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Examining the effect of childhood trauma on psychological distress, risk of violence and engagement, in forensic mental health

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Previous research has found an association between childhood trauma and insecure attachment and psychological distress, risk of violence and engagement in therapy. The aim of this study was to investigate the relationships between these factors in a forensic population. Sixty-four participants from three secure psychiatric hospitals completed the Childhood Trauma Questionnaire (CTQ), the Relationship Scales Questionnaire (RSQ) and the Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE-OM). Overall scores from participants' Historical Clinical Risk Management Violence Risk Assessment Scheme, (HCR-20) were calculated. Staff evaluated participants' engagement in therapy via completion of the Service Engagement Scale (SES). This retrospective study found childhood trauma and insecure attachment significantly predicted psychological distress and risk of violence. No associations with engagement were found, but methodological reasons for this outcome were acknowledged. The importance of routinely assessing for a history of childhood trauma and insecure attachment was highlighted.

1. Introduction
Reported prevalence rates of childhood trauma in the forensic population are thought to be high. Spitzer et al. (2006) found a rate of 69% physical abuse, 69% emotional abuse, 47% sexual abuse and 41% neglect.

1.1 Childhood trauma and psychopathology

There have been a number of large prospective studies conducted recently, regarding the influence of child abuse on psychopathology. In a World Health Organization (WHO) survey of 51,945 patients, childhood adversities were associated with 29.8% of mental disorders (Kessler et al. 2010). Bebbington et al. (2011) analyses from a national psychiatric survey found that childhood sexual abuse (CSA) was strongly related to psychosis. A recent meta-analysis has also established a strong association between childhood trauma and a greater risk of psychosis (Varese et al. 2012). There has also been evidence of a relationship between the severity of trauma and the chronicity of symptoms, which is referred to in the literature as a 'dose effect' (Anda et al. 2006; Shevlin et al. 2007; Shevlin et al. 2008; Bentall et al. 2012).

Bowlby's (1980) theory of attachment is the universal human need to form close emotional bonds to achieve healthy development. Individuals form what Bowlby called 'internal working models' of their early relationships, which influence future interpersonal and psychological functioning. A child's development can be severely affected if the perpetrator of abuse is a parent or carer. It has been established that insecure attachment is a significant risk factor for mental illness (Van Bakermans-Kranenberg and Ijzendoorrn, 2009). Recent research has also found an association between insecure attachment and psychosis (Macbeth et al. 2008; Pickering et al. 2008).

The association between child abuse and a range of personality disorders, particularly borderline personality disorder (BPD) has been acknowledged (Bierer et al. 2003; McLean et al. 2003; Spataro et al. 2004). Kingdom et al. (2010) identified those with a diagnosis of BPD, including those with co-morbid schizophrenia reported more childhood trauma, particularly emotional abuse. Similarly, people with antisocial personality disorder (ASPD) have been frequently found to have a history of severe child abuse and neglect (Davidson, 2008).

Research has revealed that an insecure attachment pattern is also a risk factor for personality disorders (Fonagy and Bateman, 2007). In a sample of participants with BPD, the majority were classified as having a preoccupied attachment (Fonagy et al. 1996). Brown (2010) examined the relationship between attachment patterns

and subsequent child abuse. He suggested that it is the combination of dysfunctional attachment and childhood trauma that can lead to personality disorder.

Individuals rarely fit neatly into one diagnostic category (Beck et al. 2004) and there is often a high rate of co-morbidity associated with mood disorders, substance misuse, post-traumatic stress disorder (PTSD) and personality disorders (Davidson, 2008). This is particularly so for forensic patients. Read et al. (2004) suggested that rather than separating childhood trauma sequelae into separate diagnoses such as PTSD, dissociative disorder, schizophrenia and borderline personality disorder, they should instead be seen as overlapping symptoms of abuse. Morrison et al. (2003) similarly believe that PTSD and psychosis are part of a spectrum of responses to child abuse and it has been proposed that symptoms are categorized as complex traumatic stress disorders instead (Courtois and Ford, 2009).

