University of Glasgow

Attachment Style, Therapeutic Alliance and Recovery in Forensic Mental Health: the A-STAR study and Clinical Research Portfolio

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A conceptual synthesis of attachment and psychosis: An updated systematic review

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Abstract:

Objective: This review sought to a) identify and summarise studies that investigated attachment amongst individuals with psychosis, published since Gumley et al. (2014),[1] and b) incorporate the new studies, with the previously reviewed studies, to provide a conceptual synthesis of the existing evidence base.

Method: The following computerised databases were searched between the 1st of January 2013 and the 26th of May 2016: CINAHL, EMBASE, Ovid MEDLINE (R), PsychINFO, and Google Scholar. To provide conceptual synthesis, two researchers allocated the new and previously identified studies[1] to one of three *a priori* models of attachment in psychosis (cognitive, developmental, and systemic) based on their primary focus.

Results: The updated search identified twenty-five papers describing nineteen studies comprising 1467 participants experiencing psychosis. The twenty-five new papers were added to twenty-two previously reviewed papers[1] to conduct a conceptual synthesis of the literature. There was almost perfect agreement between researchers on model assignment. Disagreement on two papers led to the addition of a fourth, trauma model. Small to moderate associations were found between greater attachment insecurity and more negative representations of parental care, greater childhood trauma, more difficulties with mentalisation, emotion-regulation, and interpersonal function; and service-attachment, engagement and treatment adherence. Small associations were found between attachment insecurity and increased positive, paranoia and general psychopathology symptoms and more negative appraisals of voices.

Conclusion: Attachment theory provides an evidence-based conceptual framework from which to consider the development of interventions for individuals experiencing psychosis, drawing on relationships with staff as a medium for change. However, further research examining the role of peer support is required.

Keywords: Cognitive, Developmental, Systemic, Trauma

Introduction

Attachment theory provides a developmental, lifespan theory of interpersonal and psychological functioning that emerged from understanding the primary importance and longer term consequences of the affectionate bonds created between infants and their caregivers.[2] The formation of close relationships are an evolutionary necessity, serving as a *secure base* for the exploration of the environment, and as a *safe haven*, for the modulation of anxiety and distress in response to threat. Experiences of early attachment bonds inform the development of implicit representations of self and others in relationships (Internal Working Models, IWM's). IWMs carried forward into adulthood influence interpersonal functioning and cognitive, affective and behavioural responses to stressful and traumatic life events. Within the context of the availability and responsiveness of the caregiving environment, individual differences in attachment security are thought to develop.[3] Securely attached infants demonstrate an ability to use the caregiver as a base to explore the surrounding environment and as a source of comfort when distressed or threatened. In adulthood, securely attached individuals value relationships, flexibly balance independence with intimacy and support seeking, and freely explore unfavourable memories and feelings. Conversely, insecure-ambivalent infants demonstrate difficulty in moving away from caregivers for exploration of the environment and exhibit heightened affect and poor affective regulation when distressed. In adulthood, this is synonymous with a preoccupied attachment style, whereby there is excessive concern within relationships and heightened emotional expressiveness. Insecure-avoidant infants exhibit less contact-seeking behaviours and an apparent indifference to attempts by caregivers to soothe them when distressed. Avoidant attachment in adulthood is characterised by minimisation of attachment experiences, thoughts, and memories, and excessive self-reliance when dealing with adversity.

There are now three important systematic reviews which demonstrate the importance of attachment in individuals with psychosis.[1,4,5] The authors of these reviews arguably highlight the dominance within the literature of three conceptual models of attachment in psychosis. Berry et al.[4] emphasised a cognitive model conceptualisation of the role of attachment in psychosis, whereby attachment appraisals are informed by IWMs. Whilst, their review demonstrated that there was limited research investigating attachment in psychosis at that time; they highlighted numerous testable predictions in line with the social cognitive, affective and interpersonal aspects of Bowlby's[2] conceptualisations of IWMs, which they argued may shape the development and trajectory of psychosis. Since their review the cognitive model

conceptualisation of the role of attachment in psychosis has primarily been investigated by self-reported attachment, measured by questionnaires such as the Psychosis Attachment Measure (PAM), to investigate associations with psychotic symptoms, early parental experiences and emotional, behavioural and interpersonal outcomes. The second review, by Gumley et al.[1] identified several studies demonstrating evidence that greater attachment insecurity in individuals with psychosis is related to positive and negative symptom severity, affective problems, more interpersonal problems, poorer engagement with services, more avoidant coping strategies and greater severity of previous trauma. Within their review, they emphasised a developmental model conceptualisation of attachment in psychosis, in which they concluded that attachment allows a useful theoretical model from which to understand and measure the developmental factors which may contribute to resilience and recovery from psychosis. Gumley et al's[1] developmental conceptualisation primarily incorporates studies that have investigated attachment states of mind (assessed with the Adult Attachment Interview, AAI) in psychosis in relation to earlier life experiences, processes of affect regulation and developmental factors such as metacognitive function and their influence on outcomes and recovery. The most recent systematic review, by Bucci et al.[5] demonstrated that service users with severe mental health problems, such as psychosis, have attachment-based needs that should be met within mental health services. They proposed an attachment-informed service model but concluded that there needs to be further experimental research to ascertain the relationship between provision of attachment-informed services and patient outcomes. Their review emphasises a systemic model conceptualisation of attachment in psychosis, which primarily incorporates studies exploring associations between attachment and interpersonal relationships, therapeutic relationships and engagement with the wider caregiving system. These previous reviews highlighted similar methodological challenges within the literature, including the use of small, unrepresentative samples and an over-emphasis on the use of cross-sectional, retrospective designs.

Rationale for systematic review: In the two years since Gumley et al.[1] numerous additional studies investigating the relationship between attachment and psychosis have been published. To date, no review has provided a synthesis of these new studies and the existing evidence base, in relation to the three conceptual models of attachment and psychosis outlined within the literature, namely a Cognitive, a Developmental and a Systemic model.

Aims of the study: The present systematic review sought to firstly, identify and summarise studies investigating attachment amongst individuals with psychosis published since Gumley et al.[1]; and secondly, to provide a conceptual synthesis of the existing evidence base on attachment in psychosis by reviewing the new studies along with the previously reviewed manuscripts.

Questions. Specifically the following questions were asked:

1) What are the characteristics of studies published between the 1st of January 2013, and the 26th of May 2016 which have investigated attachment in psychosis?
2) What is the existing evidence base for three *a priori* conceptual models of attachment in psychosis (a developmental, a cognitive and a systemic model)?

Methods

Protocol: The Prisma (Preferred Reporting Items for Systematic Reviews and Meta-Analyses[6]) checklist of items to include when reporting a systematic review was used to structure this review.

Eligibility Criteria: Inclusion criteria were articles that included (i) a measure of attachment, (ii) participants who experienced psychosis, (iii) participants who were deemed at risk of developing psychosis, (iv) were published between the 1st of January 2013 and the 26th of May 2016 and (v) were written in English.

Exclusion criteria were (i) non-clinical/analogue studies, (ii) qualitative data, (iii) single case studies or dissertations, (iv) conference extracts, (v) book chapters, (vi) unpublished studies, (vii) those without a measure of attachment and (vii) attachment was not assessed in relation to outcomes associated to the experience of psychosis.

Search Strategy: The following online databases were systematically searched: CINAHL, EMBASE, Ovid MEDLINE (R), PsychINFO, and Google Scholar. Databases were searched from January 2013 to 27th May 2016. The computerised search was conducted using the subject headings (PSYCHOSIS) or (SCHIZOPHRENIA) or (PSYCHOTIC DISORDER) combined with (ADULT ATTACHMENT INTERVIEW) or (ADULT ATTACHMENT) or (ATTACHMENT). To improve sensitivity of the search strategy, hand searches were conducted of relevant journals (e.g. British Journal of Clinical Psychology, Clinical Psychology Review, Psychiatry Research, Psychology and Psychotherapy: Theory, Research and Practice, Psychological Medicine) and of reference lists of selected articles.

Conceptual Synthesis of Results: Three apriori models of attachment[1] in psychosis were discussed and outlined by two researchers in order to conduct a conceptual synthesis of the new and previously reviewed manuscripts. The models defined included a cognitive, a systemic and a developmental model. All of the new and previously identified studies[1] were allocated to a primary model and where applicable, a secondary model by two reviewers, based on the key variables investigated. Although there was an inevitable overlap, studies

[1] As different paradigms have traditionally been used to conceptualise attachment, there were significant variations in how the attachment domains were described within the studies reviewed. For the purpose of this review, we will refer to secure, anxious, avoidant, and fearful attachment domains. The conceptual overlap between domains within the different traditions is outlined in Appendix 1.2.

were allocated based on their principal focus. Criteria for assignment of studies to each model was as follows: 1) Developmental model: Studies primarily exploring developmental processes (e.g. mentalisation and studies using the AAI) and associations with early experiences and behavioural, affective, interpersonal and symptomatic outcomes. 2) Cognitive model: Studies primarily exploring associations between self-reported attachment and psychotic experiences, relationships with voices, and behavioural and emotional outcomes; 3) Systemic model: Studies primarily exploring associations between attachment and quality of relationships (e.g. with therapists, mental health services and intimate relationships).

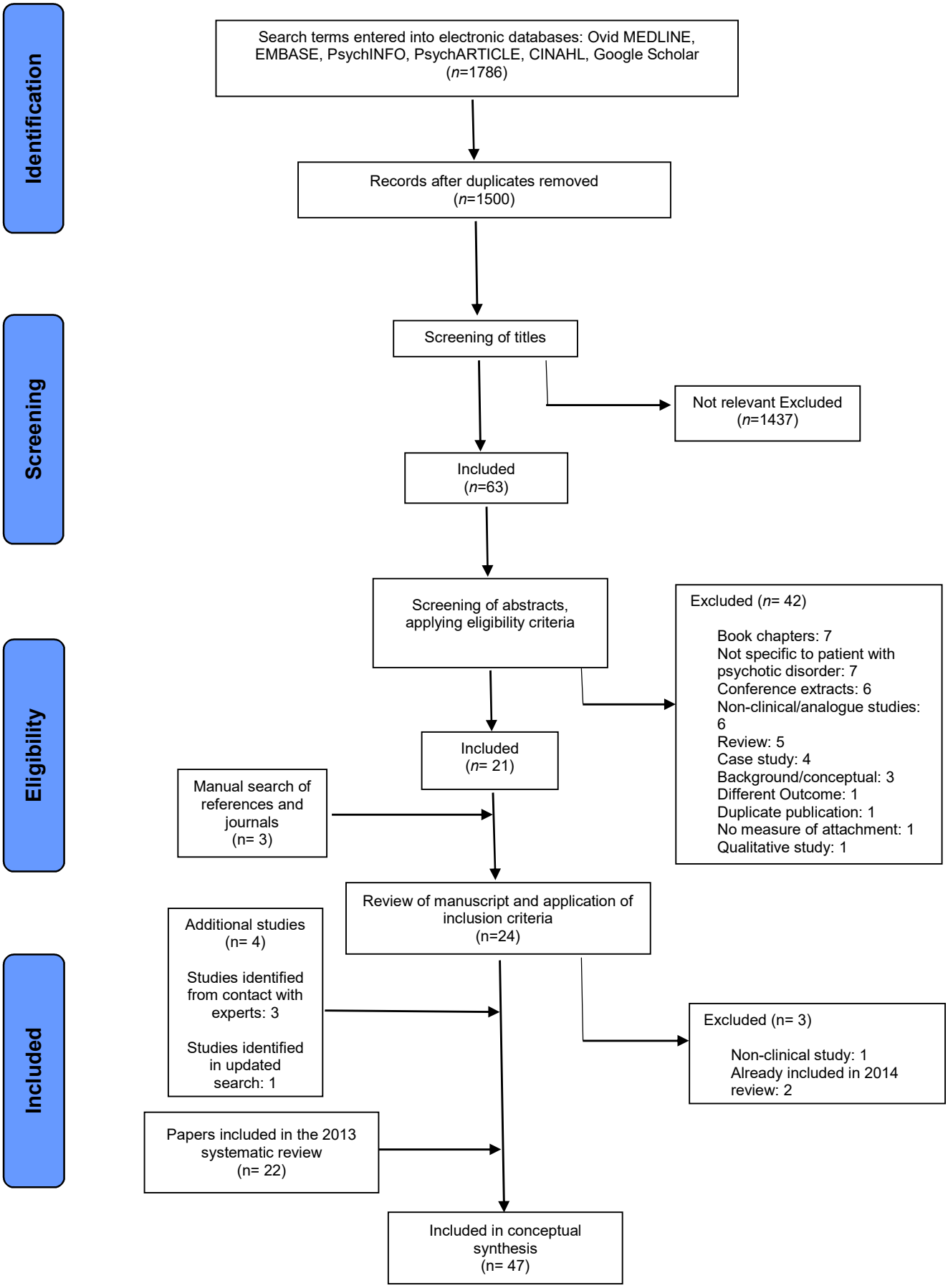
Quality Criteria: Following careful consideration of whether the papers selected for conceptual synthesis should be subject to an assessment of quality, the researcher decided not to incorporate a quality rating tool. The rationale for this is outlined. Firstly, it was thought that this may have undermined the aims of the review at this stage, as the main aim was to establish an appreciation of the existing evidence base regarding the literature on attachment and psychosis. As such, it was deemed important to include all available studies. Secondly, a key criticism of quality rating tools is the emphasis on the quality of the reporting of studies, rather than on the methodological quality of studies.[7] In this respect, it was agreed that a quality rating tool was unlikely to deduce the observed methodological limitations of the studies included, such as the high proportion of cross-sectional studies and samples including participants with established or chronic psychosis.

Results

Selection Process: The updated search and exclusion process is summarised in the PRISMA diagram (Figure 1). 1500 titles were initially screened, followed by screening of 63 abstracts, applying the eligibility criteria; with 21 potentially relevant papers identified. A further 3 papers were identified by the manual search. These papers were independently reviewed by two researchers applying the eligibility criteria, resulting in exclusion of 3 papers. Four additional papers were included following consultation with experts in the field and an updated search. This resulted in 25 papers, describing 19 studies that met the criteria for inclusion in the updated review. These 25 papers were used to answer the first research question (Table 1) and were then combined with the 22 previously reviewed papers, describing 21 studies (Appendix 1.3) to answer the second research question.

These 47 papers were assigned to conceptual models by two reviewers. Cohen's K was used to determine the level of agreement between the two researchers on the primary allocation of each paper to the cognitive, systemic and developmental models. There was almost perfect agreement between the two researchers, K = .911 (95% CI, .793 to 1.03), p ≤= .001. There were two studies on which the reviewers disagreed about primary allocation,[8,9] both of which investigated attachment in relation to experiences of trauma. The difficulty in assigning these studies related to difficulty ascertaining whether trauma was investigated in relation to its impact on developmental processes, such as mentalisation; or indeed, whether trauma was investigated in relation to its impact on the development of internal working models and as such, an individual's later cognitive appraisals. This led to difficulty in determining whether these studies should be allocated to the developmental or the cognitive model of attachment in psychosis. Upon discussion, it was agreed that to account for the difficulties in assigning these studies, a fourth model which highlighted the links between experiences of trauma and attachment would be added, namely a Trauma Model. Criteria for assignment of studies to the trauma model was: Studies primarily exploring associations between attachment and experiences of trauma (childhood and adult traumas). This discussion resulted in 100% inter-rater agreement for the 47 papers. This primary and secondary allocation of papers according to eligibility criteria for each model is summarised in Appendix 1.4.

Figure 1: PRISMA Flow Diagram



What are the characteristics of studies published since January 2013, which have investigated attachment in psychosis?

The included studies comprised 1467 participants (2329 minus 500 participants sampled across six studies,[19,24,34-37] minus 221 participants sampled in four studies,[12,25,32,34] minus 79 participants sampled in two studies,[16,17] minus 34 participants sampled in two studies,[20,38] and minus 28 participants sampled in two studies).[27,28] Based on data from 19 studies (data from the republication studies not included), participants had a mean age of 33.0 years (range of 16.7-46.6 years). Based on the data from the 19 studies, 76.5% (n=1122) participants were male and 23.5% (n=345) were female. The inclusion or exclusion criteria were not explicitly stated for four studies.[23,27,30,31]

Eighteen of the studies used a convenience sample, and one used a self-selection sample.[30] A variety of recruitment sites were reported across studies. Three studies (15.5%, n= 227) recruited from inpatient services,[9,13,24] five studies (28.9%, n= 424) from outpatient/community services,[10,14,27,29,31] two studies (12.7%, n= 187) recruited from both inpatient and community settings,[11,16] three studies (9.6%, n= 141) from psychosis early intervention services,[21,23,26] one study (3.5%, n= 51) from a specialist at-risk team,[15] one study (3%, n= 44) from the Hearing Voices Network,[30] and 2 studies (15.7%, n= 230) recruited from inpatient, community and early intervention services.[22,33] Two studies (11.1%, n=163) did not report the specific recruitment site.[18,32]

The diagnosis of the participants included schizophrenia (50.8%, n=745), schizoaffective disorder (8.9%, n=131), at-risk mental state (7%, n= 103), first-episode psychosis (5.45%, n= 80), bipolar disorder (2.3%, n= 34), other psychoses (1.7%, n= 25), unspecified non-organic psychosis (1.4%, n=21), psychotic disorder NOS (1.4%, n= 20), first-episode psychosis and co-morbid social anxiety disorder (1.4%, n=20), acute and transient psychosis (1.2%, n=17), substance induced psychosis (0.41%, n=6), mixed/undifferentiated psychosis (0.3%, n= 4), delusional disorder (0.34%, n= 5), personality disorder (0.5%, n= 7), schizophreniform disorder (0.2%, n= 3), depression with psychotic symptoms (0.14%, n= 2), pervasive developmental disorder with psychotic symptoms (0.14%, n= 2) and mania with psychotic symptoms (0.07%, n=1). Seven participants (0.44%) on the self-selection study had no diagnosis.[30] Two studies did not provide data on the specific type of psychosis (14.1%, n= 207).[13,32] In the self-selection sample study, a small pool of participants did not

report their diagnosis (0.41%, n= 6) and another pool did not specify the type of psychosis (1.4%, n= 21).[30] The diagnosis of 319 participants was not confirmed using a standard diagnostic classification system (21.8%).[13,23,30,33]

Education level was explicitly reported in six studies.[11,21-23,26,33] Approximately 23% (n= 370) of participants received or were in secondary education. No data were provided for 33.2% (n= 487) participants' level of education. Employment status was explicitly reported in six studies.[10,11,14,21,31,33] Approximately 45.3% (n= 322) were reported to be unemployed. No data were provided for 59.1% (n= 867) participants employment status. Medication was reported in seven studies.[11,14,18,22,26,30,33] There were twelve studies which reported rates of consent (52.9%; n= 776). The characteristics of the participants who chose not to take part were only reported in one study (5.4%; n = 79).[16] Only one study (2.6%; n= 38) conducted an analysis comparing the participants and those who dropped out.[26] In addition, two studies provided a flow diagram of the recruitment process (16.6%; n= 243).[10,16]

Table 1
Summary of studies published since 2013.

Study	Number of Participants	Age (years)	Gender	Attachment Measure	Attachment Measurement Constructs	Key Outcome Measures	Results
Berry et al.[9]	50	M 37.66 (SD= 11.16)	40 m/ 10 f	PAM	Anxiety Avoidance	PANS, THQ, IES-R, PEQ	Attachment anxiety independently predicted both psychosis- and hospital-related PTSD symptoms. Attachment anxiety was associated with total number of previous traumas. No correlations were found between attachment avoidance and psychosis- and hospital-related PTSD symptoms and total number of previous traumas.
Berry et al.[10]	164	M 37.4 (SD= 9.4)	146 m/ 18 f	PAM	Anxiety, avoidance	PANSS, WAI, GAF	No correlations were found between attachment and therapist- or client-rated alliance. Both attachment anxiety and avoidance were independent predictors of psychiatric symptoms, severity of symptoms and deficits in functioning post-treatment (12 months). Only attachment avoidance was still an independent predictor at follow-up (24 months).
Bo et al.[11]	108	M 36.8 (SD= 11.2)	87 m/ 21 f	RQ	Secure, fearful, preoccupied, dismissing-avoidant	PANSS, IPAS	Attachment patterns to self and other accounted for some of the variability in the allocation of patients into premeditated or impulsive aggression groups. The premeditated aggression group had an attachment characterised by a negative other-representation and a positive self-representation.
Boyette et al.[12]	110*	M 32.5 (SD= 8.48)	92 m/ 18 f	PAM	Anxiety, avoidance	PANSS, WHOQOL-BREF	Attachment anxiety was predictive of all four domains of quality of life (Qol): physical, psychological, social, and environmental. Attachment avoidance was predictive of the social and environmental domains of Qol only.
Campbell et al.[13]	76	M 35.55 (SD= 8.98)	76 m	PAM SAQ	Anxiety, avoidance, security	PANAS, EssenCES	More positive perceptions of ward climate were associated with a stronger sense of service attachment. Higher attachment avoidance was associated with weaker service attachment and poorer perceptions of ward climate. No associations between attachment anxiety and service attachment or perception of ward climate. Perceptions of ward climate and negative affect were independently associated with service attachment. The most important aspect of ward climate to service attachment was therapeutic hold.
Cavelti et al.[14]	133	M 44.48 (SD= 11.88)	86 m/ 47 f	PAM	Anxiety, avoidance	PANSS, STAR-P, STAR-C	Attachment at baseline did not have a significant impact on clinicians' or patients' ratings of therapeutic alliance at follow-up.

