions (adjudications if transferred back to prison) in last 4 months.
3. Most frequent aggressive episode leading to seclusion (or adjudication):
    a. Indiscipline or verbal exchanges to others;
    b. Threatening behaviour or threats to others;
    c. Attacks on objects;
    d. Attacks on people.
4. Most frequent self-harming episode leading to seclusion (or adjudication):
    a. Threats of self-harm;
    b. Mild self-harm (superficial lacerations or injury, no further action taken);
    c. Moderate self-harm (deeper cut, burn, swallowing items: nursing care needed and doctor informed or visited);
    d. Severe self-harm (required medical intervention).
5. Worst aggressive episode leading to seclusion:
    a. Indiscipline or verbal exchanges;
    b. Threatening behaviour or threats to others;
    c. Attacks on objects;
    d. Attacks on people.
6. Worst self-harming episode leading to seclusion (adjudication):
    a. Threats of self-harm;
    b. Mild self-harm (superficial lacerations or injury, no further action taken);
    c. Moderate self-harm (deeper cut, burn, swallowing items: nursing care needed and doctor informed or visited);
    d. Severe self-harm (required medical intervention).
7. On paragraph 16; 0=no 1=yes. Insert duration if known.
8. Percentage of time in seclusion in this period.
9. Number of logged incidents, major and minor, in the last 4 months (warnings if transferred back to prison).
10. Most frequent aggressive episode leading to incident (or warning):
    a. Indiscipline or verbal exchanges to others;
    b. Threatening behaviour or threats to others;
    c. Attacks on objects;
    d. Attacks on people.
11. Most frequent self-harming episode leading to incident (or warning):

a. Threats of self-harm;
b. Mild self-harm (superficial lacerations or injury, no further action taken);
c. Moderate self-harm (deeper cut, burn, swallowing items: nursing care needed and doctor informed or visited);
d. Severe self-harm (required medical intervention).

12. Worst aggressive episode leading to incident:

a. Indiscipline or verbal exchanges;
b. Threatening behaviour or threats to others;
c. Attacks on objects;
d. Attacks on people.

13. Worst self-harming episode leading to incident (or adjudication):

a. Threats of self-harm;
b. Mild self-harm (superficial lacerations or injury, no further action taken);
c. Moderate self-harm (deeper cut, burn, swallowing items: nursing care needed and doctor informed or visited);
d. Severe self-harm (required medical intervention).

14. On levels in the last 4 months: 0=no; 1=yes.

15. Percentage of time on levels in this period.

16. Number of transgressions in the last 4 months.

17. Type of transgression, list.

18. Privileges: 0=none; 1=yes; 99=n/a i.e. not on ward where they could be granted.

19. Attended work areas in the last 4 months: 0=no; 1=yes; 99=n/a.

20. If yes, attendance at available work areas, percentage of available sessions.

21. Attended education in the last 4 months 0=no; 1=yes; 99=n/a.

22. If yes, attendance at available education classes, percentage of available sessions.

23. Attended occupational therapy in the last 4 months: 0=no; 1=yes; 99=n/a.

24. If yes attendance at available occupational therapy, percentage of available sessions.

25. Medication: 0=no; 1=yes.

26. Traditional oral antipsychotics (chlorpromazine, thioridazine, fluphenazine, trifluoperazine, flupenthixol, zuclopenthixol, haloperidol, droperidol, pimozide, sulpiride, loxapine.) 0=no; 1=yes.

27. Dose in mg/day.

28. Total number of mg in last month. Atypical antipsychotics (clozipine, risperidone, olanzapine, quetiapine, amisulpride,) 0=no; 1=yes. Dose in mg/day. Total number of mg in last month. Depot medication (fluphenazine [*modicate*], pipothiazine [*piportil*], flupenthixol [*depixol*], zuclopenthixol [*clopixol*], haloperidol [*haldol*]) 0=no, 1=yes. Dose in mg in last month. Tricyclic antidepressants (amitriptyline, nortriptyline, dothiepin, imipramine, desipramine, clomipramine, lofepramine, trimipramine) 0=no; 1=yes.

29. Dose in mg/day.
30. Total no of mg in last month.
31. SSRI's (fluvoxamine, fluoxetine, sertraline, paroxetine, citalopram) 0=no; 1=yes.
32. Dose in mg/day.
33. Total number of mg in last month.
34. Antidepressants others e.g MAOI's (phenelzine, tranylcypromine, isocarboxazid, moclobemide) or trazodone, venlafaxine, reboxetine 0=no; 1= yes.
35. Dose in mg/day.
36. Total number of mg in last month.
37. Mood stabilizers (lithium, carbamazepine, sodium valproate, clonazepam, verapamil, lamotrigine) 0= no: 1=yes.
38. Dose in mg/day.
39. Total number of mg in last month.
40. Benzodiazepines (diazepam, chlordiazepoxide, clonazepam, lorazepam, nitrazepam. oxazepam, temazepam) 0=no; 1=yes.
41. Dose in mg/day.
42. Total number of mg in last month.
43. Other psychoactive medication 0=no; 1=yes.
44. If yes, list drugs.
45. Dose in mg/day.
46. Total number of mg in last month.
47. Compliance with medication, percentage if known.
48. ECT in the last month: 0=no; 1=yes.