1.2 Childhood trauma and offending

Victims of different types of childhood abuse and neglect have been found to be at a greater risk of conduct disorder and adult criminal behavior (Avery et al. 2002). Cumulative exposure to childhood trauma is associated with an increased risk of involvement in the criminal justice system (Rosenberg et al. 2007). This is often referred to as the 'cycle of violence' in the literature (Widom, 1989a, Widom, 1989b).

Bateman and Fonagy (2004) discuss a link between trauma and insecure attachment affecting the development of personality and increasing the risk of externalizing distress, which may include offending. Insecure attachment is thought to have a detrimental effect on a child's development of *theory of mind that* is their ability to empathize and understand the mental states of others (Fonagy and Target 1997; MacBeth et al. 2013). Failure to relate to others in this way is thought to contribute to violent behavior (Adshead, 2002). Risk of violence is higher if a person does not feel a sense of connection with others (Schore, 2003a) and De Zulueta (1993) has referred to violence as *attachment gone wrong*.

Childhood trauma and engagement

Andrews and Bonta (2007) suggest that the overall treatment goals in forensic settings are to reduce symptoms of psychopathology and address criminogenic needs such as substance abuse. Engaging patients in therapy can also be seen as part of risk management (Daffern et al. 2004) and there is evidence that increased therapeutic engagement is significantly correlated with clinically significant reductions in risk (Long et al. 2011).

Low engagement is widespread in the treatment of offenders (McMurran, 2002). Furthermore, people who have had dysfunctional family relationships may have significant problems with trust and be sensitive to rejection. The perspective they have on offending might also be at odds with the medico-legal setting they are in (Keller et al. 2010).

Tait et al. (2004) found insecure attachment was related with poor engagement with psychiatric services, and suggest it is necessary to consider the attachment style of patients in clinical practice. This is because the approach for working with individuals with a dismissing attachment style, who are hostile or very defended from distress, is quite different to a preoccupied style, where an individual can be very demanding of support (Stirpe et al. 2006).

1.3 Rationale and aims of the current study

Thomas et al. (2005) acknowledged the need to better understand the relationship between childhood trauma, psychopathology and offending behavior and how this affects risk and treatment outcomes. While a number studies have been conducted since then within prisons (Cuomo et al. 2008; Sarchiapone et al. 2009; Hansen et al. 2011, Sergentanis et al. 2014), research within secure hospitals remains very limited. There are many differences between prison and secure hospital populations. For example the majority of forensic patients have committed a violent offence during an episode of a major mental illness, such as psychosis.

Austin (2011) identified a high level of childhood trauma in her exploratory research in secure hospitals in Scotland. The aim of this study was to examine whether child abuse and insecure attachment patterns were significant predictors

of psychological distress, risk of violence, including hospital violence and engagement in psychological therapy in this population.

The following one-tailed hypotheses were proposed, based on existing research.

1. A history of childhood trauma and/or insecure attachment will predict increased psychological distress.

2. A history of childhood trauma and/or insecure attachment will predict an increased risk of violence.

3. A history of childhood trauma and/or insecure attachment will predict problems with engagement in psychological therapies.

Consideration was subsequently given to the number of years since participants first contact with Mental Health services, as this may be an indirect covariant of psychological distress and risk. For example patients are required to be detained in a secure hospital for as long as treatment for these variables is required.

2. Methods

2.1 Design and setting
This retrospective study took place in a high secure forensic psychiatric hospital for Scotland and Northern Ireland and two medium secure forensic hospitals in central Scotland. All patients resident within these units are detained under the Mental Health (Care and Treatment) (Scotland) Act 2003 or the Criminal Procedure (Scotland) Act 1995 because they had been deemed to have a mental disorder and pose a risk of harm to others. Patients are admitted from court, prison or another psychiatric hospital. While most patients had either been convicted of a violent criminal offence or acquitted by reason of a mental disorder, a minority have been detained because of significant concerns about their risk to others in less secure settings.