Gajwani et al.[15]	51	M 19 (SD= 3.09)	33 m/ 18 f	RAAS	Closeness, dependency, anxiety, security	BAI, SIAS, SPS, BDI	Securely attached clients, reported lower rates of depression and social interaction anxiety, than those with fearful or preoccupied attachment. Clients with secure or dismissive attachment reported lower social performance anxiety than those with fearful attachment and lower state anxiety than those with preoccupied attachment. The relationship between adult attachment and social anxiety was mediated by depression.
Gumley et al.[16]	79	M 24.64 (SD= 7.08)	54 m/ 25 f	AAI	Secure, insecure, autonomous, dismissing, unresolved preoccupied	PANSS	Insecure preoccupied attachment was associated with higher positive symptoms at baseline and six months compared with the secure group. Attachment security did not predict positive symptom recovery at six or twelve months. Attachment security and baseline insight predicted negative symptom recovery at 6 and 12 months. Increasing attachment security was associated with better insight at baseline and shorter duration of untreated psychosis (DUP). The relationship between attachment and positive symptoms at 12 months was fully mediated by psychiatric insight at baseline and DUP. The small significant direct relationship between attachment security and negative symptoms at 12 months was partially mediated by insight and negative symptoms at baseline.
McLeod et al.[17]	As Above	As Above	As Above	AAI	MAS	PANSS	Controlling for baseline symptom severity, gender, DUP, and premorbid academic and social Adjustment, Metacognition accounted for 62% of the variance in PANSS negative symptom scores at six months and 38% at 12 months. The same predictors also explained 47% of the variance in positive symptoms at six and 12 months.
Korver-Nieberg et al.[18]	32	M 17.1 (SD= 1.3)	19 m/ 13 f	PAM	Anxiety, avoidance	PANSS, GPTS, PTT	Adolescents with early psychosis reported higher levels of attachment anxiety than controls. No associations were found between number of perspective taking errors and attachment in patients' or controls'. Attachment anxiety was associated with social reference paranoia in patient and control groups, indicating a unique contribution. Attachment avoidance was associated with persecution paranoia in the patient group.
Korver-Nieberg et al.[19]	500*	M 37.5 (SD= 11.7)	402 m/ 98 f	RQ	Secure, fearful, preoccupied,	PANSS	Attachment anxiety was associated with higher levels of positive and general psychopathology symptoms. Attachment anxiety was associated with higher levels of:

					dismissing-avoidant		delusions, hallucinatory behaviour, suspiciousness/persecution and excitement, anxiety, tension, depression, guilt feelings, somatic concern and preoccupation. Attachment avoidance was associated with higher levels of positive symptoms, specifically: hallucinatory behaviour and suspiciousness/persecution. It was also associated with anxiety. No attachment domain was associated with negative symptoms but emotional withdrawal and passive social withdrawal were rated higher in patients with dismissing-avoidant attachment. Hallucinatory behaviour was rated higher in fearful- and dismissing- avoidant attachment. Fearful-avoidant attachment was associated with higher excitement and tension. Fearful and preoccupied attachment were associated with higher anxiety and depression. Preoccupied attachment was associated with higher guilt feelings. Attachment anxiety predicted general psychopathology symptoms.
MacBeth et al.[20]	34*	M 23.32 (SD= 7.6)	20 m/ 14 f	AAI	MAS	PANSS SES PAS DUP	Lower scores for metacognitive understanding of other's minds were significantly correlated with greater negative symptoms, poorer early adolescent social adjustment and poorer clinician rated help-seeking. Lower metacognitive understanding of own mind was significantly correlated with poorer clinician help-seeking.
Michail et al.[21]	80	No SaD: M 24 (SD= 4.5) SaD: M 24.4 (SD= 5.1)	53 m/ 27 f	RAAS	Closeness, dependency, anxiety, security	PANSS, SIAS, CDSS, MOPS, CTQ	Individuals with social anxiety disorder (SaD; with and without psychosis) reported greater levels of insecure attachment than those without SaD. No significant differences in attachment styles of individuals with SaD, with or without psychosis. No significant relationships found between childhood adversities, including early trauma and dysfunctional parental bonding, and levels of closeness, dependability and anxiety in adult attachment in people with SaD, with or without psychosis.
Palmier-Claus et al.[22]	54	Chronic: M 39.6 (SD= 8.9) FEP: M 24.6 (SD= 5.2) UHR: M 22.6	35 m/ 19 f	PAM	Anxiety, avoidance	CDSS, GPTS, CTQ, PSP	The ultra-high risk and first episode psychosis groups experienced greater levels of attachment anxiety, attachment avoidance and paranoia compared to the non-clinical group. Attachment avoidance did not predict social functioning. There was a small effect of attachment anxiety on social functioning. Childhood adversity predicted anxious and avoidant

		(SD= 5.2)					attachment, with a stronger effect of anxious attachment.
Pillay et al.[23]	23	M 26.2 (SD= 4.3)	23 m	ASQ	Autonomous, avoidant, preoccupied, ambivalent	PANSS, GAF, FESFS	Individuals with early psychosis had higher preoccupation with being loved than non-clinical students in a relationship. Individuals with psychosis had a more positive perception of their interaction skills than single students. Individuals with psychosis and single students reported less frequent intimate interaction behaviours than students in relationships.
Ponizovsky et al.[24]	101	M 37.5 (SD= 11.1)	91 m/ 10 f	RQ	Secure, fearful, preoccupied, dismissing-avoidant	PANSS, MHCSS-H, Q-LES-Q	Patients with preoccupied attachment were found to have earlier onset and longer duration of psychosis than securely attached patients; and more psychiatric admissions compared to patients with other attachment styles. Attachment anxiety was associated with lower rated health-related QoL and increased severity of positive and general psychopathology symptoms. Attachment avoidance was associated with lower rated severity, positive, negative and general psychopathology symptoms. No attachment domain was associated with service satisfaction. Attachment anxiety, satisfaction with services and general psychopathology symptoms predicted health-related QoL.
Pos et al.[25]	111*	M 31.1 (SD= 7.57)	92 m/ 19 f	PAM	Anxiety, avoidance	PANSS, CBE	Anxious and avoidant attachment were rated higher in patients than siblings and controls. Patients had poorer recall and poorer ability to make inferences for the short story than their siblings and controls. Patients with lower and higher avoidant attachment had overall better performance on second-order belief and first- and second-order emotion than medium scoring patients. There was a trend-like association between avoidant attachment and first-order belief in patients. Patients with higher anxious attachment had more problems with second-order beliefs than lower scoring patients. There were no associations between anxious attachment and first-order belief or first- and second-order emotion.
Quijada et al.[26]	38	M 16.7 (SD= 5.9)	29 m/ 9 f	RQ	Secure, fearful, preoccupied, dismissing-avoidant	PANSS, GAF	At follow-up, 39.5% of At-risk mental state patients changed their predominant attachment prototype. 7.9% from an insecure to a secure attachment and 31.6% from one insecure to another insecure attachment prototype. Fearful and dismissing attachment at baseline predicted change in positive, negative and total symptoms.

							Dismissing attachment predicted change in general psychopathology. Better baseline attachment predicted greater improvement across the twelve months of treatment. Lower dismissing attachment predicted greater decrease in positive symptoms across twelve months. Secure attachment predicted greater improvement in general functioning across twelve months. Only change in preoccupied attachment was associated with clinical change. A decrease in preoccupied attachment ratings correlated with improvement in positive, negative and general psychopathology symptoms but not improvement in general functioning.
Rieben et al.[27]	28	M 41.61 (SD= 10.05)	20 m/ 8 f	AAI	Secure, insecure, autonomous, dismissing, preoccupied	BPRS	Dismissing attachment clearly prevalent among patients compared to controls. Patients more likely to have had traumatic experiences with their primary caregivers during childhood than controls. Secure attachment to a spiritual figure was lower in patients than controls (8 patients and 12 controls) and insecure attachment to a spiritual figure was higher in patients than controls (10 patients and 2 controls). 5 patients insecurely attached to a primary caregiver had a secure attachment to a spiritual figure.
Huguelet et al.[28]	As above	As above	As above	AAI	Secure, insecure, autonomous, dismissing, preoccupied	BPRS	Psychiatric symptoms were significantly lower in patients' with secure attachment than those with other attachment styles, specifically for: anxiety, depression, suspiciousness, unusual thought content and motor retardation. Insecure attachment was associated with earlier onset of psychosis. A high prevalence of child trauma related to attachment figures was found in the patient group when compared to the control group. Patients securely attached to a primary care giver and/or a spiritual figure had a better symptom profile than patients with insecure attachment. Patients with insecure attachment to primary caregivers but secure attachment to a spiritual figure experienced fewer symptoms of anxiety and suspiciousness when compared to patients with no secure attachment to caregivers or spiritual figures.
Ringer et al.[29]	52	M 46.64 (SD= 9.15)	52 m	ECR	Anxiety, avoidance	PANSS, BHS, RSES	Both anxious and avoidant attachment were associated with more positive symptoms. No associations between attachment and negative symptoms.

							Anxious attachment was associated with emotional discomfort symptoms and lower self-esteem. Avoidant attachment was associated with increased hopelessness. Anxious attachment and emotional discomfort predicted self-esteem.
Robson et al.[30]	44	M 39.6 (SD= 11.7)	15 m/ 29 f	PAM	Anxiety, avoidance	BAVQ-R, VAY, PADS, BDI-II, distress ratings	Attachment anxiety and avoidance were associated with voice intrusiveness, voice dominance, hearer distance, hearer dependence and voice-related distress. Attachment anxiety and avoidance were associated with beliefs that the dominant voice displayed omnipotence and malevolence, and also emotional and behavioural resistance to voices. The relationship between attachment avidance and voice related distress was fully mediated by voice dominace, voice intrusiveness, beliefs about omnipotence and malevolence, persecution and deservedness of persecution. The relationship between insecure attachment and depression was partially mediated by beliefs about omnipotence, persecution and deservedness of persecution.
Strand et al.[31]	47	M 43.02 (SD= 12.54)	30 m/ 17 f	RQ	Secure, fearful, preoccupied, dismissing-avoidant	SCL-90R	No associations found between secure attachment and dismissing attachment and symptoms. Preoccupied attachment was associated with severity of symptoms, depression, anxiety, interpersonal sensitivity, paranoia and psychoticism. Fearful attachment was associated with psychoticism and interpersonal sensitivity.
Van Dam et al.[32]	131	M 31.19 (SD= 10.58)	110 m/ 21 f	PAM	Anxiety, avoidance	CASH, CAPE, CTQ-SF	Insecure attachment was associated with childhood trauma. Insecure attachment was more strongly associated with negative than positive symptomatology. The relationship between childhood trauma and positive symptoms was partially mediated by attachment.
Wickham et al.[33]	176	Secure: M 37.53 (SD= 11.21) Fearful: M 36.86 (SD= 11.64) Anxious: M 39.35 (SD= 11.80) Avoidant: M 39.17	123 m/ 53 f	RQ	Secure, fearful, preoccupied, dismissing-avoidant	PANSS, PADS, SERS, MLCS	Attachment anxiety and avoidance were associated with paranoia, suspiciousness and negative self-esteem. No associations were found between attachment anxiety and avoidance and hallucinatory experiences or belief in powerful others. Attachment anxiety predicted persecutory thinking and both insecure dimensions predicted suspiciousness but not hallucinations after co-morbidity between the symptoms was controlled for. Negative self-esteem partially mediated the association between attachment anxiety and clinical paranoia, and

	(SD= 12.46)	fully mediated the relationship between attachment avoidance and clinical paranoia.

BAI Beck Anxiety Inventory; BAVQ-R Beliefs About Voices Questionnaire-Revised; BDI Beck Depression Inventory; BDI-II Beck Depression Inventory-II; BHS Beck Hopelessness Scale; BPRS Brief Psychiatric Rating Scale; CAPE Community Assessment of Psychic Experiences; CASH Comprehensive Assessment of Symptoms and History; CBE Conflicting Beliefs and Emotions; CDSS Calgary Depression Scale for Schizophrenia; CTQ Childhood Trauma Questionnaire; CTQ-SF Childhood Trauma Questionnaire-Short Form; DUP Duration of Untreated Psychosis; EssenCES Essen Climate Evaluation Schema; FESFS First Episode Social Functioning Scale; GAF Global Assessment of Functioning; GPTS Green Paranoid Thoughts Scale; IES-R Impact of Event Scale – Revised; IPAS Impulsive/Premeditated Aggression Scale; MAS Metacognition Assessment Scale; MHCSS-H Mental Health Client Satisfaction Scale – Hebrew Version; MLCS Multi-dimensional Locus of Control Scale; MOPS Measure of Parental Style; PADS Persecution and Deservedness Scale; PANAS Positive and Negative Affect Schedule; PANSS Positive and Negative Syndrome Scale; PAS Premorbid Adjustment Scale; PEQ Psychiatric Experiences Questionnaire; PSP Personal and Social Performance Scale; PTT Perspective-Taking Task; Q-LES-Q Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form; RSES Rosenberg Self-Esteem Scale; SCL-90R Symptom Checklist; SERS Self-Esteem Rating Scale; SES Service Engagement Scale; SIAS Social Interaction Anxiety Scale; SPS Social Phobia Scale; STAR-C Scale to Assess the Therapeutic Relationship – Clinician Version; STAR-P Scale to Assess the Therapeutic Relationship – Patient Version; THQ Trauma History Questionnaire; VAY Voice and You; WAI Working Alliance Inventory; WHOQOL-BREF World Health Organisation Quality of Life – Brief Version.

* Republication of existing data

What is the existing evidence base for three apriori conceptual models of attachment in psychosis?

2.1 Developmental model

Ten papers were primarily allocated to the developmental model.[16,17,20,25,27,28,38-41] It should be noted that six of these papers originated from three research groups.[16+17,20+38,27+28] An additional three papers were secondarily allocated to the developmental model.[8,24,36] In line with the developmental model, attachment security was investigated in relation to developmental processes (e.g. mentalisation[2] and studies using the AAI) and associations with early experiences (e.g. parental bonding) and behavioural, affective, interpersonal and symptomatic outcomes.

Parental Bonding: Two studies explored the association between parental bonding and attachment. Mulligan & Lavender[39] found associations between higher maternal care and lower discomfort with closeness (r=-0.25), less need for approval (r=-0.34) and less preoccupation with relationships (r=-0.24). Maternal overprotection (intrusive and controlling) was associated with greater need for approval (r=0.24) and greater preoccupation with relationships (r=0.32). Greater discomfort with closeness was associated with both lower paternal care (r=-0.22) and paternal overprotection (r=-0.35). Berry et al.[8] found associations between attachment avoidance and parental care (r=0.31); and attachment anxiety and parental overprotection (r=0.24), although the latter was not maintained when controlling for depression.

Mentalisation: Four studies explored associations between attachment and mentalisation. Macbeth et al.[38] found that individuals with secure attachment displayed significantly higher reflective function than individuals with avoidant attachment (M–W:U=40.0; p=0.01). Additionally, individuals with anxious attachment had significantly higher reflective function than individuals with avoidant attachment (U=14.0; p=0.04). Two studies explored the association between metacognition and symptomatic recovery. McLeod et al.[17] found that when controlling for baseline symptom severity, gender, DUP, and premorbid academic and social adjustment, metacognition accounted for 62% of the variance in PANSS negative symptom scores at six months and 38% at 12 months. The same predictors also explained

[2] Mentalisation will be used within this review as a collective term for the processes of metacognition, reflective functioning and Theory of Mind.

47% of the variance in positive symptoms at both six and 12 months. MacBeth et al.[20] found that greater scores for metacognitive understanding of other's minds was associated with fewer negative symptoms (r=-0.44) and better clinician rated help-seeking (r=-0.61). Additionally, poorer early adolescent social adjustment was associated with poorer understanding of other's minds (r=-0.40). Greater metacognitive understanding of ones' own mind was also associated with better clinician rated help-seeking (r=-0.52). Pos et al.[25] investigated attachment in relation to theory of mind (ToM) in patients with psychosis. ToM was split into cognitive and affective ToM and first-order (inferring the thoughts/emotions of another person) and second-order skills (inferring what a second person thinks about a third person's thoughts/emotions). They found U-shaped associations, in which patients with lower or higher avoidant attachment had overall better performance on first-order (β=1.1) and second-order emotion (β=0.51) than medium scoring patients. Patients with higher anxious attachment had more problems with second-order beliefs than lower scoring patients (β=-0.45). There were no associations between anxious attachment and first-order belief or first- and second-order emotion.

Symptom onset and recovery: Four studies investigated the relationship between attachment, onset of psychosis and symptomatic recovery. Huguelet et al.[28] found that insecure attachment was associated with earlier onset of psychosis (χ^2=5.43). Ponizovsky et al.[36] found that patients with an anxious (t=11.2) and an avoidant attachment style (t=4.67) were younger at onset of their illness and that those with an avoidant style had longer psychiatric hospitalizations (t=2.29). Ponizovsky et al.[24] also found that patients with anxious attachment were found to have earlier onset (F=2.80) and longer duration of psychosis (F=3.13) than securely attached patients; and a greater number of psychiatric admissions compared to patients with other attachment styles (F=4.12). Gumley et al.[16] found that anxious attachment was associated with higher positive symptoms at baseline (F=4.66) and at six months (F=4.71) compared with the securely attached group. Attachment security did not predict positive symptom recovery at six or twelve months. However, attachment security predicted negative symptom recovery at both 6- (β=-0.245, t=-2.30) and 12 months (β=-0.307, t=-2.28). The relationship between attachment and positive symptoms at 12 months was fully mediated by psychiatric insight at baseline and Duration of Untreated Psychosis (DUP). The small significant direct relationship between attachment security and negative symptoms at 12 months was partially mediated by insight and negative symptoms at baseline.

Recovery/Coping Style: Five studies explored associations between attachment and recovery/coping style. Mulligan & Lavender[39] found an association between a more avoidant recovery style and viewing relationships as secondary to achievement (r=-0.41). Tait et al.[40] found that a sealing-over recovery style was associated with more anxiety about interpersonal rejection (F=12.20), lower levels of comfort with closeness (F=7.43) and greater dependence in relationships (F=13.51). Insecure attachment was associated with less engagement with services (t=3.64). Owens et al.[41] found increased global emotion regulation difficulties were associated with higher attachment avoidance (r=0.42) and attachment anxiety (r=0.69). Specifically, higher attachment avoidance was associated with non-acceptance of emotional responses, lack of emotional awareness and lack of emotional understanding. Higher attachment anxiety was associated with difficulties engaging in goal-directed behaviour when upset, impulse control difficulties, limited access to situationally appropriate emotion regulation strategies, non-acceptance of emotional responses and lack of emotional clarity. Attachment anxiety ($r^2\Delta$=0.18) and therapeutic alliance ($r^2\Delta$=0.05) were significant predictors of emotion regulation problems, but not attachment avoidance, negative emotion or psychotic symptoms.

Two studies explored the relationship between attachment organisation and attachment to a spiritual figure and its impact on symptoms and coping. Rieben et al.[27] found that nine patients who were insecurely attached to a primary caregiver, also had an insecure attachment with a spiritual figure. However, five patients insecurely attached to a primary caregiver had a secure attachment with a spiritual figure. Huguelet et al.[28] found that patients who formed a secure attachment to a spiritual figure had increased self-esteem and spiritual-coping (χ^2=17.06) and a better ability to deal with symptoms of depression (χ^2=10.13) and anxiety (χ^2=6.34). Additionally, they were more likely to report that these spiritual beliefs helped them to trust others (χ^2=10.25) and that they found comfort in their relation to their spiritual figure (χ^2=4.66). Patients with insecure attachment to primary caregivers but secure attachment to a spiritual figure experienced fewer symptoms of anxiety (t=3.01) and suspiciousness (t=2.27) when compared to patients with no secure attachment to caregivers or spiritual figures.

2.2 Cognitive model

Nineteen papers were primarily allocated to the cognitive model.[10-12,15,18,19,21,24,26,29-31,33,35-37,42,43,45] It should be noted that a total of ten of these papers originated from four research groups: three from one group,[24,36,37] three from another,[10,35,43] two from another[18,19] and

lastly, two from another group.[26,42] An additional four papers were secondarily allocated to the cognitive model.[8,22,32,44] In line with the cognitive model, self-reported attachment was investigated in relation to positive and negative symptoms of psychosis and general psychopathology symptoms; appraisal of voices; and behavioural and emotional outcomes.

Positive, negative and general psychopathology symptoms: Twelve studies explored associations between attachment and psychiatric symptoms. Ponizovsky et al.[24] found that higher attachment anxiety was associated with higher total symptoms (r=0.24) and higher attachment avoidance was associated with lower total symptoms (r=-0.26). Nine studies found associations between attachment insecurity and positive symptoms. Berry et al.[35] (r=0.35) and Ringer et al.[29] (r=0.31) both found an association between higher levels of positive symptoms and avoidant attachment. Ponizovsky et al.[36] found that individuals with avoidant attachment (t=3.35) had greater positive symptoms than securely attached individuals. Ponizovsky et al.[37] found that specifically those with fearful attachment had greater hallucinations (F=7.71). Korver-Nieberg et al.[19] found an association between higher positive symptoms and attachment avoidance (r=0.13). In particular, avoidant attachment was associated with higher suspiciousness/persecution (r=0.17) and hallucinations (r=0.18). Fearful attachment was associated with higher excitement (F=5.75). Strand et al.[31] found an association between fearful attachment and psychoticism (r=0.46). Lastly, Bo et al.[11] found that attachment avoidance was associated with premeditated aggression (F=9.76). By contrast, Ponizovsky et al.[24] found higher attachment avoidance was associated with lower rated positive symptoms (r=-0.22). Ponizovsky et al.[24] (r=0.23), Van Dam et al.[32] (r=0.18) and Ringer et al.[29] (r=0.35) found associations between higher positive symptoms and higher attachment anxiety. Korver-Nieberg et al.[19] also found an association between attachment anxiety and increased positive symptoms (r=0.17). In particular, they found that attachment anxiety was associated with higher delusions (r=0.15), hallucinations (r=0.15) and, suspiciousness/persecution (r=0.18). Ponizovsky et al.[36] found that individuals with anxious attachment (t=2.01) had greater severity of positive symptoms than those with secure attachment. Ponizovsky et al.[37] also reported that anxious attachment was associated with greater delusions (F=9.15) and greater persecution/suspiciousness (F=11.53). Strand et al.[31] also found an association between anxious attachment and psychoticism (r=0.50).