Appendix L

L.1 Rotated Component Matrix for Principal Component Analysis for the SCL-90-R; the IIP and The CIRCLE

SCL-90-R	Factor 1	Factor 2	Factor 3
Somatization			.89
Obsessive-compulsive	.74		
Interpersonal-sensitivity	.83		
Depression	.78		
Anxiety	.63		
Hostility		.73	
Phobic Anxiety		.83	
Paranoid Ideation		.56	
Psychoticism		.68	

IIP	Factor 1	Factor 2
Assertive	.93	
Sociable	.86	
Intimacy	.63	
Submissive		.87
Controlling		.87
Responsible		.68

CIRCLE scales	Factor 1	Factor 2	Factor 3
Compliant	-.94		
Coercive	.93		
Hostile	.86		
Dominant	.65		
Sociable		.96	
Friendly		.75	
Submissive			.93
Withdrawn			.76

Table of AAI classifications in the study sample including and excluding atypical 'F' patients

AAI classifications including atypical 'F'	**F v Ds v E frequency (%) n = 66**	**F v Ds v E v U frequency (%) n = 66**	**F v Ds v E v CC frequency (%) n = 66**	**F v Ds v E v U v CC frequency (%) n = 66**
Secure ('F')	5 (7.6)	4 (6.1)	4 (6.1)	3 (4.5)
Dismissing (Ds)	40 (60.6)	31 (47.0)	28 (42.4)	23 (34.8)
Preoccupied (E)	21 (31.8)	13 (19.7)	8 (12.1)	5 (7.6)
Unresolved (U)		18 (27.3)		9 (13.6)
Cannot Classify (CC)			26 (39.4)	26 (39.4)
AAI classifications without atypical 'F'	**Ds v E n = 65**	**Ds v E v U n = 65**	**Ds v E v CC n = 65**	**Ds v E v U v CC n = 65**
Dismissing (Ds)	40 (60.6)	31 (47.0)	28 (42.4)	23 (34.8)
Preoccupied (E)	25 (37.9)	16 (24.2)	11 (16.7)	7 (10.6)
Unresolved (U)		18 (27.3)		9 (13.6)
Cannot Classify (CC)			26 (39.4)	26 (39.4)

Correlation matrix of dimensions and factors of outcome measures (reported as Pearson' r)

Outcome dimensions and factors	BPRS	SCL-90-R dimensions and factors					CIRCLE factors			IIP factors			BAI factors		
		GSI	PST	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Overall mean	Factor 1	Factor 2	Guilt	External element	Mental element
BPRS	1.00**														
SCL-90-R Global Severity Index (GSI)	.58**	1.00**													
SCL-90-R Positive Symptom Total (PST)	.58**	.93**	1.00**												
SCL-90-R Factor 1	.60**	.99**	.93**	1.00**											
SCL-90-R Factor 2	.58**	.99**	**.92****	.99**	1.00**										
SCL-90-R Factor 3	.59**	.99**	.92**	.99**	.98**	1.00**									
CIRCLE Factor 1	.22	.31*	.29*	.28*	.33**	.36**	1.00**								
CIRCLE Factor 2	-.31*	-.15	-.16	-.13	-.15	-.18	-.41**	1.00**							
CIRCLE Factor 3	.24	.08	.08	.08	.09	.02	-.48**	-.34**	1.00**						
IIP overall mean	.48**	.65**	.61**	.66**	.67**	.62**	.09	-.01	.25	1.00**					
IIP Factor 1	.46**	.64**	.59**	.65**	.66**	.61**	.08	-.02	.26*	.99**	1.00**				
IIP Factor 2	.40**	.65**	.59**	.65**	.67**	.63**	.18	.00	.13	.92**	.91**	1.00**			
BAI Guilt	.06	.16	.21	.13	.14	.13	-.05	-.11	.16	.13	.14	.12	1.00**		
BAI External element	.12	.12	.13	.14	.17	.17	.34*	-.12	-.30*	-.08	-.08	-.03	-.48**	1.00**	
BAI Mental element	.02	.30*	.33**	.28*	.30*	.29*	-.01	-.06	.15	.09	.05	.07	.22	.24	1.00**

Appendix O

Statement of work undertaken by the candidate

I designed and implemented the study and was responsible for it throughout its course as principal investigator. I undertook the majority of the data collection, as described below, and undertook the statistical analysis and all the writing up under supervision from Professor Fonagy

1. Systematic review and meta-analysis: I designed the literature search which was carried out by Dr Marc Lyall. I undertook the searches of the bibliographies of review articles and chapters. I reviewed 60% percent of the 507 abstracts and extracted data from 25% of the included papers. I inputted a proportion of the data into RevMan version 4.2 and undertook sensitivity analyses on data that was heterogeneous. I decided how the studies would be grouped and the meta-analyses performed as determined by the quality and nature of the data.
2. Data collection
    a. SCID I; I conducted approximately 80% of these.
    b. SCID II; I conducted approximately 50% of these
    c. AAI; I conducted approximately 50% of the AAI interviews
    d. Other baseline data; I collected the baseline data from approximately 50% of the patients
    e. Primary and secondary outcome measures. These were collected at 8, 12 and 16 months; I collected approximately 60% this data. In particular I travelled to collect data at the 3 time points on all of the patients who had been discharged from the hospital within the lifetime of the study and were available for the follow-up
    f. I was one of the raters for all the study specific inter-rater reliabilities for the primary and secondary outcome measures.
3. AAI rating; The AAI's were transcribed using professional transcribers. I reviewed all the AAI transcripts for accuracy against the original audio tape recording. I undertook the AAI rating training and completed the reliability testing however the study AAI's were rated by Dr Penny Turton and Ms Liz Hopper.