2.2 Participants

The inclusion criteria for the study were that participants were aged 18 or over, did not have a learning disability and had capacity to provide consent. Some patients who met these criteria were excluded from the study by clinicians for other reasons, e.g. their Consultant Psychiatrist who is their Responsible Medical Officer(RMO), thought their mental health was too poor for them to engage or they were about to be discharged from hospital. From a total population of 264 patients, 94 individuals were identified from the high secure forensic hospital, 15 from one medium secure unit and 18 from the other medium secure unit. Of the 127 patients meeting the inclusion criteria, 63 declined to participate. Therefore, the total sample consisted of 64 patients (62 males, 2 females) and represented a response rate of 48.1%.

The mean age of participants was 42.3 years (SD = 11.9), ranging from 19 to 67 years. The majority of participants had at least one conviction prior to their index offence (the crime that led to their detention at a secure hospital or prison). Fifty-four participants (84.4%) had committed previous offences, with a mean number of 15.9 offences per patient (SD = 21.2) ranging from one to 100.

The mean number of years since participants' first contact with mental health services was 21.3 years (SD = 12.3) ranging from two to 50 years. The mean number of years participants had spent in a secure hospital was 11.2 years (SD = 10.8), ranging from one to 46 years. The mean number of verbally or physically violent incidents reported in hospital per participant was 16 (SD = 49.3), ranging from zero to 372. Further demographic information is provided in Table 1 below.

Table 1: Demographic characteristics

		Number (% total sample)
Gender	Male	62 (96.9%)
	Female	2 (3.1%)
Ethnicity	Caucasian	62 (96.9%)
	Other Ethnicity	2 (3.1%)
Primary Diagnosis	Schizophrenia Spectrum Disorder	59 (92.2%)
	Dissocial Personality Disorder	5 (7.8%)
Secondary Diagnosis	None	35 (54.7%)
	Dissocial Personality Disorder	15 (23.4%)
	Other Personality Disorder	13 (20.3%)
	Autistic Spectrum Disorder	1 (1.6%)
Index Offence	Murder	27 (42.2%)
	Attempted Murder	9 (14.1%)
	Assault to Severe Injury	7 (10.9%)
	Assault	6 (9.4%)
	Sexual Assault	10 (15.6%)
	Criminal Damage	3 (4.7%)
	Challenging Behavior (No Conviction)	2 (3.1%)
Attachment	Dismissing	29 (45.3%)
	Secure	17 (26.6%)
	Fearful	14 (21.9%)
	Preoccupied	4 (6.3%)

2.3 Measures

2.3.1 Childhood Trauma Questionnaire (CTQ)

The Childhood Trauma Questionnaire (Bernstein and Fink, 1998) is a 28-item self-report retrospective measure. Five categories of childhood maltreatment are assessed: emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect.

As the CTQ is designed to assess the severity of childhood trauma a person has experienced, it is also possible to establish an overall *dose effect*, the more trauma the person has experienced the higher the total score. The CTQ also has three items to identify false-negative reports of child abuse, which form a minimization/denial scale.

The CTQ has been validated with both clinical and non-clinical population and has demonstrated good internal consistency (Chronbach α = 0.66 to 0.92). Test-retest

results range from r= 0.79 to 0.81(Bernstein and Fink, 1998). The measure has also been used in a number of forensic studies before (Sarchiapone et al. 2008; Cuomo et al. 2008).

2.3.2 Relationship Scales Questionnaire (RSQ)

The Relationship Scales Questionnaire (Griffen and Bartholomew, 1994a) is a 30-item self-report measure that has been designed to yield a range of different attachment category scores. The RSQ has been validated with clinical and non-clinical population (Perrier et al. 2010) and has demonstrated good internal consistency (Chronbach α = 0.68 to 0.77). The measure has also been used in a number of forensic studies before (Baker and Beech 2004; Hansen et al. 2011).