Six studies investigated associations between attachment and negative symptoms. Van Dam et al.[32] found associations between negative symptomatology and both anxious

(r=0.32) and avoidant attachment (r=0.27). Berry et al.[35] found associations between higher negative symptoms and avoidant attachment (r=0.24). Ponizovsky et al.[36] found that those with avoidant attachment had more severe negative symptoms (t=2.36). By contrast, Ponizovsky et al.[24] found that higher attachment avoidance was associated with lower rated negative symptoms (r = -0.20; p< 0.01). Two studies found no associations between attachment and negative symptoms.[19,29]

Five studies found associations between attachment and paranoia. Berry et al.[35] found an association between avoidant attachment and more paranoia (r=0.39). Korver-Nieberg et al.[18] found associations between attachment anxiety and social reference paranoia (r=0.67) after controlling for frequency of positive and negative symptoms; indicating a unique contribution of attachment anxiety to social reference paranoia (β=0.3). They also found an association between attachment avoidance and persecution paranoia (r=0.45) after controlling for frequency of positive and negative symptoms. Palmier-Claus et al.[22] found greater paranoia in individuals with higher avoidant attachment (r=0.18) and higher anxious attachment (r=0.46). Wickham et al.[33] also found greater paranoia in patients with higher attachment avoidance (r=0.21), and higher attachment anxiety (r=0.44). They also found greater suspiciousness in patients with higher attachment avoidance (r=0.24) and higher attachment anxiety (r=0.34). Strand et al.[31] found that anxious attachment was associated with paranoia (r=0.46).

Four studies found associations between attachment and general psychopathology symptoms. Ponizovsky et al.[24] found higher attachment anxiety was associated with higher general psychopathology symptoms (r=0.31). By contrast, they found that higher attachment avoidance was associated with lower general psychopathology symptoms (r=-0.23). Ponizovsky et al.[37] found that both fearful and anxious attachment were associated with higher levels of: anxiety (F=13.95), depression (F=10.77), guilt (F=12.29), and tension (F=12.51). Avoidant attachment was associated with higher anxiety (F=11.15). Korver-Nieberg et al.[19] found associations between attachment anxiety and increased general psychopathology (r=0.20); specifically, anxiety (r=0.28), tension (r=0.22), depression (r=0.32), guilt (r=0.29), somatic concern (r=0.20) and preoccupation (r=0.12). Korver-Nieberg et al.[19] also found an association between attachment avoidance and higher anxiety (r=0.16). Fearful attachment was also associated with higher reported tension (F=13.36). Strand et al.[31] found an association between increased anxiety and anxious attachment (r=0.49).

Changes in symptoms over time: Three studies explored associations between attachment and changes in symptoms over time. Quijada et al.[42] found that secure, anxious and avoidant attachment accounted for 20.4% of change in psychotic symptoms over 6-months, when baseline symptoms and premorbid social adjustment were controlled for. Quijada et al.[26] found that fearful attachment at baseline predicted change in positive (r^2=0.07), negative (r^2=0.07) and total symptoms (r^2=0.28). Avoidant attachment at baseline predicted change in positive (r^2=0.08), negative (r^2=0.10), total symptoms (r^2=0.35) and in general psychopathology (r^2=0.18); and lower avoidant attachment predicted a greater decrease in positive symptoms across 12-months. They found that only change in anxious attachment was associated with clinical change, with a decrease in anxious attachment ratings associated with improvement in positive (r=0.38), negative (r=0.41) and general psychopathology symptoms (r=0.38). Berry et al.[10] found that both attachment anxiety and avoidance predicted psychiatric symptoms and severity of symptoms (r^2=0.43) and deficits in functioning at 12 months (r^2=0.38). They found that only attachment avoidance was still predictive of psychiatric symptoms, severity of symptoms and deficits in functioning at 24 months (r^2=0.38). Changes in attachment anxiety predicted improvement in symptoms over 6 months (r=0.30), specifically improvement in hallucinations (r_s=0.30).

Appraisal of voices: Two studies found associations between attachment and appraisal of voices. Berry et al.[43] found higher attachment avoidance in participants reporting critical/rejecting voices (t=3.14) or threatening voices (t=5.25). Higher attachment anxiety was associated with greater voice severity (r=0.29) and greater voice distress (r=0.32). Robson et al.[30] found that attachment anxiety was associated with greater voice intrusiveness (r=0.46), voice dominance (r=0.56), hearer distance (r=0.51), hearer dependence (r=0.42), voice related distress (r=0.51), beliefs that the dominant voice displayed omnipotence (r=0.58) and malevolence (r=0.56), and emotional and behavioural resistance to voices (r=0.45). Attachment avoidance was also associated with greater voice intrusiveness (r=0.53), voice dominance (r=0.53), hearer distance(r=0.30), hearer dependence (r=0.41), voice related distress (r=0.46), beliefs that the dominant voice displayed omnipotence (r=0.59) and malevolence (r=0.51), and emotional and behavioural resistance to voices (r=0.27). They also found that the relationship between attachment avoidance and voice related distress was fully mediated (analyses based on 10,000 bootstrapped samples) by voice dominace (99%CI=0.04-0.20), voice intrusiveness (99%CI=0.02-0.17), beliefs about omnipotence (99%CI=0.03-0.18) and malevolence

(99%CI=0.02-0.18), persecution (99%CI=0.06-0.24) and deservedness of persecution (99%CI=0.02-0.18).

Behavioural and emotional outcomes: Thirteen studies explored the association between attachment and behavioural and emotional outcomes. Two studies found associations between attachment and interpersonal difficulties. Berry et al.[35] found that attachment anxiety (r=0.58) and avoidance (r=0.28) were associated with more interpersonal problems. Strand et al.[31] also found an association between interpersonal insensitivity and attachment anxiety (r=0.58) and fearful attachment (r=0.54). Two studies found associations between attachment and social anxiety. Gajwani et al.[15] found that social interaction anxiety was lower in individuals ultra-high risk (UHR) of developing psychosis with secure attachment, than fearful (p<.001) or anxious attachment (p<.05). Social performance anxiety was higher in UHR individuals with fearful attachment than secure (p<.01) or avoidant attachment (p<.05). State anxiety was higher in UHR individuals with anxious attachment style than secure (p<.05) or avoidant attachment (p<.05). The relationship between adult attachment and depression in UHR individuals, was mediated by social phobia (β=0.34) and the relationship between attachment and social anxiety was mediated by depression (β=0.47). Michail et al.[21] found that individuals both with and without psychosis and with social anxiety disorder reported greater levels of insecure attachment compared to those without social anxiety disorder (χ^2=38.5).

Six studies found associations between attachment and depression. Berry et al.[8] found an association between greater depression and attachment anxiety (r=0.43) and avoidance (r=0.27). Palmier-Claus et al.[22] found greater levels of depression in individuals with higher avoidant attachment (r=0.19) and higher anxious attachment (r=0.34). Kvrgic et al.[44] found that both avoidant and anxious attachment were correlated with higher levels of depression, but only anxious attachment had an independent predictive value for self-reported depression (β=0.37). Gajwani et al.[15] found significant differences between attachment and reported depression (F=9.70), with lower rates of depression in individuals with secure attachment, than those with fearful (p<.001) or anxious attachment (p<.001). Ringer et al.[29] found that avoidant attachment was associated with increased hopelessness (r=0.31). Strand et al.[31] found an association between anxious attachment and depression (r=0.46).

Two studies found associations between attachment and psychological emotional distress. Ponizovsky et al.[37] (*F*=8.29) and Ringer et al.[29] (*r*=0.48) found that anxious attachment was associated with higher self-reported emotional distress.

Two studies found associations between attachment insecurity and self-esteem. Wickham et al.[33] found that higher attachment anxiety (*r*=0.39) and higher attachment avoidance (*r*=0.33) were associated with increased negative self-esteem. They found that negative self-esteem partially mediated the association between attachment anxiety and self-rated (*β*=0.14), and observer-rated paranoia (*β*=0.09); and fully mediated the relationship between attachment avoidance and self-rated (*β*=0.11), and observer-rated paranoia (*β*=0.07). Ringer et al.[29] found that anxious attachment was associated with lower self-esteem (*r*=0.40) and that anxious attachment and emotional discomfort were predictive of self-esteem (*F*=10.63).

Three studies found associations between attachment and quality of life. Couture et al.[45] found that secure attachment was associated with better quality of life. Both avoidant (*r*=-0.03) and anxious attachment (*r*=-0.03) were associated with lower quality of life. Ponizovsky et al.[24] found that higher attachment anxiety was associated with lower rated health-related quality of life (*r*=-0.33). Boyette et al.[12] found that attachment anxiety predicted all four domains of quality of life: physical (*β*=-.44), psychological (*β*=-.28), social (*β*=-0.23), and environmental (*β*=-0.23). By contrast, attachment avoidance only provided a unique contribution for the environmental domain (*β*=-0.20).

2.3 Systemic model

Thirteen papers were primarily allocated to the systemic model.[13,14,23,44,46-54] It should be noted that five of these papers originated from one research group[46,49,52-54] and a further two papers emanated from another research group.[44,48] An additional two papers were secondarily allocated to the systemic model.[35,38] In line with the systemic model, attachment was investigated in relation to the quality of relationships (e.g. with therapists, mental health services and intimate relationships).

Service engagement and treatment adherence: Three studies explored associations between attachment and service engagement and treatment adherence. MacBeth et al.[38]

found associations between attachment and both service engagement (χ^2=7.11) and treatment adherence (χ^2=6.62). Specifically, secure attachment was associated with better engagement (*p*=.01) and better treatment adherence (*p*=.02) than avoidant attachment. Dozier[46] found greater attachment security was associated with more compliance with treatment, as rated by clinicians (*r*=0.37). Stronger avoidance was associated with greater rejection of treatment providers (*r*=-0.55), less self-disclosure (*r*=-0.50), and poorer use of treatment (*r*=-0.32). Kvrgic et al.[44] found that an anxious attachment was associated with higher treatment adherence (*r*=0.20).

Service attachment and milieu: Two studies explored associations between attachment and attachment to services and perceptions of ward milieu. Blackburn et al.[47] found that higher insecure attachment was associated with lower attachment to services (*r*=-0.39). Those with a lower number of hospital admissions (*r*=-0.33) and who were not under section (*t*=-3.27) reported greater attachment to services. Campbell et al.[13] found that patients with more positive perceptions' of ward milieu had a stronger sense of service attachment (*r*=0.61). Higher attachment avoidance was associated with weaker service attachment (*r*=-0.23) and poorer perceptions of ward milieu (*r*=-0.25). Perceptions of ward milieu (*β*=0.47) and negative affect (*β*=0.41) were independently associated with service attachment. The most important aspect of ward milieu for service attachment, was therapeutic hold (*β*=0.60), which refers to the depth and influence of staff support.

Quality of the therapeutic relationship: Six studies explored associations between attachment and self- and informant-ratings of the quality of the therapeutic relationship. Two studies found associations between avoidant attachment and a poorer quality of therapeutic relationships. Berry et al.[35] found that attachment avoidance was associated with more self-rated (*r*=-0.44) and staff-rated difficulties (*r*=-0.33) in the therapeutic relationship. Kvrgic et al.[44] found that avoidant attachment was related to a poorer therapeutic relationship (*r*=-0.25). They found that a poor therapeutic relationship correlated with avoidant attachment style, independent of anxious attachment style and depressive symptoms (*β*=-0.21). However, two studies found no associations between attachment style and therapeutic alliance quality.[14,48] Two studies explored the interaction between patient and staff attachment styles and its impact on the therapeutic alliance. Dozier et al.[49] found that case managers with a more insecure attachment responded in greater depth to clients higher in attachment anxiety (*r*=0.64). Additionally, more insecure case managers perceived clients higher in attachment anxiety to have greater dependency needs than clients who were

avoidant (r=0.80). Tyrell et al.[50] found that client and case manager attachment interacted in predicting the working alliance and client functioning. Specifically, clients who were more avoidant had better alliances and functioned better with less avoidant case managers, whereas clients who were less avoidant worked better with more avoidant case managers (r=0.53).

Attachment and other relationships: Four studies investigated associations between attachment and other relationships. Two studies examined the consistency of attachment styles between general relationships and those with mental health staff and services. Arbuckle et al.[51] found that attachment style in general relationships was closely associated with attachment style in relationships with keyworkers' and mental health teams', for both individuals with anxious attachment (r=0.75-0.83) and avoidant attachment (r=0.52-0.80). They found less consistent evidence of correlations between keyworker ratings and self-report ratings of attachment, and the majority of the correlations between team ratings and self-report ratings of attachment were small and non-significant. Dozier et al.[52] found that in interactions with case managers, avoidance was associated with being more rejecting of significant others (r=0.52) and more confused following interactions (r=0.51). Their significant others also felt less supported (r=0.53) and more saddened post-interactions (r=0.57). One study investigated the relationship between familial attachment strategies and coping with psychosis. Dozier et al.[53] found that both avoidant and anxious attachment amongst families were associated with higher levels of expressed emotion, specifically emotional over-involvement (F=3.44). One study explored associations between attachment and perceptions of skills and behaviour in intimate relationships. Pillay et al.[23] found that individuals with early psychosis were more preoccupied than student controls (F= 6.26), had more negative perceptions of their intimacy abilities (F=7.68) and engaged with less intimacy (F=30.96) than participants involved in a relationship.

Attachment and discrepancies between self- and informant-reporting of symptoms: One study highlighted the associations between attachment and the discrepancies between self- and system-rated symptoms. Dozier & Lee[54] found that anxious attachment was associated with heightened symptom reporting (F=4.86). However AAI interviewers reported that avoidant participants experienced more delusions (r=0.30), hallucinations (r=0.30), and suspiciousness (r=0.55), and case managers rated avoidant subjects as generally more psychotic (r=0.37).

2.4 Trauma model

Five papers were primarily allocated to the trauma model.[8,9, 22,32,55] One additional paper was secondarily allocated to the trauma model.[28] In line, with the trauma model, attachment security was investigated in relation to associations between attachment and previous experiences of trauma (childhood and adulthood) and outcomes (e.g. post-traumatic stress symptoms).

Previous experiences of trauma: Four studies explored associations between attachment, early experiences of trauma and outcomes. Huguelet et al.[28] found a high prevalence of childhood trauma related to attachment figures in the patient group, compared to the control group (χ^2= 4.39). Berry et al.[8] found higher levels of anxious attachment in patients who experienced trauma with significant others in childhood compared to those who had experienced trauma with significant others in adulthood, non-significant others and those with no interpersonal trauma, (F=3.43). Van Dam et al.[32] found higher childhood traumas in patients higher in both attachment anxiety (r=0.28), and attachment avoidance (r=0.27). Childhood trauma was predictive of both the severity of positive (r^2=0.06) and negative symptoms (r^2=0.13). They also found that in patients, the relationship between childhood trauma and positive symptoms was partly mediated by attachment style ($r^2\Delta$=0.03). Palmier Claus et al.[22] found that childhood adversity predicted both avoidant (β=0.31) and anxious attachment (β=0.47). Two studies explored associations between attachment and experiences of both childhood and adulthood trauma. Berry et al.[9] found a significant correlation between attachment anxiety and total number of previous traumas (r=0.32). Picken et al.[55] found that higher anxious attachment was associated with higher total number of self-reported traumatic events (r=0.38) and interpersonal traumas (r=0.37). Higher avoidant attachment was associated with a lower total number of self-reported traumatic events.

Post-traumatic symptoms: Two studies explored attachment in relation to experiences of post-traumatic stress symptoms. Berry et al.[9] found a significant correlation between attachment anxiety and both psychosis-related (r=0.56) and hospital-related PTSD symptoms (r=0.54). Attachment anxiety was an independent predictor of both psychosis-related (β=0.41) and hospital-related experiences (β=0.40). Picken et al.[55] found that higher anxious attachment was associated with a higher severity of post-traumatic symptoms (r=0.36).

Discussion

The aims of this paper were a) to review the characteristics of studies published since January 2013, which have investigated attachment in psychosis and b) to apply the new papers to the previously reviewed papers to summarise the existing evidence base for three apriori conceptual models of attachment in psychosis (developmental, cognitive, and systemic). We further identified a fourth category of papers better fitting a trauma model. The updated systematic search of the literature identified 25 papers describing 19 studies comprising 1467 participants, with a mean age range of 33.0 years (range 16-46 years), of whom 76.5% (n=1122) were male. Of the sample, 50.8% (n= 745) had a diagnosis of schizophrenia. Several methodological problems are noted in the literature published since 2013. Within Gumley et al.[1] they noted that all but 2 of the 22 studies were cross-sectional. Since then, whilst still a high proportion of cross-sectional studies, there was an increase in prospective designs, with nine papers describing six prospective studies conducted since 2013. All but four studies[15,21,22,26] were conducted with participants with established or chronic psychosis. Only two studies reported participant flow.[10,16]

The 25 newly identified papers produced some interesting new findings with regards to the role of attachment in the development, course and recovery from psychosis. New evidence demonstrates that childhood adversity is predictive of attachment insecurity, in particular, anxious attachment;[22] and that attachment is a mediating variable in the relationship between childhood trauma and positive symptoms.[32] Attachment anxiety was also found to be predictive of post-traumatic stress disorder symptoms in relation to experiences of psychosis and hospitalisation.[9] This highlights that consideration should be given to the attachment histories of patients to better understand the development and course of their difficulties and to actively prevent further trauma. New findings also emphasised clinical differences between individuals with anxious and avoidant attachment and associations with symptoms and outcomes. Attachment anxiety was associated with greater general psychopathology symptoms,[19] poorer quality of life,[12] and was found to be predictive of low self-esteem.[29] In addition, individuals with attachment anxiety reported greater severity of positive and general psychopathology symptoms, had longer duration of psychosis and a greater number of psychiatric admissions than individuals with other attachment styles.[24] By contrast, individuals with attachment avoidance, self-reported lower severity of positive, negative and general psychopathology symptoms,[24] despite evidence suggesting association with more positive symptoms.[19] New studies highlighted that both anxious and avoidant attachment were independent predictors of psychiatric symptoms, severity of symptoms and deficits of functioning at twelve months.[16]

In terms of recovery, new evidence suggests that attachment security is predictive of negative symptom recovery at six and twelve months.[16] Another study demonstrated that a decrease in attachment anxiety was associated with improvement in positive, negative and general psychopathology symptoms across twelve months,[26] suggesting that the facilitation of more secure attachments may aid clinical change. New evidence also emphasises the important role of mentalisation ability in symptom recovery, with greater mentalisation ability associated with better early adolescent social adjustment, less negative symptoms and better help-seeking behaviours[34] and greater improvement in positive and negative symptoms.[17] This suggests that interventions focused on the improvement of attachment and mentalisation may facilitate recovery in psychosis. The new findings that the depth and influence of staff support played an important role in better attachment to services,[13] emphasises the importance of positive working relationships with staff in promoting engagement.

The conceptual synthesis of the 25 newly identified papers with the 22 previously reviewed papers[1] in general identified excellent consistency across findings within each of the four key conceptual models within the existing evidence base regarding the role of attachment in psychosis. Within the developmental model, we observed small associations between insecure attachment and experiences of controlling and over-intrusive parenting, and poor parental care,[8,39] adding to the evidence-base that parenting experiences are key to attachment organisation and to the development of internal working models of the self and others. Developmental processes are also key to symptomatic and recovery outcomes, with small to moderate associations identified between better mentalisation abilities, reduced negative symptoms and improved help seeking behaviour.[20] Small to moderate associations were found between insecure attachment and emotion regulation difficulties.[41] There were also some interesting new findings with regards to attachment to a spiritual figure in individuals with an insecure attachment style and associations with a reduction in symptoms.[28]

Within the cognitive model, we observed small associations between attachment insecurity and increased positive symptoms and general psychopathology symptoms across a number of studies.[19,29,35,37] Findings for negative symptoms were more inconsistent across studies, although one study found evidence that attachment predicts recovery from negative symptoms.[16] Small associations demonstrated evidence that appraisal of voices is shaped by attachment[43] and evidence that the relationship between attachment insecurity and voice

related distress and depression may be mediated by these appraisals.[30] Moderate associations were found between attachment insecurity and greater interpersonal difficulties.[35] Small to moderate associations were found between attachment insecurity and greater depression,[22] poorer self-esteem,[33] reduced quality of life,[45] and social anxiety.[15]

Within the systemic model, there was a moderate to strong association between the client's attachment in their general relationships and their attachment across both their relationships with their keyworker and mental health team.[51] There were inconsistencies in the data reported on the associations between attachment and quality of the therapeutic relationship. However, moderate to strong associations demonstrated a better quality therapeutic alliance between patients and staff who have distinct attachment styles.[50] Additionally, therapeutic alliance was found to be a key predictor of emotion regulation difficulties,[41] suggesting an important influence of therapeutic relationships on symptomatic outcomes. Moderate associations were found between avoidant attachment and poorer service engagement and treatment adherence.[46] Small to moderate associations were also found between attachment insecurity and reduced attachment to services; with key influences found to be increased hospitalisations[47] and poorer perceptions of ward milieu.[13] With regards to personal relationships, there was a small association found between familial attachment insecurity and increased emotional over-involvement.[53] In intimate relationships, anxious attachment was related to a more negative perception of intimacy abilities and engagement with less intimacy.[23]

Within a trauma model, small associations were found between attachment insecurity and an increased number of childhood traumas involving primary attachment figures.[8,28] Evidence that childhood trauma predicted the severity of positive and negative symptoms was also found.[32] This provides further support for the already well-established literature on the role of early experiences of childhood adversity on attachment security and the development of psychosis.