2.3.3 Clinical Outcomes in Routine Evaluation - Outcome Measure (CORE-OM)

The Clinical Outcomes in Routine Evaluation - Outcome Measure (Evans et al. 2002) is a 34-item self-report questionnaire that is widely used in psychological therapy contexts (Office of Health Economics, 2008). The instrument measures difficulties in the domains of *wellbeing, psychological symptoms, functioning* and *risk*.

The CORE-OM has demonstrated good internal reliability and test re-test validity is high (r = 0.75-0.95) (Evans et al. 2002). A recent study found that the CORE-OM was acceptable and potentially useful in secure hospitals, with good internal validity (Chronbach α = 0.87) (Perry et al. 2013).

2.3.4 Historical Clinical Risk Management Violence Risk Assessment Scheme (HCR-20) Version Two

The Historical Clinical Risk Management Violence Risk Assessment Scheme (HCR-20) Version Two (Webster et al. 1995) is a structured professional judgment tool, designed to predict and manage violence. The HCR-20 has been validated across forensic populations and the mean effect size has been found to range from moderate to large in size ($r \cong 0.3- 0.5$) (Douglas et al. 2005).

2.3.5 Service Engagement Scale (SES)

The Service Engagement Scale (Tait et al. 2002) was developed to measure the engagement of patients with schizophrenia with services in the community. It is a 16-item questionnaire, which examines the categories of *availability,*

collaboration, help-seeking and *treatment adherence*. The SES has good internal consistency (Chronbach α = 0.76 – 0.90) and good to excellent test – retest reliability (r = 0.80 – 0.97).

2.4 Procedure

Participants completed the three self-report questionnaires CTQ, RSQ and CORE-OM. Previous CTQ scores were obtained for the 13 patients who had participated in the Austin (2011) study, so that they did not have to provide this information again.

The high secure forensic psychiatric hospital had adopted the CORE-OM as a routine outcome measure since February 2012 and data relating to the first available completed CORE-OM was also obtained for a subsample of participants (n = 27) and a mean CORE-OM score was calculated for these participants using the first and last CORE-OM completed.

Consent was gained from participants to access their clinical files in order to obtain background demographic information about their diagnosis and their HCR-20 data. In this study, each participant's Clinical Team had compiled the HCR-20 assessments used, which are updated annually. The earliest dated back to 2005, when the HCR-20 was first introduced to the high secure forensic psychiatric hospital. Three participants did not have a completed risk assessment and five participants had an alternative risk assessment to the HCR-20. This led to a subsample of 56 participants with data for this measure and 46 participants had more than one completed HCR-20. A mean score of the HCR-20 was defined as the last HCR-20 or the mean of the first available and last HCR-20.

Consent was gained to obtain the number of verbal and physically aggressive episodes recorded for each participant on the hospitals' incident reporting system (DATIX).

Participants also agreed to a member of the Psychology Service completing the SES regarding their level of engagement in psychological therapy. Only scores from the subtotals *availability*, *collaboration* and *help seeking* were used in analysis as the *treatment adherence* subscale is about compliance with medication.

3. Results

Summary statistics relating to the variables investigated are as follows. The mean CTQ score for emotional abuse was 9.98 (SD 5.61), physical abuse was 9.22 (SD 5.33), sexual abuse 9.31 (SD 6.39), emotional neglect 11.39 (SD 5.95), physical neglect 9.06 (SD 4.54) and total score 48.97 (SD 22.58).

The mean of the last CORE-OM for wellbeing was 1.00 (SD 0.80), problems, 0.91 (SD 0.79), function 1.10 (SD 0.67), risk 0.15 (SD 0.36), total score 0.84 (SD 0.60). The mean of the first and last CORE-OM total score combined was 0.92 (SD 0.65).

The mean score of the HCR-20 was 26.82 (SD 6.21). The mean score for DATIX was 16.00 (SD 49.29).

The mean SES score for availability was 1.31 (SD 1.7), collaboration 3.58 (SD 2.16), help seeking 5.16 (SD 2.70) and total score minus treatment was 10.05 (SD 5.30).

The Shapiro-Wilks test of normality revealed that the distribution of data relating to the number of DATIX incidents in hospital ($W = .70$, $df = 23$, $p < .001$), the CTQ ($W = .76$, $df = 23$, $p < .001$), and SES ($W = .91$, $df = 23$, $p < .05$), differed significantly from a normal distribution. Data for the remaining variables did not differ significantly from a normal distribution.

Eleven participants (17.2%) reported no childhood trauma. Eight participants (12.5%) experienced one category of abuse, 16 participants (25%) two categories, ten participants (15.6%) three categories, seven participants (10.9%) four categories and 12 participants (18.8%) all five categories of child abuse. The prevalence and range of each category of childhood trauma, with the overall total is reported in Table 2 below.

Table 2: Prevalence of childhood abuse

Type of Abuse	None-minimal n (%)	Low - moderate n (%)	Moderate -severe n (%)	Severe - extreme n (%)	Total Sample n (%)
Emotional Abuse	33 (51.6%)	14 (21.9%)	6 (9.4%)	11 (17.2%)	31 (48.4%)
Physical Abuse	36 (56.3%)	6 (9.4%)	8 (12.5%)	14 (21.9%)	28 (43.7%)
Sexual Abuse	34 (53.1%)	6 (9.4%)	9 (14.1%)	15 (23.4%)	30 (46.9%)
Emotional Neglect	31 (48.4%)	17 (26.6%)	4 (6.3%)	12 (18.8%)	33 (51.6%)
Physical Neglect	28 (43.8%)	18 (28.1%)	4 (6.3%)	14 (21.9%)	36 (56.2%)

From this sample there was a reported rate of 48.4% emotional abuse, 43.7% physical abuse, 46.9% sexual abuse, 51.6% emotional neglect and 56.2% physical neglect, when calculated from the 'low to moderate' scale cut-off.

Bernstein and Fink (1998) have stated that any score from one to three on the CTQ minimization/denial scale suggests the possibility of underreporting of abuse (false negative). Forty-one participants (64.1%) obtained a score of zero. Ten participants (15.6%) obtained a score of one. Five participants (7.8%) obtained a score of two and eight participants (12.5%) obtained a score of three. Spearman's correlational analysis identified a significant negative correlation between the CTQ minimization/denial scores the CTQ Total scores ($r = -.54$, $p < .001$). This means an increase in the CTQ minimization/denial scale is related to a decrease in the CTQ scores, which suggests that the frequency of trauma in the sample may be higher than reported.

Nonparametric correlational analyses were used to explore relationships among variables. Significant relationships at $p < .05$ were found between fearful attachment and mean CORE-OM, fearful attachment and mean HCR-20, number of years since first contact with mental health services and mean HCR-20.

Significant relationships at $p < 0.1$ were found between fearful attachment and preoccupied attachment, fearful attachment and dismissing attachment, fearful attachment and the last CORE-OM, SES and Mean HCR-20, SES and number of years since first contact with mental health services, mean CORE-OM and last CORE-OM, mean CORE-OM and CTQ, last CORE-OM and CTQ. Statistical significant

associations with the dependent variables were then used to create regression models.

3.1 Hypothesis 1: A history of childhood trauma and insecure attachment will predict increased psychological distress.

A stepwise multiple regression analysis was undertaken (Table 3). Predictor variables included the CTQ total score and the dimensional scores for the fearful RSQ category. The criterion variable in this case was psychological distress, represented by the last CORE-OM score.

Table 3: Multiple regression analysis to predict psychopathology (last CORE-OM)

	Beta	Std. Error	Std. Beta	t	Sig.
Step 1					
Constant	0.31	0.16		1.87	0.066
CTQ Total	0.01	0.00	0.41	3.50	0.001
Step 2					
Constant	-0.13	0.20		-0.62	0.536
CTQ Total	0.01	0.00	0.30	2.63	0.011
Fearful Attachment	0.21	0.06	0.37	3.28	0.002

$\triangle R^2 = 0.17$ for step 1 ($p < 0.01$); $\triangle R^2 = 0.29$ for step 2 ($p < 0.01$).