An integrated model of the role of attachment in psychosis: This review adds much new evidence to the attachment conceptualisation of recovery from psychosis proposed by Gumley et al.[1] New evidence for the role of trauma in childhood[9,22,32] provides further validation for a stress-vulnerability conceptualisation of its role in psychosis, whereby trauma increases vulnerability to developing psychosis and shapes later symptom expression and coping style in the face of stressful experiences. Coupled with the existing literature

regarding associations between early adverse parental experiences and insecure attachment, a causal connection between these negative early experiences and the development of attachment security is suggested. Attachment is important in understanding the developmental processes of affect regulation, such as processing of emotion, modulation of stress and self-regulation; and Gumley et al.[1] propose that it is within the development of this system that vulnerability to the development of psychosis can be understood. Indeed, the collective evidence-base suggests that the adaptive attachment strategies developed in the context of the affect regulation system, influence the expression of psychosis and processes important to recovery from the illness. In line with this, this review found much new evidence to support associations between attachment anxiety and avoidance and increased positive symptoms, paranoia and general psychopathology.[19,22,24,29] Indeed, attachment insecurity has also been found to be associated with appraisal of voices as more critical and threatening and with greater associated distress.[30,43] Additionally, new evidence shows that insecure attachment is predictive of symptomatic recovery over time.[10,26]

Indeed, in line with Gumley et al.[1] the relationships between individuals experiencing psychosis and staff and services are especially important as they provide the context in which recovery can be promoted. It is within these relationships, that the attachment-related strategies of individuals will become apparent. It is imperative that services' are well-able to respond to individuals needs in an appropriate and sensitive way to provide the secure base and safe haven essential for recovery.[1] Indeed, one study demonstrated that more positive perceptions of ward milieu were linked to better service attachment and most importantly, that the depth and influence of staff support was particularly influential.[13] However, this review highlights the challenges for staff and services in working with individuals high in attachment insecurity, and additionally, suggests that the differing clinical presentations of attachment anxiety and avoidance, present contrasting difficulties for the systems in which they unfold. This review found associations between avoidant attachment and reluctance to disclose, problems in seeking help, poorer treatment adherence and more difficulties in the therapeutic alliance.[35,38,46] Individuals with avoidant attachment had an avoidant recovery style,[39] increased hopelessness,[29] greater confusion following interactions with staff,[52] and poorer reflective function.[38] Indeed, the latter is important as better mentalising ability was independently associated with better clinician-rated help-seeking and fewer negative symptoms[20] and accounted for variance in negative symptom recovery at 6 and 12 months.[17] This suggests that a challenge for staff working with individuals high in avoidant attachment may be in facilitating reflection on thinking, affect and behaviour, in order to more appropriately access support. Conversely, anxious attachment was associated with greater

symptom disclosure and better treatment adherence.[44,54] However, anxious attachment was also associated with an increased likelihood of experiencing hospital-related post-traumatic stress symptoms,[9] and indeed, attachment anxiety and the therapeutic alliance were predictive of emotion regulation difficulties.[41] Individuals high in attachment anxiety were found to have greater interpersonal sensitivity,[31] greater social interaction and state anxiety,[15] and greater reported emotional distress.[29] Anxious attachment was also found to be predictive of depression[44] and associated with a reduced quality of life.[12,24] This suggests that the challenge for staff working with individuals high in anxious attachment may be in managing heightened affect and relational sensitivity and preoccupation.

An important aspect of the findings of this review is the importance of systems in promoting recovery from psychosis and, the need for reflective staff and systems to ensure problematic attachment patterns are not reinforced as this could be detrimental to recovery. Indeed, two studies demonstrate evidence of the important interaction of staff and service-user attachment patterns. One study found that staff attachment insecurity can lead to perceptions of greater dependency needs in anxiously attached individuals[49] and another, that stronger alliances were evident between staff and service-users with contrasting attachment styles.[50] This is important as it indicates that all clinical staff should be attachment informed and encouraged to reflect on the impact their own attachment style may have on service-user relationships. This has potential to prevent re-enactment of damaging patterns of relationships, reduce staff-stress and promote service-users' well-being and recovery.

Strengths and limitations of the review

The main strength of this review is the large number of studies and large number of clinical participants that have been included, providing an excellent source from which to view the existing evidence base and from which to develop future research. An additional strength is that whilst previous reviews have focused on aspects of measurement and construct validity within attachment and psychosis, this is the first review focused on addressing the literature within a conceptual framework. This provides a basis for the development of a theoretical framework from which to develop interventions for individuals with psychosis.

Limitations of this review were the exclusion of unpublished data and thesis/dissertations as only reviewing published data, may have led to over-estimation of effect sizes. Additionally,

as this was a narrative review, no meta-analysis was conducted and as such, there was no standardised reporting of effect sizes. A meta-analysis of the data would improve the quality of synthesis of the literature.

Research Implications

The findings of this systematic review highlight the importance of attachment in understanding adaptation to and recovery from psychosis. In particular the review provides a summary of the role of early adverse experiences of trauma and negative parental representations, and developmental processes, such as mentalisation and affect regulation in symptom expression, coping and recovery styles. It outlines clear relationships with attachment and symptom expression, appraisal of symptoms and emotional, behavioural and interpersonal outcomes, which play both a predisposing and perpetuating role in the development and trajectory of psychosis. It provides a deeper understanding of the difficulties individuals with psychosis have in building therapeutic relationships and engagement with staff and teams and indeed the unique role that systemic influences may play in maintaining difficulties but also in promoting recovery and resilience.

Whilst there is a growing recognition of the important role of systems within the attachment and psychosis literature, there seems to be very little research investigating the interaction of attachment and wider systemic influences. Only one study investigated attachment in intimate relationships with individuals with psychosis,[23] and there appear to be no studies investigating relationships with peers. This is a surprising omission as presumably, particularly in inpatient environments whereby other patients play a key role, they could feasibly be a source of activation of attachment needs and/or a source of support in times of stress and distress. In addition, the attachment styles of staff still seems to be a relatively under explored area, which may have clear clinical implications. There also appears to be a lack of studies exploring interventions for attachment and aspects of interventions which are associated with clinical change. In relation to this, studies investigating what factors can facilitate the adoption of a secure attachment bond within individuals who have a primary insecure attachment prototype may also be of clinical and empirical utility.

Clinical Implications

This review emphasises the attachment-needs of individuals with psychosis and their impact on symptom expression, symptom appraisals, and, ability to seek-help, adhere to treatment

and engage with services. This provides further evidence that attachment insecurity has implications for recovery from psychosis and that an attachment-informed approach to mental health services is necessitous. Training is required for those staff working most closely with individuals experiencing psychosis to promote recognition of attachment-related difficulties and provide a framework from which to intervene and provide support. This review provides evidence of associations between attachment insecurity and difficulties within many aspects of psychological functioning which could sensibly be the focus of treatment. These include: mentalisation, interpersonal function, emotion regulation and low self-esteem. Clinical consideration should also be given to findings that contrasting staff-patient attachment styles can lead to the development of better working alliances.[52] For instance, within the allocation of key working relationships and therapeutic referrals, as this could have service benefits, in terms of better use of resources and better patient outcomes.

Conclusion

This review, provides a substantial evaluation of the existing evidence-base of attachment and psychosis, encompassing a large number of clinical participants. It outlines a comprehensive conceptual framework, providing evidence to support the importance of early experiences of trauma and adverse parenting experiences in the development of attachment security and vulnerability to psychosis. We also found evidence that attachment insecurity is associated with symptom expression, and emotional, behavioural and interpersonal outcomes which impact individuals' abilities to effectively build working alliances and engage with services. The review highlighted the important role of service providers in ensuring that services offer an attuned response to attachment-related needs to promote resilience, adaptation to and recovery from psychosis. It also highlights that further research is required to investigate the potential role and impact of peer support on individuals experiencing psychosis, as this is a remarkable omission within the existing literature.

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Chapter 2: Major Research Project

Attachment Style, Therapeutic Alliance and Recovery in Forensic Mental Health: the A-STAR study

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Plain English Summary

Background: Attachment theory is a framework to understand the importance of relationships across the lifespan. Through our early experiences of relationships we develop an attachment style which influences how we form and maintain relationships, how we cope with life events and how we regulate emotions. Attachment anxiety and avoidance of attachment have been linked to more relationship problems and increased risk of mental health problems. These insecure attachments are associated with more difficulties in relationships with caregivers and poorer engagement with mental health services. Amongst service-users of forensic mental health services, there is an increased rate of these insecure attachment styles. Given the importance of relationships, a focus on attachment in forensic mental health may be a helpful approach to promoting recovery. An important step towards achieving this is to explore whether service-users and staff agree about service-users' attachment. **Aims:** To find out if service-users and staff agree about the service-users' attachment. To find out if service user attachment is associated with attachment to services, therapeutic alliance, perceptions of the ward climate and perceptions of recovery. **Methods:** Service-user participants were asked to complete five questionnaires, to measure their attachment in general relationships, their attachment to the service, their therapeutic alliance with their key worker, their perception of the ward climate and, their experience of recovery. The key worker for each participant was also asked to complete a measure of the service-users' attachment style and a rating of the therapeutic alliance. Following ethical approval and informed consent, 22 forensic mental health service-user's from low and medium secure hospitals completed the five questionnaires. Nineteen of the named 22 keyworkers asked to participate on behalf of a service-user completed the questionnaire measures. **Main Findings:** The study found that staff and service-users had good agreement about anxious attachment style but poorer agreement about avoidant attachment styles. Avoidant attachment styles were found to be associated with less positive experiences of recovery. Lastly, more positive experiences of staff support were associated with better attachment to forensic services. **Conclusions:** These results have important practical applications for the development of staff training aimed at developing recognition of attachment-related behaviour. This may be particularly important for individuals with avoidant attachment, as it could help staff to enable these service-users to become more actively engaged in their own recovery. The results also highlight the value of the support provided by staff to promote service-user engagement, which may ultimately improve service-user well-being and outcomes.

Abstract:

Background: Research suggests that forensic mental health services and staff can play an important role in the recognition and intervention with attachment-related behaviours to promote engagement and recovery. There is a lack of literature exploring whether the attachment needs of forensic service-users are recognised and, associations between attachment style and factors predictive of recovery.

Aims: This study aimed to examine the extent to which service-users and keyworkers agree about service-users' attachment and to identify whether attachment was associated with service attachment, working alliance, ward climate and recovery.

Methods: Twenty-two service-users from low and medium secure forensic services, completed questionnaire measures of their attachment style, service attachment, working alliance, ward climate and experiences of recovery. Nineteen keyworkers completed measures of the service-users attachment style and working alliance.

Results: There was strong agreement between service-users and staff for attachment anxiety (ICC=0.71) but poor agreement for attachment avoidance (ICC=0.39). Service attachment was associated with more positive perceptions of staff support (r=0.49) and avoidant attachment was associated with lower ratings of recovery (r=-0.51). Correlations between attachment style and service attachment, working alliance and ward climate were small and non-significant.

Conclusions: A focus on staff training to support recognition of the nature and impact of avoidant attachment styles is indicated. The findings suggest that interventions to enhance staff - service-user relationships may be important for service attachment and indeed promotion of a recovery focused orientation amongst service-users high in avoidant attachment may improve wellbeing and outcomes.

Introduction

Attachment theory provides a developmental, lifespan theory whereby our early attachment experiences lead to the development of mental representations or 'internal working models' (IWMs) of the interpersonal world (Bowlby, 1979). IWMs develop in the context of the availability and responsiveness of early attachment figures, enabling the child to develop developmentally appropriate autonomy in exploring their environment (*Secure Base)* and security in the knowledge that their attachment figure is there to return to in times of trouble *(Safe Haven)*. In adulthood, IWM's provide a broader relational framework which shape our expectations and interpretations of self and others, guide our interactions with others and influence our cognitive, behavioural and affective responses to others and to adverse or stressful life experiences. Infants have the inherent ability to flexibly develop adaptive attachment behaviours within varied care giving environments, including suboptimal environments (Main, 1990), and it is within this context, that individual differences in attachment security are thought to develop (Cassidy, 2008).

Traditionally, infant attachment can be classified as: secure, insecure-avoidant, insecure-ambivalent (Ainsworth et al., 1978) and disorganised (Main & Solomon, 1986). Adult attachment classification can be conceptualised within two major paradigms. In the developmental tradition, infant attachment are also reflected in adult attachment as: secure-autonomous, dismissing, preoccupied or disorganised (Main et al., 1985). Secondly, the social psychology tradition identifies attachment dimensions in terms of anxiety and avoidance (Bartholomew, 1990, 1997). Within this dimensional model, attachment anxiety is characterised by fear of interpersonal rejection or abandonment, excessive need for approval and distress when attachment figures are unavailable or unresponsive (Wei et al, 2007). Conversely, attachment avoidance is characterised by fear of dependence and interpersonal intimacy, excessive need for self-reliance and reluctance to self-disclose (Wei et al, 2007).

Disturbances of attachment have been implicated within a range of mental health problems (Dozier et al, 2008), and in particular, much attention has recently been paid to the overlap between insecure attachment and psychosis. A higher prevalence of insecure attachment has been demonstrated in individuals with psychosis than controls (Couture et al., 2007); with an insecure-dismissing attachment thought to be particularly common (MacBeth et al., 2011). The mounting evidence-base provides cumulative support that attachment may be influential to risk of developing psychosis, in individual symptom development and

maintenance, and in adaptation to and recovery from psychosis (Gumley et al., 2014). Within the recovery-focused literature, a crucial finding is that the quality of an individuals' relationships are a key determinant in the course of psychosis (Penn et al., 2004; cited in Schwannauer & Gumley, 2014). In line with this, numerous studies have looked at the implications of insecure attachment on individuals' relationships and their engagement with mental health services. They demonstrate associations between attachment insecurity and increased difficulties within the therapeutic relationship, and in particular that a dismissing attachment style may have a particularly negative impact on alliance and engagement (Berry et al., 2007; Berry et al., 2008; Blackburn et al., 2010).

The development of meaningful relationships have long been considered to be a key component in the process of recovery, regardless of the therapeutic approach, the model used and the health professional providing the treatment (McCabe, 2004). However, given the substantiated relationship between service-user attachment style and engagement with services, it is now widely conceived that attachment theory provides a viable framework not only to inform clinical practice, but also for the design of psychiatric services (Bucci et al., 2015). The British Psychological Society's National Advisory Group on Mental Health (Seager, 2007; cited in Berry and Drake., 2010) recommend that all staff should be attachment informed and trained to respond therapeutically to service-users. Accordingly, there is now a growing body of literature examining the role of mental health professionals as attachment figures and the implications of this on therapeutic relationships, engagement with services and service-user outcomes (Adshead, 1998; Berry & Drake., 2010).

Within forensic services, attachment theory may be particularly pertinent in understanding service-users' early experiences, their offending behaviours and their relationships with services. The reported prevalence rates of psychosis in male prisoners in 1998, was reported to be twenty times that of the general population (JCPMH, 2013). There is also an over-representation of forensic service-users with a diagnosis of personality disorder, with prevalence estimates of between 60-80%, compared with 4% within the general population (Adshead & Aiyegbusi, 2014). Indeed, early attachment insecurity is an established risk factor for the development of personality disorder (Adshead & Aiyegbusi, 2014). There are also strong links between early attachment disturbance and later offending behaviour, with poor maternal mental health, poor parenting and abusive home relationships considered key contributory factors (JCPMH, 2013). These established links suggest that attachment theory

may provide a practicable model for understanding and managing interpersonal difficulties and cognitive and emotional responses to stress and risk (Adshead & Aiyegbusi, 2014).

A key function of multi-disciplinary teams is to facilitate a *safe haven* for expression of distress and a *secure base* for promoting exploration and recovery (Goodwin et al., 2003). Within forensic mental health services, building relationships and creating a safe and secure environment to promote rehabilitation and recovery can be extremely challenging. The IWM's held by forensic mental health service-users' are often based on experiences of abusive, broken or turbulent relationships and it is within these experiences that cognitive, affective and behavioural responses to others and to adversity are formed. These may be typified in the problematic behaviours presented by service-users to staff, including self-harm, aggression, and the sabotage of treatment plans, often in the face of discharge or loss of a specific keyworker (Adshead, 1998). There is a risk that such harmful interpersonal behaviours may be reinforced and maintained if misunderstood by staff (Aiyegbusi, 2004). Specifically, those with an avoidant attachment may be overlooked and those with an anxious attachment may be seen as demanding, evoking highly negative feelings amongst staff teams (Adshead, 2004). By way of an interactive process, staff internal working models of relationships will also inevitably impact on the way in which they understand, relate to and attend to service-users (Adshead, 1998) and should also be considered.

Within forensic mental health services, attachment theory could provide a valuable framework from which to develop training, support and supervision. It can assist staff to understand service-users' interpersonal styles, to reflect upon their own attachment patterns and the interaction with those of service-users', to respond appropriately to attachment-related behaviours and to inform the development of interventions targeting staff – service-user relationships (Berry & Drake, 2010). Learning to understand the function of attachment related behaviours, could improve staff capacity to more appropriately support service-users and promote their engagement in numerous aspects of rehabilitation (Adshead, 1998). Research has shown that attachment to forensic mental health services was strongly associated with more positive perceptions of ward climate, and in particular that, more positive staff - service-user relationships, were most influential (Campbell et al., 2014). In addition, forensic mental health service users listed "*kindness and empathy, and being listened to and related to as a fellow human being*" (pp. 134; Turton et al., 2011) as important to their recovery. These studies emphasise that the social environment created by staff and services is a crucial and valued aspect of treatment and recovery.

There is growing empirical evidence highlighting the importance of attachment pathways in understanding psychiatric problems within forensic mental health (JCPMH, 2013; Adshead & Aiyegbusi, 2014) and increased recognition of the use of attachment theory to conceptualise the relationship between forensic service-users and staff and services (Adshead, 1998; Campbell et al., 2014). Despite this, there is a paucity of literature exploring whether staff working within forensic mental health services recognise attachment styles within their service-users in order to meet their attachment needs. Additionally, no other study has investigated whether attachment styles within forensic service-users are associated with factors found to be predictive of recovery in service-users experiencing psychosis (this study aims to investigate whether there is an association between attachment style and service-users engagement with services) and indeed if these difficulties impede forensic service-users' abilities to meet recovery based values.

Aims: The primary aim of this research was to explore the extent to which forensic service-users' self-ratings and keyworker staff informant-ratings of attachment style are associated with each other. The secondary aims were to explore the associations between attachment, service attachment, working alliance, perception of ward climate and recovery.

Hypotheses:

Primary outcomes:

1) It was hypothesised that there would be a high intra class correlation (ICC=0.8) between service-users self-ratings of attachment and key workers informant ratings of service-users' attachment, as measured by the Psychosis Attachment Measure (PAM).

Secondary Outcomes:

2) It was predicted that greater self-rated attachment security (lower ratings of anxiety and avoidance) would be associated with higher ratings of service attachment and higher self- and keyworker ratings of therapeutic alliance.
3) It was predicted that greater informant-rated attachment security would be associated with higher service-user ratings of service attachment and higher self- and keyworker ratings of therapeutic alliance.
4) It was hypothesised that greater self- and informant-rated attachment security and higher ratings of service-user service attachment would be associated with more positive ratings of ward climate perceptions.

5) Finally, it was predicted that greater self- and informant-ratings of attachment security would be associated with higher self-rated recovery.

Methods

Design: This was a cross sectional study, which utilised questionnaire measures, including self-report and informant measures of participant attachment styles and self-report measures of aspects of recovery.

Participants: Inclusion criteria for service-user participants were a) male and female forensic mental health inpatients, b) low and medium secure hospitals, c) English speaking, d) had a named primary keyworker, e) able to provide informed consent. Exclusion criteria were a) patients who were unable to provide informed consent, who were acutely psychotic or who lacked capacity to consent based on the advice of responsible medical officers (RMO). Inclusion criteria for keyworker participants were a) they were the named primary keyworker for the service-user participant. Within the forensic directorate, it is a requirement that all key workers are qualified mental health staff nurses.

Sample size was calculated *a priori* based on the primary outcome of the study, that there would be a high intra class correlation (ICC=0.8) between service-users' self-ratings of attachment and key workers' informant ratings of service-users' attachment. In estimating the sample size, the following parameters were considered: Firstly, as it was commonplace for keyworkers within the forensic directorate to have responsibility for more than one service-user, it was anticipated that key workers' ratings of services-users attachment would be clustered where a single keyworker was likely to inform on n>1 service-users meaning that observations would be non-independent. Secondly, consideration was given to the width of the 95% confidence interval (95%CI) around the estimate of the ICC. For this purpose two 95%CI intervals of 0.2 (i.e. 95%CI, 0.7-0.9) and 0.3 (i.e. 95%CI, 0.65-0.95) were selected. Based on this analysis (conducted according to D.G. Bonett. 2002. Statistics in Medicine, 21(9): 1331-1335) it was estimated that a sample size of between 31 and 36 was needed to detect a correlation of 0.8, with a 95% Confidence Interval of 0.2 (i.e. 95% CI, 0.7-0.9), with between 3-4 service-users per keyworker (table 2).

Table 2 – Sample Size Calculation

Width of Confidence Interval	ICC	Number of service-users per key worker			
		3	4	5	6
0.2	0.8	36	31	29	27
0.3	0.8	17	15	14	13

Measures:

Psychosis Attachment Measure (PAM: Self-Report, appendix 2.2; Informant-Report, appendix 2.3): is a 16-item self-report measure of adult attachment for people with psychosis. There is also an informant version which includes parallel items to those included in the self-report measure but asks informants to rate observable behaviours (Berry et al., 2008). The PAM uses a four-point Likert scale to assess the two dimensions of anxious and avoidant attachment styles. A number of studies have demonstrated internal consistency, with Cronbach's alpha coefficients ranging from 0.70 to 0.86 for the anxiety dimension and from 0.60 to 0.91 for the avoidance dimension (Gumley et al., 2014).

Service Attachment Questionnaire (SAQ: appendix 2.4): is a 25-item self-report measure which assesses the security of mental health service-users' attachment to staff members and to the hospital itself. The SAQ uses a four-point Likert scale to assess 6 themes, including: being attended to and listened to; being there – consistency and continuity; being given enough time – ending and leaving; safe environment; relationships which enable helpful talking and human contact and comfort (Goodwin et al, 2003). It has good internal consistency (α=0.88) (Blackburn et al., 2010).

Working Alliance Inventory-Short Revised (WAI-SR: appendix 2.5) and Working Alliance Inventory-Short Revised-Therapist (WAI-SRT: appendix 2.6): The WAI-SR is a 12-item self-report measure and the WAI-SRT a 10-item informant measure of the therapeutic alliance. Both the WAI-SR and the WAI-SRT use a five-point Likert scale to assess three key aspects of the therapeutic alliance, including: a) agreement on therapeutic tasks, b) agreement on therapeutic goals, and c) the affective bond between service-user and therapist (Munder et al, 2010). The WAI-SR has demonstrated excellent internal consistency in outpatient and inpatient samples, with Chronbach's alpha of 0.90 and 0.93 respectively (Munder et al, 2010).

Essen Climate Evaluation Schema (EssenCES: appendix 2.7): is a 17-item self-report measure which assesses the service users' perceptions of the social and therapeutic atmosphere of forensic psychiatric wards (Schalast et al, 2008). The EssenCES uses a five-point Likert scale to assess three aspects of the social climate, including: a) Therapeutic Hold (the extent to which the climate is perceived as supportive of patients' therapeutic needs), b) Patients' Cohesion and Mutual Support (whether mutual support of a kind typically seen as characteristic of therapeutic communities is present), and c) Experienced Safety (the level of perceived tension and threat of aggression and violence). The EssenCES has demonstrated acceptable internal consistency within UK high secure hospital settings, with Chronbach's alpha ranging from 0.72 to 0.82 (Howells et al, 2009).

Scale for Assessing the Forensic Experience of Recovery (SAFER: appendix 2.8): is a 24-item self-report measure which assesses the importance of values identified as important in recovery processes to forensic mental health service-users and additionally, assesses whether they are currently living in a way consistent with their values (Quill et al., 2014). The SAFER was conceptually developed within the CHIME framework for recovery (Leamy et al, 2011) and the Good Lives Model of offender rehabilitation (Ward and Brown, 2004). A recent study (Baxter et al., 2016), demonstrated that the SAFER had good internal consistency (α=0.92; 95%CI=0.88, 0.95) and good test-retest reliability (r=-0.79; $p<.05$).

Procedures: A presentation of the proposed research (appendix 2.9) was given by the lead researcher at multi-disciplinary forensic mental health team meetings within forensic mental health acute assessment and rehabilitation wards (N=10) in low and medium secure hospitals (N=2) to request permission to recruit. RMO's, senior charge nurses and clinical psychologists were asked to provide eligible service-users with service-user participant information sheets (appendix 2.10). Participants were given at least 24 hours to consider participating. The researcher contacted a named contact within each forensic mental health team to determine interest and appointments were arranged with potential participants.

The researcher obtained informed written consent (appendix 2.11) and met with participants to complete the PAM self-report, SAQ, WAI-SR, EssenCES and SAFER. To account for possible literacy and/or cognitive issues, the researcher read all questions aloud and participants gave a verbal response. Questionnaires took between 30 and 70 minutes to complete. All participants were offered a break and only a minority of participants (N=2)

required to complete the measures in more than one session. RMO's and keyworkers were informed of service-user participation (appendix 2.12).

Following participation, the named primary keyworker of each service-user participant was provided with a keyworker participant information sheet (appendix 2.13). Keyworker participants were given at least 24 hours to consider participating. The researcher contacted each ward to determine interest and appointments were arranged with potential participants. The researcher obtained written informed consent (appendix 2.14) and provided keyworker participants with a copy of the PAM informant-report and the WAI-SRT for completion. Completed questionnaires were returned by post.

Ethical and management approval: The research proposal (appendix 2.15) was submitted to the Research and Audit Committee within the Directorate of Forensic Mental Health and Learning Disability (DFMHLD) within NHS Greater Glasgow and Clyde (NHS GG&C). It was also submitted to NHS GG&C's Research and Development Department and to the West of Scotland Research Ethics Committee (15/WS/0198). Approval was received following minor amendments to the study protocol (appendix 2.16).

Data Analysis: Prior to hypothesis testing, normality of distributions were examined using the Shapiro-Wilk test. For the primary analysis, scores for self-rated attachment anxiety were non-normally distributed ($W(18)=0.87$; $p<.05$), with a positively-skewed distribution. Scores were normally distributed for informant rated attachment anxiety ($W(18)=0.92$; $p>.05$), self-rated attachment avoidance ($W(18)=0.95$; $p>.05$), and informant-rated attachment avoidance ($W(18)=0.97$; $p>.05$). Data were therefore analysed for average absolute agreement using two-way random intra-class correlation coefficients.

For the secondary analysis, the Shapiro-Wilk test found that self-rated avoidance, informant-rated anxiety and avoidance, the SAQ, the WAI-SR total and task subscale, the WAI-SRT total, task and bond subscales, the EssenCES total, therapeutic hold and patient cohesion and mutual support subscales, and the SAFER were normally distributed. However, the Shapiro-Wilk test identified several variables that were non-normally distributed. These included: self-rated attachment anxiety ($W(22)=0.91$; $p<.05$), the WAI-SR Goal ($W(22)=0.85$; $p<.01$) and Bond subscales ($W(22)=0.89$; $p<.05$); the WAI-SRT Goal subscale ($W(22)=0.86$; $p<.01$) and the EssenCES Experienced Safety subscale ($W(22)=0.91$; $p<.05$).

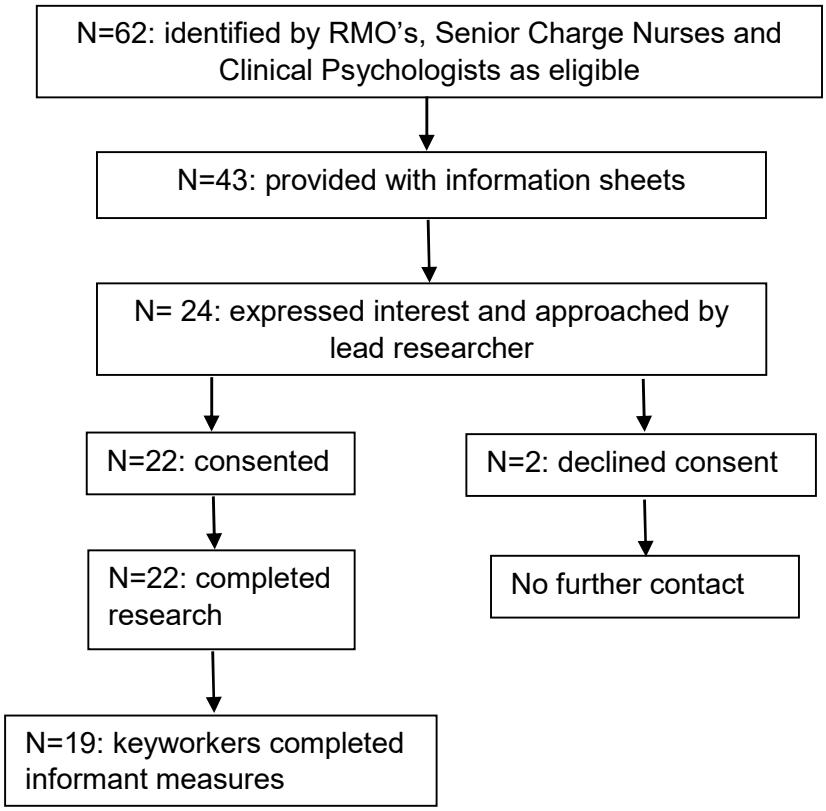
All relationships were evaluated using Pearson correlation coefficient. However, as there were numerous variables that were non-normally distributed and due to the smaller than planned sample size, all correlations were computed using bootstrapping via 1000 random samples. Correlation estimates are presented alongside 95% Confidence Intervals (95%CI) providing a transparent estimate of variance and statistical significance.

Planned analysis to use linear-effects modelling was intended to account for anticipated clustering in the data, where a single keyworker was likely to inform on n>1 service-users. However, as only one keyworker informed on n>1, the actual analysis was conducted using sensitivity estimates to account for the non-independence of these observations.

Results

Sample characteristics: Twenty-two forensic mental health service-user participants were recruited. 95.5% were male (N=21). Mean age was 47.2 years (range 31-69 years). The primary diagnosis of the participants included schizophrenia (63.6%; N=14), schizoaffective disorder (22.7%; N=5), bipolar disorder (4.5%; N=1), psychotic episode (4.5%; N=1) and mixed personality disorder (4.5%; N=1). 68.2% (N=15) were from a medium secure hospital and 31.8% (N=7) were from a low secure hospital. Of the 21 participants without a primary diagnosis of personality disorder, 22.7% (N=5) had a secondary diagnosis of personality disorder. A further 27.3% (N=6) were reported to have traits of one or more personality disorder(s) but had not yet been formally assessed for diagnostic purposes. 72.7% (N=16) were residing within rehabilitation wards and 27.3% (N=6) within acute assessment wards. All participants (N=22) were detained in hospital under section, with 72.7% (N=16) on a Compulsion Order with Restriction Order, 9.1% (N=2) a Compulsory Treatment Order, 9.1% (N=2) a Compulsion Order, and 9.1% a Transfer for Treatment Direction. Only one participant was on remand for assessment (4.5%). All other participants were already convicted (95.5%; N=21), with 40.9% (N=9) receiving long term treatment, 31.8% (N=7) progressing towards transfer for return to the community, 13.6% (N=3) awaiting a bed in low secure services, 4.5% (N=1) awaiting transfer back to prison and 4.5% (N=1) receiving continued assessment and care due to an unsettled presentation. Keyworkers for 86.4% (N=19) of participants completed informant measures. The total scores for all measures completed are presented in appendix 2.17.

Figure 2: Recruitment Flow



Primary Outcomes:

Self- and informant ratings of attachment style: The primary outcomes were analysed using data from those participants who had corresponding informant ratings of attachment style (n=19 dyads).

As predicted, a two-way random effects Intra-class correlation coefficient found strong absolute agreement between self-and informant rated attachment anxiety: ICC(2,19)=0.71; 95%CI, 0.27, 0.88; (F(18,18)=3.711, p<.01). By contrast, there was poor agreement between self- and informant-rated attachment avoidance ICC(2,19)=0.39; 95%CI, -0.67, 0.77; (F(18,18)=1.603, p>.05). Sensitivity analyses were undertaken to account for non-independent observations. One keyworker completed informant measures for two service-user participants (participant's 18 and 20). Post-hoc sensitivity analysis was conducted on the data with the removal of participant 18 and the inclusion of participant 20 and there were no changes in the pattern of intra-class correlations. Secondly, post-hoc sensitivity analysis was conducted on the data with the removal of participant 20 and the inclusion of participant 18 and there were no changes in the pattern of intra-class correlations (appendix 2.18).

A further sensitivity analysis was conducted to evaluate whether missing data from keyworkers (N=3) was associated with any differences in the service-user participant population (appendix 2.19). There were no significant differences identified in relation to age, self-rated attachment security (anxiety and avoidance subscales), service attachment, self-rated working alliance, ratings of ward climate and ratings of recovery.

Secondary Outcomes:

Associations between attachment style, service attachment, working alliance, ward climate and recovery: The secondary analysis was conducted using the data from all service-user participants (N=21) and all keyworker participants (N=19).

Self-rated Attachment Security and Service Attachment: There were no significant associations between the SAQ and the self-report PAM anxiety subscale (*r*=-0.16; 95%CI, -0.57, 0.19) or the self-report PAM avoidance subscale (*r*=-0.31; 95%CI -0.77, 0.32).

Self-rated Attachment Security and Working Alliance: There were no significant associations between the self-report PAM anxiety subscale and the WAI-SR total scale (*r*=0.11; 95%CI -0.71, 0.31); or the WAI-SR Task (*r*=0.04; 95%CI -0.60, 0.46), Goal (*r*=0.03; 95%CI -0.58, .41) and Bond (*r*=-.30; 95%CI -0.78, 0.13) subscales. There were also no significant associations between the self-report PAM avoidance subscale and the WAI-SR total scale (*r*=-0.06; 95%CI, -0.58, 0.38); or the WAI-SR Task (*r*=-0.14; 95% CI, -0.56, 0.29), Goal (*r*=-.16; 95%CI, -0.589, 0.242) and Bond (*r*=0.099; 95%CI, -0.43, 0.50) subscales.

There were no significant associations between the self-report PAM anxiety subscale and the WAI-SRT total scale (*r*=0.18; 95%CI, -0.54, 0.60); or the WAI-SRT Task (*r*=0.19; 95%CI, -0.56, 0.57), Goal (*r*=0.11; 95%CI, -0.40, 0.44) and Bond (*r*=0.03; 95%CI, -0.56, 0.54) subscales. There were also no significant associations between the self-report PAM avoidance subscale and the WAI-SRT total scale (*r*=-0.18; 95%CI, -0.64, 0.49); or the WAI-SRT Task (*r*=-0.16; 95%CI, -0.64, 0.54), Goal (*r*=-0.00; 95%CI, -0.57, 0.58) and Bond (*r*=-0.03; 95%CI, -0.57, 0.53) subscales.

Informant-rated Attachment Security and Service Attachment: There were no significant associations between the SAQ and the informant-report PAM anxiety subscale (*r*=0.07; 95%CI, -0.36, 0.37) or the informant-report PAM avoidance subscale (*r*=0.05; 95%CI, -0.34, 0.43).

Informant-rated Attachment Security and Working Alliance: There were no significant associations between the informant-report PAM anxiety subscale and the WAI-SR total scale (*r*=0.218; 95%CI, -0.22, 0.58); or the WAI-SR Task (*r*=0.23; 95%CI, -0.27, 0.63), Goal (*r*=0.25; 95%CI, -0.22, 0.63) and Bond (*r*=0.11; 95%CI, -0.35, 0.46) subscales. There were also no significant associations between the informant-report PAM avoidance subscale and the WAI-SR total scale (*r*=-0.25; 95%CI, -0.65, 0.21); or the WAI-SR Task (*r*=-0.155; 95%CI, -0.63, 0.40), Goal (*r*=-0.20; 95%CI -0.61, .26) and Bond (*r*=-0.28; 95%CI, -0.58, 0.06) subscales.

There were no significant associations between the informant-report PAM anxiety subscale and the WAI-SRT total scale (*r*=0.22; 95%CI -0.39, .61); or the WAI-SRT Task (*r*=0.34; 95%CI -0.19, 0.67), Goal (*r*=0.28; 95%CI, (-0.23, 0.64) and Bond (*r*=-0.06; 95%CI, -0.63, 0.40) subscales. There were also no significant associations between the informant-report PAM avoidance subscale and the WAI-SRT total scale (*r*=-0.263; 95%CI, -0.57, 0.05); or the WAI-SRT Task (*r*=-0.12; 95%CI, -0.52, 0.21), Goal (*r*=-0.278; 95%CI, -0.61, 0.04) and Bond (*r*=-0.16; 95%CI, -0.51, 0.19) subscales.

Self-Rated Attachment Security and Ward Climate: There were no significant associations between the self-report PAM anxiety subscale and the EssenCES total scale (*r*=0.06; 95%CI, -0.39, 0.39); or the EssenCES Therapeutic Hold (*r*=-0.04; 95%CI, -0.37, 0.27), Patient Cohesion and Mutual Support (*r*=0.14; 95%CI, -0.32, 0.46) and Experienced Safety (*r*=0.03; 95%CI, -0.48, 0.43) subscales. There were also no significant associations between the self-report PAM avoidance subscale and the EssenCES total scale (*r*=-0.24; 95%CI, -0.67, 0.31); or the EssenCES Therapeutic Hold (*r*=-0.22; 95%CI, -0.47, 0.07), Patient Cohesion and Mutual Support (*r*=-0.26; 95%CI, -0.713, 0.29) and Experienced Safety (*r*=-0.04; 95%CI, -0.49, 0.46) subscales.

Informant-rated Attachment Security and Ward Climate: There were no significant associations between the informant-report PAM anxiety subscale and the EssenCES total

scale (*r*=0.19; 95%CI, -0.19, 0.53); or the EssenCES Therapeutic Hold (*r*=0.26; 95%CI, -0.06, 0.61), Patient Cohesion and Mutual Support (*r*=0.23; 95%CI, -0.14, 0.57) and Experienced Safety (*r*=-.05; 95%CI, -0.45, 0.34) subscales. There were also no significant associations between the informant-report PAM avoidance subscale and the EssenCES total scale (*r*=-0.13; 95%CI, -0.45, 0.20); or the EssenCES Therapeutic Hold (*r*=-0.11; 95%CI, -0.51, 0.30), Patient Cohesion and Mutual Support (*r*=-0.15; 95%CI, -0.46, 0.21) and Experienced Safety (*r*=0.04; 95%CI, -0.38, 0.35) subscales.

Service Attachment and Ward Climate: In line with our fourth hypothesis, we found a significant moderate correlation between the SAQ and the EssenCES Therapeutic Hold subscale (*r*=0.49; 95%CI, 0.18, 0.73); suggesting that higher ratings of therapeutic hold were associated with higher ratings of service attachment. There were no significant associations between the SAQ and the EssenCES total scale (*r*=0.250; 95%CI, -0.19, 0.75); or the EssenCES Patient Cohesion and Mutual Support (*r*=0.21; 95%CI, -0.22, 0.68) and Experienced Safety (*r*=-0.06; 95%CI, -0.41, 0.35) subscales.

Self-Rated Attachment Security and Recovery: In line with our fifth hypothesis, we found a significant moderate negative correlation between the SAFER and the self-report PAM avoidance subscale (*r*=-0.51; 95%CI, -0.74, -0.23); suggesting that higher attachment avoidance was associated with lower self-rated recovery. There was no significant association between the SAFER and the self-report PAM anxiety subscale (*r*=-0.17; 95%CI, -0.60, 0.20).

Informant-Rated Attachment Security and Recovery: There were no significant associations between the SAFER and the informant-report PAM anxiety subscale (*r*=0.25; 95%CI, -0.23, 0.65) or the informant-report PAM avoidance subscale (*r*=-0.15; 95%CI, -0.50, 0.21).

Post-hoc Analysis:

Further analysis was conducted to evaluate whether specific sample characteristics, including legal status (e.g. type of section), transfer status (e.g. long-term treatment, awaiting transfer to the community or lower security) and the type of ward in which the participants' inhabited (e.g. acute assessment or rehabilitation) had any effect on the participants'

relationship with the service (appendix 2.20). There were no significant effects of legal status, transfer status or ward type on the participants' self-rated service attachment and working alliance.

Discussion

The primary aim of this research was to determine the extent to which service-users' and their keyworkers within forensic mental-health services agreed about the service-users' attachment style. The secondary aims were to explore the relationships between self- and informant-rated attachment security and attachment to services, strength of the therapeutic alliance, perceptions of the ward environment and recovery-based values. In order to evaluate these relationships, a cross-sectional correlational study was conducted with 22 service-user participants and 19 keyworker participants from low and medium secure forensic hospitals. The primary hypothesis was that there would be a strong correlation between self- and informant-rated attachment security. Secondary hypotheses were that there would be correlations between self- and informant-rated attachment security and service attachment as measured by the SAQ, working alliance as measured by the WAI-SR and the WAI-SRT, ward climate evaluations as measured by the EssenCES and recovery as measured by the SAFER. It was also hypothesised that there would be a correlation between ward climate evaluations and service attachment.

We observed strong agreement between service-users self-ratings and keyworkers informant-ratings on the PAM anxiety subscale. By contrast, there was poor agreement between service-users and their keyworkers on the PAM avoidance subscale. These results indicate better recognition of attachment anxiety than attachment avoidance in service-users amongst key-working staff within forensic mental health services. There was a significant positive correlation between the SAQ and the EssenCES Therapeutic Hold subscale. This indicated that more positive service-user perceptions of the support they receive from staff were associated with greater attachment to services. There was a significant negative correlation between the self-rated PAM avoidance subscale and the SAFER. This indicated that lower service-user attachment avoidance was associated with greater capacity to live in a way consistent with recovery-based values.