Step 1 added the CTQ total score data. Step 2 added fearful RSQ data. The regression analysis aimed to determine whether these variables could predict psychological distress and were entered this way to ensure that the smallest possible set of predictor variables were retained in the final model (Brace et al. 2009).

Childhood trauma (as measured by the total CTQ score) significantly predicted psychological distress (as measured by the last CORE-OM), std. ß= 0.30, t(2,63)=, p = 0.01. Fearful attachment (as measure by the RSQ) was also a significantly predictor of psychological distress std. ß= 0.37 t(3,28) p < 0.01. Model 1 accounted for less than 17 per cent of the variance in psychological distress, adjusted R^2=0.17, F(12,28) p < 0.01. The addition of CTQ data to Model 2 resulted in an additional 29 per cent of the variance being explained $\triangle R^2 = 0.29$ F(10,76) p < 0.01.

3.2 Hypothesis 2: A history of childhood trauma and insecure attachment will predict an increased risk of violence.

A stepwise multiple regression analyses were undertaken. In the first of these regression analyses (Table 4), predictor variables included the number of years since the participants' first contact with mental health services, the CTQ total score and dimensional scores for fearful and dismissing attachment RSQ categories. The criterion variable in this case was risk represented by the mean HCR-20 score.

Table 4: Multiple regression analysis to predict risk of violence (using mean HCR-20)

	Beta	Std. Error	Std. Beta	t	Sig.
Step 1					
Constant	22.26	1.67		13.33	<0.001
Years Mental Health	0.23	0.07	0.40	3.07	0.003
Step 2					
Constant	15.54	3.80		4.09	<0.001
Years Mental Health	0.24	0.07	0.42	3.36	0.002
Fearful	0.46	0.23	0.31	2.02	0.049
Dismissing	-0.07	0.24	-0.05	-0.29	0.770

R^2 =0.16 for step 1 (p < 0.01); ΔR^2 = 0.29 for step 2 (p< 0.05).

Data relating to the number of years since participants' first contact with mental health services were entered at Step 1. Step 2 added the CTQ total score data, although this was not retained in the model. Step 3 added fearful and dismissing RSQ data.

The number of years since participants' first contact with mental health services significantly predicted risk of violence (last HCR-20), std. ß= .42, t (3, 36) p = 0.02. That is the longer they were in hospital, the higher their risk. Fearful attachment significantly predicted of risk of violence, std. ß= .31, t (2, 02) p = 0.05. Model 1 accounted for 16 per cent of the variance in risk of violence adjusted R^2= 0.16, F(9,44) p < 0.01 The addition of CTQ total score to Model 2 did not account for any additional variance and was not retained. The addition of fearful attachment data to Model 3 resulted in an additional 29 per cent of the variance being explained (ΔR^2 = 0.29) F(2,97) p = 0.04.

The DATIX variable on violent incidents since admissions did not meet parametric assumptions for multivariate regression analysis, so the data was made into a binary variable and a hierarchical logistic regression model was used to examine the predictive associations between number of years since participants' first contact with mental health services, childhood trauma (CTQ total score) and preoccupied attachment (RSQ) on incidents of hospital violence recorded on DATIX as a binary dependent variable.

Data relating to the number of years since participants' first contact with mental health services were entered at Step 1. Step 2 added the CTQ total score data. Step 3 added preoccupied RSQ data.

Table 5: Logistic hierarchical regression analysis to predict risk of violence (DATIX)

	Exp(B)	Wald (1)	sig
Years Mental Health	1.06	4.07	0.041
CTQ	1.01	1.34	0.107
Preoccupied	1.74	4.70	0.037

Goodness of fit 73.8%.