There were no significant associations between the SAFER and the self-and informant-rated PAM anxiety subscale, or the informant-rated avoidance subscale. There were also no other

significant associations between the SAQ and EssencES total or subscales; no significant associations between the PAM self- or informant-versions and the EssenCES total or subscales; or between the PAM self- and informant versions and the SAQ. However, there was one interesting finding regarding attachment avoidance and the SAQ. Although non-significant, the effect-size indicated a small to moderate negative association (*r*=-0.31). This effect-size is slightly higher than the significant effect-size reported by Campbell et al. (2014), whereby they found a negative association between service-attachment and avoidant attachment (*r*=-0.23) in a forensic sample. The results would also be in line with the findings of Blackburn et al. (2010) who found that in an adult psychiatric sample, greater attachment insecurity was associated with poorer service attachment (*r*=-0.39). The small sample size and the higher than expected variance within the sample (indicated by wide confidence-intervals) may indicate that this study did not have sufficient power to detect this correlation.

Lastly, there were no significant associations between the PAM self- or informant-rated versions and the WAI-SR and WAI-SRT. However, there were some interesting findings within the correlations noted. Firstly, although non-significant, there were small to moderate negative correlations between the PAM informant-rated avoidance subscale and the WAI-SR (*r*=-0.25) and the WAI-SRT (*r*=-0.26); indicating that lower informant-rated attachment avoidance may be associated with a better self-rated and a better informant-rated working alliance. Additionally, the weak non-significant correlations between the PAM self-rated avoidance subscale and the WAI-SR and WAI-SRT were both negative correlations. This also suggests that from a service-user perspective, greater attachment avoidance may relate to a poorer working alliance. However, several factors may have impacted on the significance and the magnitude of scores within the current study. As discussed above, the small sample size and higher expected variance in the sample, indicate that the study may not have been sufficiently powered to detect all correlations. Additionally, it was noted that some service-user participants seemed more susceptible to demand characteristics of the setting, and it was thought that numerous service-users actively presented a more positive relationship with their keyworker than may have been the case, perhaps impacting the reliability of these specific findings.

This study was designed to address gaps in the literature and in the clinical application of attachment theory within forensic mental health services, in relation to the recognition of service-users' attachment amongst staff in forensic services and the relationships between

attachment and variables associated with engagement and recovery. The novel finding that staff in forensic services were better at recognising attachment anxiety than attachment avoidance in service-users is in keeping with the results of a study conducted in an adult mental health setting (Arbuckle et al., 2012), in which there was a strong association between informant-rated and self-rated attachment anxiety, and a weak association between informant-rated and self-rated attachment avoidance. These results can be grounded within the existing literature on the clinical presentation of individuals with insecure attachment styles. Research suggests that individuals greater in attachment anxiety report more psychiatric symptoms (Dozier & Lee, 1995), more actively engage in help-seeking (Vogel & Wei, 2005) and display greater treatment adherence (Kvrjic et al., 2011). By contrast, individuals higher in attachment avoidance disclose less, make poorer use of treatment and are more rejecting of others (Dozier, 1990). Research has also shown that individuals higher in avoidant attachment have more negative symptoms (Gumley et al., 2014). Indeed, one explanation could be that staff misattribute attachment avoidance to negative symptomatology. In line with this, it could be that the more externalising nature of individuals with attachment anxiety leads to more readily discernible attachment-related affective and behavioural responses. It could also be that increased help-seeking leads to more time spent supporting and intervening with these individuals and subsequently a better knowledge and understanding of their presentation. Conversely, these findings suggest that building therapeutic rapport to understand and support individuals with attachment avoidance, who may be minimising distress and not seeking support is feasibly a considerable challenge for staff, who may understandably under-estimate the relational-needs of such service-users. This is of particular relevance to a forensic mental health population, where psychosis is a dominant diagnosis and in which evidence suggests a higher avoidant-dismissing attachment style is prevalent (MacBeth et al., 2011). This finding provides a framework from which to consider staff support, training and supervision within forensic services.

Additionally, the finding that the staff-patient relationship aspect of ward climate was associated with greater service attachment, further amplifies the importance of the need for staff to be able to effectively understand and support patients for promotion of engagement. This finding is consistent with a previous study which also found that the support provided by staff was the most important aspect of ward climate evaluations for service attachment (Campbell et al., 2014). Relationships are important in determining outcomes in psychosis, and the concept of relatedness accordingly deemed a key component within the Good Lives Model, which provides a strengths-based recovery framework for offender rehabilitation

(Ward & Brown, 2004). Discordantly, this current study points to poorer-rated working alliance in individuals with attachment avoidance and indeed, this is in line with earlier studies in non-forensic settings, that have demonstrated significant associations between attachment avoidance and more service-user and staff-rated difficulties in the therapeutic relationship (Berry et al., 2008; Kvrgic et al., 2011). This has clear adverse implications for service attachment in individuals with an avoidant attachment style.

Furthermore, consistent with the study by Baxter et al. (2016), this study also demonstrates that attachment avoidance has a negative association with perceptions of recovery. These findings are also supported by research which found that attachment avoidance was associated with greater hopelessness (Ringer et al., 2014) and was an independent predictor of severity of psychiatric symptoms and functional ability at twenty-four months (Berry et al., 2015). Evidence demonstrates that more recovery orientation is associated with a better quality of therapeutic alliance (Kvrjic et al., 2012), suggesting an interactive process between one's optimism that recovery is attainable and the ability to engage in meaningful therapeutic relationships. Within a forensic mental health setting, there is an obvious challenge in striking a balance between risk management, whereby protection of the public is paramount, and consistently meeting the recovery-based values of service-users, in order to enhance their wellbeing. However, working with forensic service-users within a recovery-orientated framework (e.g. the 'Good Lives Model') to facilitate the establishment of shared, recovery-based goals, may well facilitate more meaningful staff- and service-engagement, to ultimately improve service-user outcomes.

Strengths of the study: To the authors knowledge, no other study has investigated the strength of agreement between self- and informant-rated attachment style amongst service-users' in forensic services. This provides an important contribution to the evidence base regarding the application of attachment theory to forensic mental health service-users and services. In addition, the finding that staff are better able to recognise attachment anxiety than attachment avoidance has important clinical implications with regards to staff training, support and supervision and subsequently patient outcomes.

This study has replicated the findings of two other studies which have investigated factors associated with attachment style within a forensic setting (Campbell et al., 2014; Baxter et al., 2016), which suggests reliability of the current findings. It also strengthens the evidence

base with regards to the associations between staff-patient relationships and service attachment and between attachment avoidance and self-rated recovery.

Limitations: The sample size was smaller than planned, based on power calculations conducted *a priori*. The confidence-intervals found were much wider than anticipated, indicating greater variance within the sample obtained. Both factors suggest that the study did not have sufficient power to detect all hypothesised correlations. The informant-rated measures (PAM Informant-version and WAI-SRT) were also not returned for every participant, which further impacted the sample size for the primary analysis, on which the *a priori* calculation was based.

Although the effects of legal status and transfer status were not found to have a significant effect on participants ratings of self-rated SAQ and WAI-SR, it should still be considered possible that these factors may have impacted on participants responding. This may be reflected in the lower than expected magnitude of the correlations and lack of significance of the results. It is thought that participants' may have provided more positive ratings than may have been the case due to concerns on how this may impact upon their progress and/or transfer status. It is also thought that transfer status may have impacted on recruitment to the study with participants citing concerns that participation may impact on pending transfers to lower levels of security and the community. Additionally, all participants' in the study were under section, which previous research has found to be a significant independent associate of attachment to services, with those under section in general psychiatric settings reporting poorer attachment to services (Blackburn et al., 2010). The lack of consistency with these results may provide further evidence that participants presented more positive ratings of SAQ than may truly be the case.

Several characteristics of the service-user sample were not recorded, including: length of stay in a forensic hospital and the type of offending behaviour. These data were not recorded due to the potential identifiable nature of these characteristics within a small and vulnerable client group. In addition, the length of time that keyworkers had known service-users was not recorded because this was not planned prior to data collection. There is potential that this may have been a source of unsystematic variance within the strength of agreement between service-users' and keyworkers'.

Implications for future research: To determine the generalizability of this study's findings regarding the strength of agreement between self- and informant-rated attachment; and to detect hypothesised correlations between attachment style, service attachment, working alliance and ward climate, larger sample sizes are required. It would also be useful to ascertain the strength of agreement and the variables associated with attachment in a high secure forensic setting. It would be of interest to investigate the factors which create therapeutic hold in individuals high in attachment avoidance, perhaps initially by case-study design. It would also perhaps be of interest to investigate whether there are differences between the recovery-based values of individuals with avoidant and anxious attachment styles and whether this relates to engagement and therapeutic alliance.

Conclusions: Despite the limitations, this study is unique in highlighting better recognition of attachment anxiety than attachment avoidance amongst staff within forensic mental health services. The findings also provide further evidence of associations between the support received by staff and greater service attachment, and between an avoidant attachment style and poorer experiences of recovery. This provides a useful framework for forensic mental health services to develop training and support for staff to aid recognition of the attachment needs of individuals with avoidant attachment styles. A focus on relational interventions to enhance and maintain the constructive and nurturing aspects of staff support, and a recovery-focus to cultivate optimism for change may have important interactive implications for service-user engagement and recovery.

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Chapter 3: Appendices

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Chapter 1: Systematic Review

Chapter 2: Major Research Project

Appendix 1.1: Authors Guidelines for Submission

Schizophrenia Bulletin

2015 Impact Factor: 7.757

5 Year Impact Factor: 8.601

2015 Ranking: 6/140 in Si: Psychiatry

Aims and Scope

Schizophrenia Bulletin seeks to review recent developments and empirically based hypotheses regarding the etiology and treatment of schizophrenia. We view the field as broad and deep, and will publish new knowledge ranging from the molecular basis to social and cultural factors. We will give new emphasis to translational reports which simultaneously highlight basic neurobiological mechanisms and clinical manifestations. Much of the *Bulletin* content will be invited reviews and manuscripts organized as a theme by special guest editors. Also, the *Bulletin* will carry unsolicited manuscripts of high quality that report original data related to theme issues or where the *Bulletin* can provide a special venue for a major study.

Manuscript Preparation

Manuscript Length: Manuscripts should be concisely worded and should not exceed 5,000 words for major reviews, 4,000 words for regular articles, or 2,500 words for invited special features. The word count should include the abstract, text body, figure legends, and acknowledgments and must appear together with the abstract word count on the title page of the manuscript. Supplementary data, including additional methods, results, tables, or figures will be published online.

Abstract: Provide a summary of no more than 250 words describing why and how the study, analysis, or review was done, a summary of the essential results, and what the authors have concluded from the data. The abstract should not contain unexplained abbreviations. Up to six key words that do not appear as part of the title should be provided at the end of the abstract.

Main Text: Unsolicited original manuscripts reporting novel experimental findings should be comprised of these sections, in this order: Abstract, Introduction, Methods, Results, Discussion, Acknowledgments, References, and Figure Legends. Review articles must contain an abstract; however, the body of the text can be organized in a less structured format.

Number pages consecutively beginning with the title page. Spelling should conform to that used in *Merriam-Webster's Collegiate Dictionary*, eleventh edition.

References: Authors are encouraged to be circumspect in compiling the reference section of their manuscripts. Please note: references to other articles appearing in the same issue of the journal must be cited fully in the reference list. Each reference should be cited in consecutive numerical order using superscript arabic numerals, and reference style should follow the recommendations in the *American Medical Association Manual of Style*, 10th edition, with one exception: in the reference list, the name of all authors should be given unless there are more than 6, in which case the names of the first 3 authors are used, followed by "et al." Manuscripts in which the references do not follow this format will be returned for retyping.

Figures and Tables: Full length manuscripts including regular and invited theme articles should contain no more than a combined total of 5 tables and figures. Theme introductions and special features are limited to 2 tables or figures (total). Figures and tables must be referred to using arabic numbers in order of their appearance in the text (e.g., Figure 1, Figure 2, Table 1, Table 2, etc.).

Appendix 1.2: Conceptual Overlap of Attachment Domains

Developmental Tradition	**Social Psychology Tradition**
(Main et al. 1985)	**(Bartholomew et al. 1991)**
Measurement:	
Attachment 'States of Mind' *e.g. AAI*	*Self-reported attachment experiences* *e.g. PAM, RQ*
Dimension Classifications:	
1) Secure-Autonomous:	**Secure:**
Open and free to explore attachment-related experiences	High self-worth
At ease with imperfections in the self	Believes others are responsive
Avows missing, needing and depending on others	Comfortable with autonomy and forming close relationships with others
2) Insecure-Dismissing (Deactivating):	**Avoidant (Dismissing):**
Self positively described as strong or independent	Overt positive self-view
Little or no articulation of hurt or distress	Denies feelings of subjective distress
Little or no articulation of needing or depending on others	Dismisses the importance of close relationships
Minimises descriptions of negative experiences	Reluctance to self-disclose
3) Insecure-Preoccupied (Hyperactivating):	**Anxious (Preoccupied):**
Passive or angry preoccupation with experiences of being parented	Negative self-view
Excessive blaming of self or parents	Sense of self-worth dependent on approval and acceptance of others
Attempts to seek agreement from others regarding parents faults	Excessive distress if attachment figures unavailable or unresponsive
	4) Fearful:
	Negative self-view and lack of trust in others
	Apprehension about close relationships
	High levels of distress

Appendix 1.3: Summary of Studies Included in the 2014 Systematic Review (Gumley et al., 2014)

Study	Number of Participants	Age (years)	Gender	Attachment Measure	Attachment Measurement Constructs	Key Outcome Measures	Results
Arbuckle et al. (2012)	24	M 32.4 (SD= 8.7)	15 m/ 9 f	PAM	Anxiety Avoidance	PSYRATS CDSS	Attachment avoidance correlated with auditory hallucinations. Self-reported attachment avoidance of team was associated with delusions. Association between depression & avoidance.
Berry et al. (2008)	96	M 44 (SD= 12.8)	66 m/ 30 f	PAM	Anxiety, avoidance	IIP-32, SBS, WAI PANSS	Interpersonal problems related to attachment. Attachment anxiety related to attention seeking, & avoidance related to hostility. Attachment avoidance related to therapeutic alliance problems. Total symptoms correlated with anxiety & avoidance. Avoidance related to positive & negative symptoms & paranoia.
Berry et al. (2009)	80	M 44 (SD= 13.3)	55 m/ 25 f	PAM	Anxiety, avoidance	PANSS, CDSS, PBI, THQ	Associations between attachment anxiety & parental over-protection, & attachment avoidance & parental care. Higher attachment anxiety in childhood trauma with significant others. Depression associated with greater attachment anxiety. Attachment was not associated with number of hospital admissions or length of illness.
Berry et al. (2012)	73	M 39.1 (SD= 11.3)	59 m/ 14 f	PAM	Anxiety, avoidance	PSYRATS PANSS	Attachment avoidance related to critical, rejecting & threatening voices. Attachment anxiety related to voice severity & distress.
Blackburn et al. (2010)	78	M 39 (SD= 13.8)	62 m/ 16 f	PAM SAQ	Anxiety, avoidance, security	PSYRATS CDSS	Attachment anxiety related to treatment adherence & positive clinician input. Attachment avoidance related to non-supportive clinician input. Attachment avoidance related to positive symptoms. Depression associated with anxiety & avoidance
Couture et al. (2007)	96	M 23.7 +/- 4.7	63 m/ 33 f	ASQ	Autonomous, avoidant,	CASIG	Attachment anxiety associated with number of traumatic events, interpersonal trauma and severity of post traumatic symptoms.

					preoccupied, ambivalent		
Dozier 1990	42	M 35 (21- 60)	No data	AAI Q-sort	Security, anxiety, avoidant, preoccupied	Clinician ratings	Associations between attachment to services & security. Number of hospital admissions negatively correlated with attachment to services. Lower attachment to services in those under section. Security to services associated with lower depression. Attachment to service not associated to psychiatric symptoms.
Dozier et al. (1994)	76	For n= 27 M 35 (23- 48)	45 m/ 31 f	AAI Q- sort	Secure, insecure, hyper-activating, deactivating.	Intervention interview	Deactivating clients reported greater general life satisfaction than clients rated as less deactivating. Deactivating clients reported more life satisfaction working with less deactivating case managers. Less deactivating case managers formed stronger alliances with more deactivating clients. No significant effects between hospitalisation and attachment were evident. No association between attachment security & depression.
Dozier and Lee (1995)	As above	As above	As above	AAI Q-sort	Secure, insecure, hyper- activating, deactivating.	BSI, QoL	Compliance was associated with attachment security. Attachment avoidance was associated with reduced likelihood to seek help and poor use of treatment. Attachment preoccupation was associated with more self-disclosure.
Dozier et al. (2001)	34	M 34 (21- 46)	24 m/ 10 f	AAI Q-sort	Security, insecurity, hyper-activation, deactivation	Problem Solving task	Deactivating clients were off task more, were more rejecting off significant others, and were more confused following interactions with case managers. The significant others of deactivating clients felt less supported and more saddened after tasks.
Dozier et al. (1991)	40	M 34 (21- 51)	27 m/ 13 f	AAI Q-sort	Security, anxiety, repression, preoccupation	FMSS, BSI	Insecure attachment & deactivating strategies rated as more symptomatic. Secure attachment rated as having fewer delusions & deactivating strategies as looser in thinking. Secure rated as less delusional, less likely to hear voices & less suspicious. Dismissing rated as more delusional, likely to hear voices & suspicious.

							Those able to evaluate attachment & use hyper-activating strategies rated as less psychotic.
Kvrgic et al. (2011)	127	M 44 (SD= 11.5)	84 m/ 43 f	PAM	Anxiety, avoidance	PANSS, CDSS, BDI-II, SES, STAR	Avoidant attachment were off task significantly more than others, were more rejecting of their significant others and were more confused following interactions with case managers. Their significant others also felt less supported and saddened after tasks.
Macbeth et al. (2010)	34	M 23.32 (SD= 7.6)	20 m/ 14 f	AAI	Secure, insecure, autonomous, dismissing, unresolved preoccupied,	RF, PAS SES, PANSS, WHOQOL-BREF	Insecure attachment was not associated with familial EE. Over-involved families associated with higher levels of repression & preoccupation. Sample was less secure and more repressing than other samples. Those with a schizophrenia diagnosis were more repressing than affective disorders. Those with repressing strategies reported fewer psychiatric symptoms.
Mulligan and Lavender (2010)	73	Males: M 39 (SD= 10.49) Female: M 48.63 (SD=14.5)	55 m/ 18 f	ASQ	Secure, insecure	PBI RSQ	Secure attachment displayed significantly higher reflective function than individuals with avoidant attachment. Preoccupied attachment had significantly higher RF than individuals with avoidant attachment. Association between attachment & engagement with service. Secure attachment associated with better engagement than avoidant attachment but there was no difference between secure and preoccupied attachment. No differences between attachment classification & positive or negative symptoms. No differences between attachment & quality of life.
Picken et al. (2010)	110	Md 38 (18- 61)	99 m/ 11 f	PAM	Anxiety, avoidance	PDS	Avoidance & preoccupied attachment associated with lower quality of life. Discomfort with closeness, need for approval & preoccupation with relationships associated with lower quality of life. Confidence in relationships associated with greater quality of life.

Ponizovsky et al. (2007)	30	M 38.4 (SD= 10.2)	30 m	AAQ	Secure, avoidant, anxious/ ambivalent	PANSS	Association between high maternal care and secure attachment. Maternal care associated with discomfort with closeness, need for approval & preoccupation with relationships. A negative association between paternal care & discomfort with closeness. Maternal overprotection associated with greater need for approval & preoccupation. Paternal overprotection associated with discomfort with closeness. Recovery style related to the relationships as secondary to achievement scale
Ponizovsky et al. (2011)	100	M 40.3 (SD= 11.2)	70 m/ 30 f	RQ	Secure, fearful, preoccupied, dismissing-avoidant	PANSS, GHQ	Avoidant or anxious/ ambivalent attachment had greater severity of positive symptoms. Less positive symptoms related to secure attachment. Avoidant attachment had more severe negative symptoms.
Tait et al. (2004)	50	M 33.8 (SD= 12.0)	31 m/ 19 f	RAAS	Closeness, dependency, anxiety, security	PBI SES RSQ PANSS	Delusion severity was predicted by preoccupied & fearful avoidant attachment. Persecution/ suspiciousness were predicted by preoccupied & fearful avoidant attachment. Hallucinations were significantly predicted by fearful avoidant attachment.
Tyrell et al. (1999)	54	M 41 (25-62)	22 m/ 32 f	AAI Q-sort	Deactivating, hyper- activating, autonomous, non-autonomous	QoL WAI GAF BDI	Associations between parental care & dependence, & closeness in relationships. Parental abuse inversely related to dependence & closeness. Rejection anxiety correlated with parental abuse & lack of care. Insecure attachment was associated with likelihood to disengage & related to avoidant coping style. Sealing over associated with more anxiety about interpersonal rejection & lower comfort with closeness & dependence. Attachment anxiety related to positive symptoms.

Quijada et al. (2012)	31	M 15.7 (SD=3.1) Range=12-25	23 m/ 8f	RQ	Secure, fearful, preoccupied, dismissing-avoidant	PANSS GAF PSA	Preoccupied attachment correlated with psychotic symptoms Fearful attachment correlated with disorganisation symptoms Secure, preoccupied and dismissing predicted change in psychotic symptoms over 6-months Secure attachment predicted change in disorganisation Secure attachment predicted change in functioning
Owens et al. (2012)	49	M 38.1 (SD=11/55)	42m/7f	PAM	Anxiety / Avoidance	WAI PANAS PANSS DERS	Attachment anxiety and therapeutic alliance were significant predictors of emotion regulation problems, but not attachment avoidance, negative emotion or psychotic symptoms.
Kvrgic et al. (2012)	156	M 44.5 (SD=11.67)	102m/54f	PAM	Anxiety / Avoidance	STAR RAS SED BIS PANSS BDI-II MGAF	Hierarchical multiple regressions revealed that more recovery orientation, less self-stigma, and more insight independently were associated with a better quality of the therapeutic alliance. Clinical symptoms, adult attachment style, age, and the duration of treatment by current therapist were unrelated to the quality of the therapeutic alliance.