The number of years since participants' first contact with mental health services significantly predicted the participants classification into the hospital violence group (DATIX), OR = 1.06, Wald = 4.07, p = 0.041. Preoccupied attachment was also a significant predictor of hospital violence, OR = 1.74, Wald = 4.70, p = 0.037. Childhood trauma as measured by the CTQ total was not a significant predictor. The final model was significant (Omnibus test $Chi^2_{(3)}$ = 8.06, p = 0.035) and it explained 17.6% of Nagelkerke's pseudo variance with 73.8% goodness of fit.

3.3 Hypothesis 3: A history of childhood trauma and insecure attachment will predict problems with engagement in psychological therapies.

With regard to the third hypothesis, no statistically significant relationships emerged between engagement and childhood trauma and engagement and insecure attachment.

4. Discussion

The primary diagnosis of participants in this sample is similar to a recent prospective study completed at a high secure hospital in Scotland (Vojt et al. 2013), schizophrenia spectrum disorder (92.2% and 92.7%) and personality disorder (7.8% and 7.3%). The overall rates of childhood trauma across the five CTQ categories was similar to Austin (2011), in the categories of emotional abuse (48.5% and 46.2%), physical abuse (43.8% and 48%), emotional neglect (51.7% and 57.4%) and physical neglect (56.3% and 61%), but rates of sexual abuse were found to be higher (46.9% to 29.5%). It is important to acknowledge however that 13 of the participants engaged in both studies.

Almost half of the sample (45.3%) had a dismissing attachment pattern, characterized by individuals who view close relationships as harmful. This is not surprising as dismissing attachment is associated with criminal behavior and violence (Sroufe, 2005; Stirpe et al. 2006). That the rates of secure attachment (26.6%) exceeded fearful (21.9%) and preoccupied (6.3%) was more unexpected. Interestingly Adshead (2002) proposed that for some patients a forensic hospital might be their first enduring attachment and become a 'secure base'. This seems possible if we consider that some participants have been in hospital for up to 46 years, although it conflicts with the view that attachment patterns are created in infancy and remain stable over the lifespan (Fonagy, 1999).

In terms of hypothesis one, childhood trauma and insecure, specifically fearful attachment significantly predicted psychological distress as measured by the last CORE-OM, which is in keeping with the literature (Van Bakermans-Kranenberg and Ijzendoorrn, 2009; Kessler et al. 2010; Severi Martins et al. 2011).

However, one very surprising finding was that the mean of the last CORE-OM scores was below the clinical cut off of 1.19 for men and 1.29 for women, (Barkham et al. 2005) despite 43.7% of the sample having a co morbid diagnosis of schizophrenia spectrum disorder and personality disorder. The fact that clinical staff excluded patients from the study whose mental health was unstable, could

explain this outcome. This low level of distress in the sample also suggests that the quality of care across the hospitals is good.

In terms of hypothesis two, only fearful attachment significantly predicted risk as measured by the mean HCR-20 (Adshead, 2002; Schore, 2003a). However it could be argued that childhood trauma is the mechanism that leads to the development insecure attachment, which leads to criminal behaviour (Avery et al. 2002; Rosenberg et al. 2007)

The number of years since participants' first contact with mental health services also significantly predicted risk, as measured by the mean HCR-20 and violent incidents recorded on DATIX. This was an expected outcome, as forensic patients are required to be detained in a secure hospital, as long as their risk of violence remains high. This is determined by using violence risk assessments such as the HCR-20, which are regularly reviewed at Care Planning Approach (CPA) meetings, (NHS Scotland, 2009).

A preoccupied attachment pattern was also found to significantly predict risk, as measured by the number of violent incidents recorded on DATIX. Interestingly Dozier and Lee (1995) found that participants with a preoccupied attachment style reported more distress than others. Similarly Fonagy et al. (1996) found that preoccupied attachment was most frequently associated with BPD, which is related to externalising emotions. It seems likely therefore, that participants with this pattern of behaviour would have higher rates of verbal and physical aggression in hospital.