BDI Beck Depression Inventory; BDI-II Beck Depression Inventory-II ; BIS Birchwood Insight Scale; BSI Brief Symptom Inventory; CASIG Client Assessment of Strengths Interests and Goals; CDSS Calgary Depression Scale for Schizophrenia; DERS Difficulties in Emotion Regulations Scale; FMSS Five Minute Speech Segment; GAF Global Assessment of Functioning; GHQ General Health Questionnaire; IIP-32 Inventory of Interpersonal Problems-II; MGAF Modified Global Assessment of Functioning; PANAS Positive and Negative Affect Scale; PANSS Positive and Negative Syndrome Scale; PAS Premorbid Adjustment Scale; PBI Parental Bonding Instrument; PDS Posttraumatic Stress Diagnostic Scale; PSA Premorbid Social Adjustment; PSYRATS Psychotic Symptoms Rating Scale; QoL Quality of Life Interview; SES Service Engagement Scale; RAS Recovery Assessment Scale RF Reflective Functioning; RSQ Recovery Style Questionnaire; SBS Social Behaviour Scale; SED Self-Esteem Decrement Due to Self-Stigma subscale of Self-stigma in Mental Illness Scale; STAR Scale to Assess the Therapeutic Relationship; THQ Trauma History Questionnaire; WAI Working Alliance Inventory; WHOQOL- BREF World Health Organisation Quality of Life- Brief Version.

Appendix 1.4: Summary of Studies Allocated to Each Model of Attachment in Psychosis

Model of Attachment in Psychosis	Eligible Studies			
	Primary Allocation		Secondary Allocation	
	Study Author (Reference Number)	Eligibility Criteria Met	Study Author (Reference Number)	Eligibility Criteria Me
Developmental Model: ***Eligibility Criteria:*** Studies in which attachment security is investigated in relation to developmental processes (e.g. mentalisation and studies using the AAI) and associations with early experiences (e.g. parental bonding) and behavioural, affective, interpersonal and symptomatic outcomes.	Mulligan & Lavender[39]	Experiences of parental bonding, recovery style	Berry et al[8]	Experiences of parental bonding
	Macbeth et al[38]	Mentalisation	Ponizovsky et al[36]	Onset of psychosis, symptomatic recovery
	McLeod et al[17]	Mentalisation	Ponizovsky et al[24]	Onset of psychosis, symptomatic recovery
	MacBeth et al[20]	Mentalisation		
	Pos et al[25]	Mentalisation		
	Huguelet et al[28]	Onset of psychosis, Impact of attachment to a spiritual figure on symptomatic recovery and coping		
	Gumley et al[16]	Symptomatic recovery		
	Tait et al[40]	Recovery Style		
	Owens et al[41]	Emotion Regulation		
	Rieben et al[27]	Impact of attachment to a spiritual figure on symptomatic recovery and coping		
Cognitive Model: ***Eligibility Criteria:*** Studies in which self-reported attachment is investigated in relation to positive and negative symptoms of psychosis and general psychopathology symptoms; appraisal of voices; and behavioural and emotional outcomes.	Ponizovsky et al[24]	Psychotic symptoms, general psychopathology symptoms, quality of life	Van Dam et al[33]	Psychotic symptoms
	Berry et al[35]	Psychotic symptoms, interpersonal difficulties	Palmier Claus et al[22]	Psychotic symptoms, depression
	Ringer et al[29]	Psychotic symptoms, depression, emotional distress, self-esteem	Berry et al[8]	Depression
	Ponizovsky et al[36]	Psychotic symptoms	Kvrgic et al[44]	Depression
	Ponizovsky et al[37]	Psychotic symptoms, general psychopathology symptoms, emotional distress		

	Korver-Nieberg et al[19]	Psychotic symptoms, general psychopathology symptoms		
	Strand et al[31]	Psychotic symptoms, general psychopathology symptoms, interpersonal difficulties, depression		
	Bo et al[11]	Premeditated aggression		
	Korver-Nieberg et al[18]	Psychotic symptoms		
	Wickham et al[33]	Psychotic symptoms, self-esteem		
	Quijada et al[42]	Changes in symptoms over time		
	Quijada et al[26]	Changes in symptoms over time		
	Berry et al[10]	Changes in symptoms over time		
	Berry et al[43]	Appraisal of voices		
	Robson et al[30]	Appraisal of voices		
	Gajwani et al[15]	Social anxiety, depression		
	Michail et al[21]	Social anxiety		
	Couture et al[45]	Quality of life		
	Boyette et al[12]	Quality of life		
Systemic Model: ***Eligibility Criteria:*** Studies in which attachment was investigated in relation to the quality of relationships (e.g. with therapists, mental health services and intimate relationships).	Dozier[46]	Service engagement and treatment adherence	Macbeth et al[38]	Service engagement and treatment adherence
	Kvrgic et al[44]	Treatment adherence, quality of the therapeutic alliance	Berry et al[35]	Quality of the therapeutic alliance
	Blackburn et al[47]	Service attachment		
	Campbell et al[13]	Service attachment, perceptions of ward milieu		
	Dozier et al[49]	Quality of the therapeutic alliance		
	Tyrell et al[50]	Quality of the therapeutic alliance		
	Cavelti et al[14]	Quality of the therapeutic alliance		
	Kvrgic et al[48]	Quality of the therapeutic alliance		
	Arbuckle et al[51]	Consistency of attachment style across relationships		

	Dozier et al[52]	Consistency of attachment style across relationships		
	Dozier et al[53]	Familial attachment and coping		
	Pillay et al[23]	Perceptions in intimate relationships		
	Dozier & Lee[54]	Discrepancies between self- and system-rated symptoms		
Trauma Model: ***Eligibility Criteria:*** Studies in which attachment security is investigated in relation to associations between attachment and previous experiences of trauma (childhood and adulthood) and outcomes (e.g. post-traumatic stress symptoms).	Berry et al[8]	Childhood trauma	Huguelet et al[28]	Childhood trauma
	Van Dam et al[32]	Childhood trauma		
	Palmier Claus et al[22]	Childhood trauma		
	Berry et al[9]	Previous trauma, post-traumatic stress symptoms		
	Picken et al[55]	Previous trauma, post-traumatic stress symptoms		

Appendix 2.1: Authors Guidelines for Submission

Criminal Behaviour and Mental Health

2015 Impact Factor: 1.446

2015 Ranking: 19/57 in Criminology and Penology; 82/136 in Psychiatry (Social Science)

Aims and Scope

Criminal Behaviour & Mental Health – CBMH – aims to publish original material on any aspect of the relationship between mental state and criminal behaviour. Thus, we are interested in mental mechanisms associated with offending, regardless of whether the individual concerned has a mental disorder or not. We are interested in factors that influence such relationships, and particularly welcome studies about pathways into and out of crime. These will include studies of normal and abnormal development, of mental disorder and how that may lead to offending for a subgroup of sufferers, together with information about factors which mediate such a relationship. We are particularly keen to attract treatment studies and studies evaluating the impact of a range of interventions and new services designed to increase public safety as well as the safety and well-being of the perpetrators of crime and their victims.

Author Guidelines

Manuscript style. All submissions must have a title, be printed on one side of A4 paper with numbered pages, be double-line spaced and have a 3cm wide margin all around. Illustrations and tables must be printed on separate sheets, and not incorporated into the text.

- The **title** page must list the full title, short title, names and affiliations of all authors. Give the full address, including e-mail, telephone and fax, of the author, who is to check the proofs.
- Include the name(s) of any **sponsor(s)** of the research contained in the paper, along with **grant number(s)**.
- The article will be sent for peer review without the above identifying details.
- **Substantive research articles** should not exceed **3000** words for the main body of the text and contain no more than **4 tables or figures**. A structured **abstract** should be supplied and must not exceed **200** words. It should be subdivided into the following headings: background, aims/hypotheses, methods, results, conclusions/implications for (clinical) practice.

Reference style. References should be arranged alphabetically. Where reference is made to more than one work by the same author, published in the same year, identify each citation in the text as follows: (Collins, 1998a), (Collins, 1998b). Where multiple authors are listed in the reference, please cite in the text as 'Maxwell et

al. (1999)'. All references must be complete and accurate. Where possible the DOI for the reference should be included at the end of the reference. Online citations should include date of access.

Appendix 2.2: PAM Self-Report

PAM self-report

We all differ in how we relate to other people. This questionnaire lists different thoughts, feelings and ways of behaving in relationships with others. Thinking generally about how you relate to other key people in your life, please use a tick to show how much each statement is like you. Key people could include family members, friends, partner or mental health workers.

There are no right or wrong answers

	Not at all	**A little**	**Quite a bit**	**Very much**
1. I prefer not to let other people know my 'true' thoughts and feelings.	(.0.)	(.1.)	(.2.)	(.3.)
2. I find it easy to depend on other people for support with problems or difficult situations.	(.3.)	(.2.)	(.1.)	(.0.)
3. I tend to get upset, anxious or angry if other people are not there when I need them.	(.0.)	(.1.)	(.2.)	(.3.)
4. I usually discuss my problems and concerns with other people.	(.3.)	(.2.)	(.1.)	(.0.)
5. I worry that key people in my life won't be around in the future.	(.0.)	(.1.)	(.2.)	(.3.)
6. I ask other people to reassure me that they care about me.	(.0.)	(.1.)	(2.)	(.3.)
7. If other people disapprove of something I do, I get very upset.	(.0.)	(.1.)	(.2.)	(.3.)
8. I find it difficult to accept help from other people when I have problems or difficulties.	(.0.)	(.1.)	(.2.)	(.3.)
9. It helps to turn to other people when I'm stressed.	(.3.)	(.2.)	(.1.)	(.0.)

	Not at all	A little	Quite a bit	Very much
10. I worry that if other people get to know me better, they won't like me.	(.0.)	(.1.)	(.2.)	(.3.)
11. When I'm feeling stressed, I prefer being on my own to being in the company of other people.	(.0.)	(.1.)	(.2.)	(.3.)
12. I worry a lot about my relationships with other people.	(.0.)	(.1.)	(.2.)	(.3.)
13. I try to cope with stressful situations on my own.	(.0.)	(.1.)	(.2.)	(.3.)
14. I worry that if I displease other people, they won't want to know me anymore.	(.0.)	(.1.)	(.2.)	(.3.)
15. I worry about having to cope with problems and difficult situations on my own.	(.0.)	(.1.)	(.2.)	(.3.)
16. I feel uncomfortable when other people want to get to know me better.	(.0.)	(.1.)	(.2.)	(.3.)

Appendix 2.3: PAM Informant-Report

PAM informant-report

We all differ in how we relate to other people. This questionnaire lists different thoughts, feelings and ways of behaving in relationships with others. Thinking generally about _____ and how he/she relates to other key people in his/her life, please indicate with a tick how much each statement is like him/her. Key people could include his/her family members, friends, partner, mental health workers or other service users.

	Not at all	**A little**	**Quite a bit**	**Very much**
1. _____ denies or minimises the importance of distressing events.	(.0.)	(.1.)	(.2.)	(.3.)
2. _____ asks others for help with his/her problems or difficulties.	(.3.)	(.2.)	(.1.)	(.0.)
3. _____ tends to appear distressed if people are not there when he/she needs them.	(.0.)	(.1.)	(.2.)	(.3.)
4. _____ approaches others to talk about his/her problems and concerns.	(.3.)	(.2.)	(.1.)	(.0.)
5. _____ expresses worries about key people in his/her life not being around in the future.	(.0.)	(.1.)	(.2.)	(.3.)
6. _____ asks for reassurance that other people care about him/her.	(.0.)	(.1.)	(.2.)	(.3.)
7. When other people show disapproval of _____, he/she appears very distressed.	(.0.)	(.1.)	(.2.)	(.3.)

	Not at all	A little	Quite a bit	Very much
8.When _____ has problems or difficulties, he/she finds it difficult to accept help from other people.	(.0.)	(.1.)	(.2.)	(.3.)
9. _____ is easily reassured when he/she is distressed.	(.3.)	(.2.)	(.1.)	(.0.)
10. _____ expresses concerns about other people not liking him/her.	(.0.)	(.1.)	(.2.)	(.3.)
11. When _____ is distressed he/she spends more time on his/her own than in the company of others.	(.0.)	(.1.)	(.2.)	(.3.)
12. _____ frequently expresses concerns about his/her relationships with other people	(.0.)	(.1.)	(.2.)	(.3.)
13. _____ attempts to cope with stressful situations on his/her own.	(.0.)	(.1.)	(.2.)	(.3.)
14. _____ tends to go along with what other people want, even if it means compromising his/her own needs.	(.0.)	(.1.)	(.2.)	(.3.)
15. _____ expresses worries about having to cope with problems and difficult situations on his/her own.	(.0.)	(.1.)	(.2.)	(.3.)
16. When people want to find out more about _____, he/she ends the conversation or changes topic.	(.0.)	(.1.)	(.2.)	(.3.)

Appendix 2.4: SAQ

SERVICE ATTACHMENT QUESTIONNAIRE

Below is a list of 25 statements about mental health services and the experiences people might have whilst receiving them. Please read each item carefully and then respond to each one by indicating how close the statement is to your own experience and feelings about the service you are currently in contact with. Use the following rating scale:

1 = Not at all 2 = Sometimes 3 = Quite often 4 = Always

1	I have somebody who listens attentively to me	1	2	3	4
2	I have regular time with the same person that knows me and my problems	1	2	3	4
3	I feel under pressure to get better and be discharged	1	2	3	4
4	I have a feeling of being looked after	1	2	3	4
5	I have the feeling that I'll be accepted for who I am, whatever I say	1	2	3	4
6	I'm helped to realise that it's not just me – other people have similar problems.	1	2	3	4
7	I don't feel listened to, or taken notice of	1	2	3	4
8	I get frustrated because I have to wait too long to see my key worker/therapist	1	2	3	4
9	I feel confident that support will be provided when I am discharged	1	2	3	4
10	I feel suffocated by the service rather than feeling safe	1	2	3	4
11	I can't relate to/get on with certain people in the service	1	2	3	4
12	It feels like there's a "them and us" attitude from the staff	1	2	3	4
13	I feel that people in the service understand my needs and problems	1	2	3	4
14	I know that the same person is there for me consistently	1	2	3	4
15	I worry that I won't be better within the allocated time and will need longer	1	2	3	4
16	I feel safe within the service	1	2	3	4
17	I don't feel judged, just accepted	1	2	3	4
18	I feel patronised and stigmatised by the service	1	2	3	4
19	I don't feel that people really want to listen to what my problems are	1	2	3	4
20	I worry that I'll be discharged without any follow-up from my key worker/therapist	1	2	3	4
21	I feel confident that if I need more time and help, over longer, that it will be given	1	2	3	4
22	I feel frustrated at my lack of freedom within the service	1	2	3	4
23	I feel I have a partnership with my key worker/therapist and that we work together	1	2	3	4
24	I have the feeling my key worker/therapist is really interested in me and wants to help	1	2	3	4
25	I am made to feel that I am a burden to the service and outstaying my welcome	1	2	3	4

Appendix 2.5: WAI-SR

Working Alliance Inventory – Short Revised (WAI-SR)

Instructions: Below is a list of statements and questions about experiences people might have with their therapy or therapist. Some items refer directly to your therapist with an underlined space -- as you read the sentences, mentally insert the name of your therapist in place of _____ in the text. Think about your experience in therapy, and decide which category best describes your own experience.

IMPORTANT!!! Please take your time to consider each question carefully.

1. As a result of these sessions I am clearer as to how I might be able to change.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

2. What I am doing in therapy gives me new ways of looking at my problem.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

3. I believe___likes me.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

4. ___and I collaborate on setting goals for my therapy.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

5. ___and I respect each other.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

6. ___and I are working towards mutually agreed upon goals.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

7. I feel that___appreciates me.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

8. _____ and I agree on what is important for me to work on.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

9. I feel _____ cares about me even when I do things that he/she does not approve of.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

10. I feel that the things I do in therapy will help me to accomplish the changes that I want.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

11. _____ and I have established a good understanding of the kind of changes that would be good for me.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

12. I believe the way we are working with my problem is correct.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

Appendix 2.6: WAI-SRT

Working Alliance Inventory – Short Revised - Therapist (WAI-SRT)

Instructions: Below is a list of statements about experiences people might have with their client. Some items refer directly to your client with an underlined space -- as you read the sentences, mentally insert the name of your client in place of _____ in the text. IMPORTANT!!! Please take your time to consider each question carefully.

1. ___and I agree about the steps to be taken to improve his/her situation.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

2. I am genuinely concerned for ___'s welfare.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

3. We are working towards mutually agreed upon goals.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

4. ___and I both feel confident about the usefulness of our current activity in therapy.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

5. I appreciate ___ as a person.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

6. We have established a good understanding of the kind of changes that would be good for ___.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

7. ___ and I respect each other.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

8. _____ and I have a common perception of his/her goals.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

9. I respect _____ even when he/she does things that I do not approve of.

①	②	③	④	⑤
Seldom	Sometimes	Fairly Often	Very Often	Always

10. We agree on what is important for _____ to work on.

⑤	④	③	②	①
Always	Very Often	Fairly Often	Sometimes	Seldom

Appendix 2.7: EssenCES

Essen Climate Evaluation Schema (rev. 2010)

			I Agree		
	Not at All	Little	Somewhat	Quite a Lot	Very Much
1. This ward has a homely atmosphere					
2. The patients care for each other					
3. Really threatening situations can occur here					
4. On this ward, patients can openly talk to staff about all their problems					
5. Even the weakest patient finds support from his fellow patients					
6. There are some really aggressive patients on this ward					
7. Staff take a personal interest in the progress of patients					
8. Patients care about their fellow patients' problems					
9. Some patients are afraid of other patients					
10. Staff members take a lot of time to deal with patients					
11. When a patient has a genuine concern, he finds support from his fellow patients					
12. At times, members of staff are afraid of some of the patients					
13. Often, staff seem not to care if patients succeed or fail in treatment					
14. There is good peer support among patients					
15. Some patients are so excitable that one deals very cautiously with them					
16. Staff know patients and their personal histories very well					
17. Both patients and staff are comfortable on this ward					

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Appendix 2.8: SAFER

SAFER: Scale for Assessing the Forensic Experience of Recovery

This questionnaire has 24 statements. Each statement has two parts. The first part asks if a value, activity or experience in your life is important to you. You can answer yes or no. A value is something that you feel is important in your life. Your values can motivate you to behave in a certain way or can influence how you live your life.

If you answer yes, that the value is important to you, there is a second part that asks you to rate how much you feel you are living in a way that is in keeping with that value. There is space beneath each question for you to explain why you have chosen each answer. It is best to complete this with a member of staff so you can talk about your values and your recovery.

Please try to answer each statement. There are no right or wrong answers.