In terms of hypothesis three neither childhood trauma, nor insecure attachment predicted problems with engagement, as measured by the SES, despite evidence of this in the literature (Keller et al. 2010; Tait et al. 2004). If we examine the SES scores in more detail however, we can see that engagement did not appear to be a significant problem for this sample. The mean score was 10.05 (SD = 5.3) out of a possible score of 36. It is difficult to conduct research on engagement, as individuals who have problems with this would not participate. A qualitative study with staff in forensic settings may yield more meaningful results.

4.1 Limitations

The use of retrospective measures of childhood trauma in this study is a limitation. Briere (1992) acknowledged the time that has passed since the abuse occurred or the perceived stigma about disclosing could also affect the accuracy of reporting. The fact that 35.9% of participants obtained between one and three in the CTQ minimization score, and that it was negatively correlated with increasing rates of trauma, suggests that this may have occurred in this sample.

This study also used a relatively narrow definition of childhood trauma. It has been acknowledged that there are also other stressors that occur in childhood, such as death of a parent, divorce or parental mental illness or substance abuse that could be a factor in future psychopathology (Severi Martins et al. 2011).

The use of the CORE-OM as a measure of psychological distress is a further limitation, as it makes it difficult to compare this study with research on diagnosis such as psychosis, BPD or PTSD. It has already been acknowledged that patients in secure hospitals have complex needs, and often have co-morbid symptoms, which are not easily captured in one measure. A pan -theoretical measure of distress was chosen for this reason (Perry et al. 2013). It may have been possible to increase the measures to assess specific disorders, but this would have greatly increased the burden on patients and is likely to have reduced the number recruited.

The use of the RSQ as a self-report measure of attachment may be another limitation. Many of the participants showed elements of more than one attachment pattern, and individual variability was lost with the selection of one category. Gumley et al. (2013) also caution against self-report measures of attachment as it can lead to biased reporting e.g. individuals with dismissing attachment can describe themselves as autonomously secure. A narrative assessment such as the Adult Attachment Interview (AAI) (George et al. 1987) would have yielded a more sophisticated assessment, but would again have taken much longer to administer and may have been a barrier to recruitment.

It is important to acknowledge that the Service Engagement Scale (Tait et al. 2002) was designed and standardised to measure the engagement of community patients with schizophrenia. It was selected however because the 12 questions in

the measure on availability, collaboration and help seeking are equally relevant to hospital patients.

It would have been interesting to consider the effect of the five separate CTQ categories in this study, but the small sample size limited statistical analyses, and the results in general need to be interpreted with caution for this reason. All 127 patients who were identified for the study were approached and the 48.1% response rate is to be expected within a forensic setting.

Care must be taken not to generalize results from this exploratory study, and comparison should be limited to groups with similar demographics and abuse histories. Confidentiality prevents analysis of the population who declined to participate and it is safe to assume that the sample differed from patients that were excluded for clinical reasons on rates of psychological distress, risk and engagement.

4.2 Clinical implications

The high rate of childhood trauma identified in this study, which predicted psychological distress, underlines why it is important to routinely enquire about child abuse, as part of a mental health assessment (Read et al. 2008) to inform trauma focused formulations and interventions (Courtois and Ford, 2009). While this is standard practice in secure hospitals and indeed one of the risk factors in the HCR-20 is 'early maladjustment', it is important to consider how much attention is given to this. Clinicians may ask about incidence of sexual abuse for example, but fail to consider a history of emotional abuse or neglect in depth.

Insecure attachment was also found to predict psychological distress and risk in this study, which suggests that it would also be useful to routinely assess forensic patients' attachment patterns, to enable more sensitive therapeutic interventions and manage risk. Indeed a systematic review by Gumley et al. (2013) highlights the importance of assessing attachment, in order to understand patients' emotional regulation style and facilitate engagement and recovery.

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Declaration of interest

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