1) I value close relationships with family and friends	**No**		**Yes**	
If yes: I feel I have close relationships with family and friends	**Not at all**	**A little**	**Moderately**	**Very much**
2) I value being able to repair difficult relationships	**No**		**Yes**	
If yes: I feel that I can repair difficult relationships.	**Not at all**	**A little**	**Moderately**	**Very much**

3) I value building new relationships	**No**	**Yes**		
If yes: I feel that I can build new relationships	**Not at all**	**A little**	**Moderately**	**Very much**
4) I value support from fellow patients	**No**	**Yes**		
If yes: I feel supported by fellow patients	**Not at all**	**A little**	**Moderately**	**Very much**
5) I value being part of a community	**No**	**Yes**		
If yes: I feel part of a community	**Not at all**	**A little**	**Moderately**	**Very much**
6) I value having hope for the future	**No**	**Yes**		
If yes: I feel hopeful for the future	**Not at all**	**A little**	**Moderately**	**Very much**

7) I value when others are optimistic about my future	**No**	**Yes**		
If yes: I feel that others are optimistic for my future	**Not at all**	**A little**	**Moderately**	**Very much**
8) I value having things to look forward to	**No**	**Yes**		
If yes: I feel that I have things to look forward to	**Not at all**	**A little**	**Moderately**	**Very much**
9) I value having motivation to make changes in my life	**No**	**Yes**		
If yes: I feel motivated to make changes in my life	**Not at all**	**A little**	**Moderately**	**Very much**

10) I value being the person I am	**No**	**Yes**		
If yes: I feel happy with the person I am	**Not at all**	**A little**	**Moderately**	**Very much**
11) I value having confidence	**No**	**Yes**		
If yes: I feel confident	**Not at all**	**A little**	**Moderately**	**Very much**
12) I value others accepting my mental health difficulties	**No**	**Yes**		
If yes: I feel that others accept my mental health difficulties	**Not at all**	**A little**	**Moderately**	**Very much**
13) I value having purpose to my life	**No**	**Yes**		

If yes: I feel that I have purpose to my life	**Not at all**	**A little**	**Moderately**	**Very much**

14) I value having a healthy lifestyle	**No**	**Yes**

If yes: I feel I have a healthy lifestyle	**Not at all**	**A little**	**Moderately**	**Very much**

15) I value having happiness in life	**No**	**Yes**

If yes: I feel happy	**Not at all**	**A little**	**Moderately**	**Very much**

16) I value having a role in the community in which I live	**No**	**Yes**

If yes: I feel that I have a role in the community in which I live	**Not at all**	**A little**	**Moderately**	**Very much**

17) I value having an understanding of my mental health difficulties	**No**	**Yes**		
If yes: I feel that I understand my mental health difficulties	**Not at all**	**A little**	**Moderately**	**Very much**
18) I value having control over my life	**No**	**Yes**		
If yes: I feel I have control over my life	**Not at all**	**A little**	**Moderately**	**Very much**
19) I value having choices about my care and treatment	**No**	**Yes**		
If yes: I feel that I have choices about my care and treatment	**Not at all**	**A little**	**Moderately**	**Very much**
20) I value having responsibility	**No**	**Yes**		

If yes: I feel that I have enough responsibility	**Not at all**	**A little**	**Moderately**	**Very much**

21) I value when people focus on the things I do well	**No**	**Yes**

If yes: I feel that people focus on the things I do well	**Not at all**	**A little**	**Moderately**	**Very much**

22) I value being able to express myself	**No**	**Yes**

If yes: I feel that I can express myself	**Not at all**	**A little**	**Moderately**	**Very much**

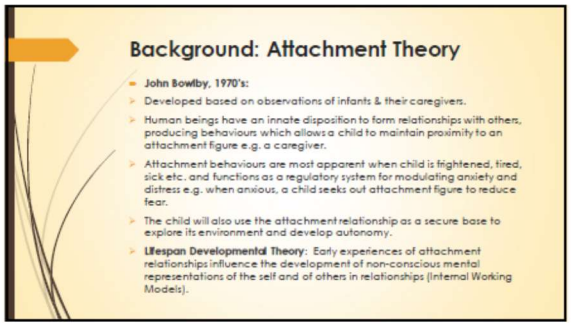
23) I value staff being honest with me about my risk of re-offending	**No**	**Yes**

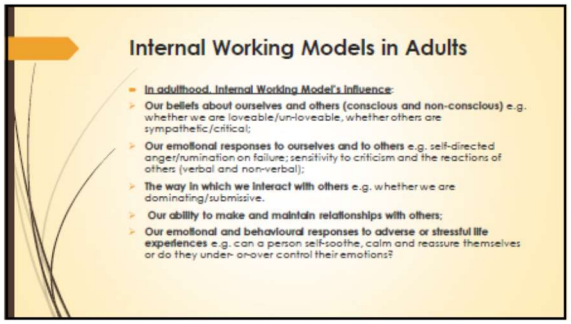
If yes: I feel that staff are honest with me about my risk of re-offending	**Not at all**	**A little**	**Moderately**	**Very much**

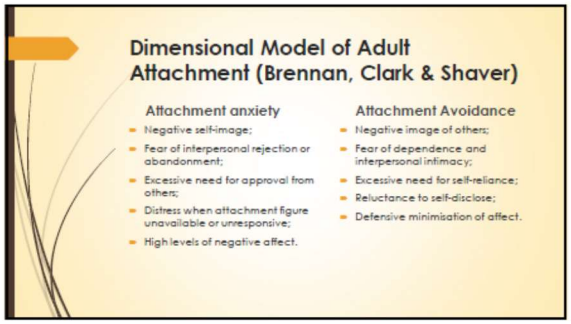
24) I value talking to staff about my risk of re-offending	**No**	**Yes**

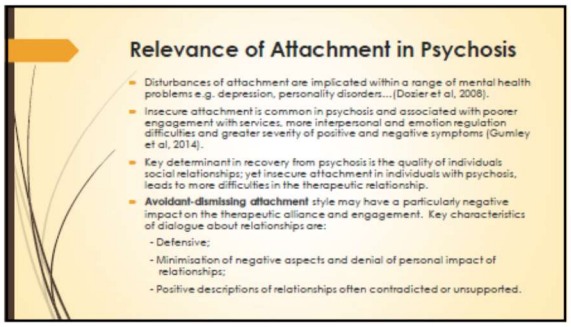
If yes: I feel that I can talk to staff about risk	**Not at all**	**A little**	**Moderately**	**Very much**

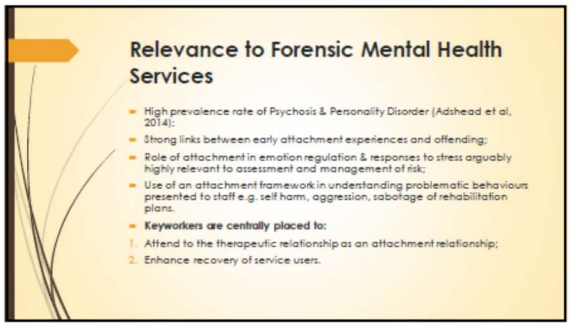
Appendix 2.9: Presentation to Forensic Mental Health Teams











The A-STAR Study – Aims

Primary Aim:

1. To what extent do key working staff and service users agree about the service users attachment style?

Secondary Aims:

2. Are attachment styles within forensic mental health service users associated with factors found to be predictive of recovery in service users experiencing psychosis? e.g. Service engagement.

3. Do attachment related difficulties impede forensic service users' abilities to meet recovery based values?

What we need you to do

Recruitment:

- We aim to recruit between 31-36 service users and their keyworkers, low and medium security.
- RMO's, Senior Charge Nurses and Clinical Psychologists will be asked to identify and approach potential participants who match the inclusion criteria and provide them with a PIS.

(**Inclusion Criteria:** English speaking; named primary key worker; able to provide informed consent. **Exclusion Criteria:** unable to provide informed consent, acutely psychotic or lack capacity.)

Participation:

- Keyworkers are NOT obligated to participate, SU will not be withdrawn from the study to maintain confidentiality of this decision.
- Researcher will meet keyworker to answer questions and obtain consent.
- Keyworkers will be asked to complete 2 questionnaires (15-30 mins).

Why is it important that we get keyworkers perspectives?

- Attachment styles are largely non-conscious representations.
- Self Reporting of own attachment style is problematic.
- Incorporating an informant perspective is key!
  - Existing studies are largely based on self report.
  - This study may highlight the discrepancy between self and informant perspectives and where discrepancies lie.
  - Implications in terms of future measurement of attachment.
  - Adding a new perspective to the evidence base.

What are the potential benefits?

Systems Perspective of Attachment: Relationships are a key determinant & provide the context for SU recovery. Building understanding of these relationships is crucial.

1. Platform to build complex interventions that engage multiple stakeholders.
   - Internal Model of Relationships is not fixed – we have the capacity to facilitate change.
2. Identification of barriers to engagement –shape policy & training to enhance capacities to engage SU's.
3. Important contribution to the evidence base.

What will happen to the results of the study?

- Summary of results to all participants – Service Users and Keyworkers.
- Presentation of results at a future DFMHLD Research Day.
- Presentation at relevant conferences where possible.
- Plans to submit to relevant peer reviewed journals.
- Submitted as part of thesis for Doctorate in Clinical Psychology award.

Thank You for Your Time

Questions/Comments?

Appendix 2.10: Service-User Participant Information Sheet

Attachment Style, Therapeutic Alliance and Recovery in forensic mental health (A-STAR Study)

Contact:
Joanna McNaughton
Trainee Clinical Psychologist
Institute of Mental Health and Wellbeing
Gartnavel Royal Hospital,
1st Floor, Admin Building,
University of Glasgow,
Glasgow G12 0XH

Service User Participant Information Sheet (Version 1.3, 30th October 2015)

We would like to invite you to take part in a research study, which is being done as part fulfilment of a Doctorate degree in Clinical Psychology. Before you decide, it is important for you to understand why the research is being done and what it will involve for you. Please take time to read the following information carefully. You may wish to discuss it with other people. We advise that you take at least 24 hours to decide whether to take part in the study.

What is the research about?

Attachment theory was proposed by John Bowlby in the 1950s and provided a framework to understand the importance of our early relationships across the lifespan. Through our experiences of relationships we develop an attachment style which influences how we make and maintain relationships, cope with life events and cope with emotional distress. Attachment styles characterised by greater anxiety about relationships or greater avoidance of relationships are linked to more relationship problems and an increased risk of mental health problems. Amongst service users insecure attachment styles are associated with more difficulties in relationships with caregivers and poorer engagement with mental health services.

Amongst forensic mental health service users, there is an increased rate of insecure attachment styles. As quality of relationships is important for recovery, a focus on attachment style in forensic mental health may be a helpful approach to promoting recovery. Therefore attachment theory is a useful framework for improving staff-service user relationships. An important step towards achieving this is to explore whether service users and staff agree about the service users' attachment style. We are also interested in finding out how forensic mental health service users and their keyworkers ratings of their attachment styles relates to the quality of their relationships with their keyworkers, with the

forensic mental health service itself, and their recovery from mental health difficulties. This kind of research can help forensic mental health services to develop approaches to improve staff-service user relationships as a way of promoting the recovery of service users.

Who is being asked to take part?

We are asking forensic mental health service users and their keyworkers in low and medium secure hospitals in NHS Greater Glasgow & Clyde (NHS GG&C) to participate in the study.

Why have I been asked to take part?

You have been invited to participate because you were identified by a member of the forensic mental health team responsible for your care (e.g. Psychiatrist, Psychologist or Senior Charge Nurse) as having expressed an interest in participating in this research.

Do I have to take part?

No. Taking part is entirely up to you. If you do not wish to take part it will not affect any treatment that you currently receive. Also, if you do decide to take part, you are able to change your mind and withdraw from the study at any time without it affecting your care either now or in the future.

What will happen next if I want to take part?

If you decide to take part in the study after reading this information sheet and after you have your questions answered by the researcher, the researcher will confirm that you wish to take part and arrange for you to complete a consent form. The researcher will then arrange an appointment to meet with you, to assist you to complete 5 questionnaires. The questionnaires will ask you questions about your early experiences of relationships, which will provide a rating of your attachment style; your relationship with your keyworker; your relationship with the forensic mental health service currently responsible for your care; your experience of the ward atmosphere; and lastly, about your experiences of your recovery. This meeting will last approximately 70 minutes. However, this meeting can take place over one or more sessions depending on your preferences. In addition to this, your keyworker will also be asked to complete 2 questionnaires. These questionnaires will ask your keyworker questions about your attachment style and their relationship with you.

Taking part will not affect any current treatment that you may be receiving or that you are about to receive. In addition, your answers to questions will be kept entirely confidential and will not be used to inform your relationship with your keyworker.

What are the possible risks of taking part?

There is a risk that completing questionnaires asking about your early experiences of relationships and other areas of potential difficulty may stir painful feelings or memories. It is important that you consider whether you wish to think about potentially distressing issues before deciding whether to take part. If you decide to participate, you are free to withdraw at any time, without giving reason if you change your mind.

What are the possible benefits of taking part?

The study aims to enhance understanding of the difficulties associated with attachment style and the factors that may hinder recovery in forensic mental health service users. You will help us to highlight important areas for individual treatment and staff training, which will be beneficial to the assessment, well-being and recovery of future forensic mental health patients.

What happens when the research is over?

All participants continue to receive their usual care. During your appointment with the researcher, you will be asked if you would like to receive a summary of the outcomes from the research. All participants who opt in will receive a written summary of the outcomes, upon completion of the study.

Will my taking part be kept confidential?

Yes. The information you provide will be treated confidentially. The information you give will be made anonymous so that your name will not be attached to any questionnaires. Your name and any information that could identify you will not appear in any reports. Only your anonymous information will be shared with other researchers.

With permission from you, your keyworker and your Psychiatrist will be informed that you are taking part in the study. However, your answers on the questionnaires will be kept entirely confidential and will not be shared with your keyworker or psychiatrist.

If you share information that makes the research team concerned for your safety or the safety of other people, or any information relating to any breach of the conditions of low or medium security, we will be required to tell others involved in your care (e.g. your keyworker, Psychiatrist and Senior Charge Nurse). We will always notify you beforehand if we are going to do this, and explain why.

What will happen to the results of the study?

Once the study is completed we will produce a report that will describe the findings of the study. This report will be submitted by Joanna McNaughton, Lead Researcher as part of her Doctorate in Clinical Psychology award from the University of Glasgow. You will not be identified in any report or publication. The report will not include any personal details of the people who took part.

Who is organising and funding the research?

The University of Glasgow and NHS Greater Glasgow & Clyde will organise the research. The University of Glasgow will fund the study.

Who has reviewed the study?

The study has been reviewed by the University of Glasgow to ensure that it meets standards of scientific conduct. It has also been reviewed by the Directorate of Forensic Mental Health and Learning Disabilities Research and Development Committee and the Research and Development Department

in NHS Greater Glasgow and Clyde. The West of Scotland Research Ethics Committee has also reviewed the study to ensure that it meets standards of ethical conduct.

Can I speak to someone who is not involved in the study?

Yes you can. Dr Caroline Bruce, University Teacher at the University of Glasgow, who is not involved in the study can answer questions or give advice about participating in this study. Her telephone number is 0141 211 0607.

What will happen if there is a problem or if I want to make a complaint?

If you have any concerns about the study or the way it is conducted or if you want to complain about any aspect of this study, please contact the Chief Investigator, Prof. Andrew Gumley, Mental Health and Wellbeing, Gartnavel Royal Hospital, 1st Floor, Admin Building, University of Glasgow, Glasgow G12 0XH in the first instance. The normal NHS complaint mechanisms will also be available to you.

Thank you.

Appendix 2.11: Service-User Consent Form

SERVICE USER CONSENT FORM (Version 1.3: 30/10/15)

Title of Study: **Attachment Style, Therapeutic Alliance and Recovery in forensic mental health (A-STAR Study)**

Contact Address: *Miss Joanna McNaughton, Mental Health and Wellbeing, Gartnavel Royal Hospital, 1055 Great Western Road, Glasgow, G12 0XH*

Please Initial Box

1. I confirm that I have read and understood the information sheet about the study dated 30th October 2015 (Version 1.3). ☐
2. I confirm that I have had an opportunity to consider the information, ask questions about the study, and have had these answered satisfactorily. ☐
3. I understand that my participation in the study is voluntary and that I am free to withdraw from the study at any time, without giving any reason, and without my medical care or legal rights being affected. ☐
4. I understand that I will be asked to meet with the researcher on between 1 and 2 occasions to complete 5 questionnaires. ☐
5. I understand that it may be difficult or upsetting to think about my experiences of relationships and other areas of difficulties, and that I will have access to professional support if this is required. ☐
6. I understand that if I share any information that makes the researcher concerned for my safety or the safety of other people, or any information relating to any breach of the conditions of low or medium security, the researcher will be required to inform others involved in my care (e.g. my keyworker, Psychiatrist and Senior Charge Nurse). ☐
7. I understand that my personal information may be looked at by the research team and members of the regulatory authorities where it is relevant to my taking part in this research. ☐
8. (If appropriate) I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers. ☐
9. I agree for my keyworker and my Psychiatrist to be informed of my participation in the above study. ☐
10. I agree to participate in the above study. ☐

Name of Participant	Date	Signature
Name of Person taking consent	Date	Signature

When completed: 1 for participant; 1 for researcher site file; 1 (original) to be kept in medical notes.

Thank you for taking part in the study.

Appendix 2.12: Letter of Participation

Version 1.3 RMO Letter 30.10.15

Department of Clinical Psychology
Institute of Mental Health and Wellbeing
Gartnavel Royal Hospital,
1st Floor, Admin Building,
University of Glasgow,
Glasgow G12 0XH

E-mail: j.mcnaughton.1@research.gla.ac.uk

{Date}

Dear Dr {Name Responsible Medical Officer}

RE: {Patient Name}
Date of Birth: {date of birth}

Study Title: Attachment Style, Therapeutic Alliance and Recovery in forensic mental health (A-Star Study)

I am writing to inform you that your patient consented to participate in the above research study on the {date} at Leverndale Hospital/Rowanbank Clinic. This study has been approved by NHS Greater Glasgow and Clyde's Research and Development Department (Reference Number: GN15CP376) and by the West of Scotland Research Ethics Service.

The purpose of the study is to find out if there is a relationship between forensic mental health service user and staff ratings of the service users' attachment style. The study will also examine associations between service users' attachment style, their attachment to services, their ratings of the therapeutic alliance, their perceptions of the ward climate and their experience of recovery. An appointment will be arranged by the research team with your patient in order for them to be assisted to complete 5 questionnaires. It is estimated that this appointment will last approximately 70 minutes, and then their involvement in the study will end. The questionnaires will consist of the Psychosis Attachment Measure (PAM), Service Attachment Questionnaire (SAQ), Working Alliance Inventory-Short Revised (WAI-SR), Essen Climate Evaluation Schema (EssenCES) and the Scale for Assessing the Forensic Experience of Recovery (SAFER).

If you would like any further information about this project, please do not hesitate to contact me using the details above.

Yours sincerely

Joanna McNaughton
Trainee Clinical Psychologist

Supervised by:
Professor Andrew Gumley
Professor of Psychological Therapy

Appendix 2.13: Keyworker Participant Information Sheet

Attachment Style, Therapeutic Alliance and Recovery in forensic mental health (A-STAR Study)

Contact:
Joanna McNaughton
Trainee Clinical Psychologist
Institute of Mental Health and Wellbeing
Gartnavel Royal Hospital,
1st Floor, Admin Building,
University of Glasgow,
Glasgow G12 0XH

Keyworker Participant Information Sheet (Version 1.3, 30th October 2015)

We would like to invite you to take part in a research study, which is being done as part fulfilment of a Doctorate degree in Clinical Psychology. Before you decide, it is important for you to understand why the research is being done and what it will involve for you. Please take time to read the following information carefully. You may wish to discuss it with other people. We advise that you take at least 24 hours to decide whether to take part in the study.

What is the research about?

Attachment theory was proposed by John Bowlby in the 1950s and provided a framework to understand the importance of our early relationships across the lifespan. Through our experiences of relationships we develop an attachment style which influences how we make and maintain relationships, cope with life events and cope with emotional distress. Attachment styles characterised by greater anxiety about relationships or greater avoidance of relationships are linked to more relationship problems and an increased risk of mental health problems. Amongst service users insecure attachment styles are associated with more difficulties in relationships with caregivers and poorer engagement with mental health services.

Amongst forensic mental health service users, there is an increased rate of insecure attachment styles. As quality of relationships is important for recovery, a focus on attachment style in forensic mental health may be a helpful approach to promoting recovery. Therefore attachment theory is a useful framework for improving staff-service user relationships. An important step towards achieving this is to explore whether service users and staff agree about the service users' attachment style. We are also interested in finding out how forensic mental health service users and their keyworkers ratings of their attachment styles relates to the quality of their relationships with their keyworkers, with the forensic mental health service itself, and their recovery from mental health difficulties. This kind of research can help forensic mental health services to develop approaches to improve staff-service user relationships as a way of promoting the recovery of service users.

Who is being asked to take part?

We are asking forensic mental health service users and their keyworkers in low and medium secure hospitals in NHS Greater Glasgow & Clyde (NHS GG&C) to participate in the study.

Why have I been asked to take part?

You have been invited to participate because a service user and/or service users' for whom you are keyworker have consented to participate in this research.

Do I have to take part?

No. Taking part is entirely up to you. If you do not wish to take part it will not impact on the participation of the service user or the service users for whom you are keyworker. Your decision not to take part will remain confidential and the service user(s) data will still be included in the study. Also, if you do decide to take part, you are able to change your mind and withdraw from the study at any time.

What will happen next if I want to take part?

If you decide to take part in the study after reading this information sheet and after you have your questions answered by the researcher, the researcher will confirm that you wish to take part and arrange for you to complete a consent form. The researcher will then provide you with 2 questionnaires for you to complete. The questionnaires will ask you for your ratings of the service users' attachment style and questions about your therapeutic relationship with the service user(s). It will take you approximately 15-30 minutes to complete the questionnaires for one participant. If you decide to participate you will be provided with an information sheet outlining how to complete the questionnaires and with the contact details of the researcher should any difficulties arise or any questions be raised during completion.

In addition to this, service users will be asked to complete 5 questionnaires. These questionnaires will ask service users questions about their own attachment style and their therapeutic relationship with you. They will also be asked about their relationship with the forensic mental health service currently responsible for their care; their experience of the ward atmosphere; and lastly, about their experiences of recovery.

Your answers to questions will be kept entirely confidential and will not be used to inform your relationship(s) with service users.

Are there any risks or benefits to taking part?

The study aims to enhance understanding of the difficulties associated with attachment style and the factors that may hinder recovery in forensic mental health service users. Your participation will help us to highlight important areas for individual treatment, staff training and outcome measurement which will be beneficial to the assessment, well-being and recovery of future forensic mental health patients. There are no identified risks to keyworkers who agree to take part.

What happens when the research is over?

We will inform all participants of the outcome of the research and we will write to you to inform you of the results.

Will my taking part be kept confidential?

Yes. The information you provide will be treated confidentially. The information you give will be made anonymous so that your name will not be attached to any questionnaires. Your name and any

information that could identify you will not appear in any reports. Only your anonymous information will be shared with other researchers.

Your answers on the questionnaires will be kept entirely confidential and will not be shared with service users or other staff members.

What will happen to the results of the study?

Once the study is completed we will produce a report that will describe the findings of the study. This report will be submitted by Joanna McNaughton, Lead Researcher as part of her Doctorate in Clinical Psychology award from the University of Glasgow. You will not be identified in any report or publication. The report will not include any personal details of the people who took part.

Who is organising and funding the research?

The University of Glasgow and NHS Greater Glasgow & Clyde will organise the research. The University of Glasgow will fund the study.

Who has reviewed the study?

The study has been reviewed by the University of Glasgow to ensure that it meets standards of scientific conduct. It has also been reviewed by the Directorate of Forensic Mental Health and Learning Disabilities Research and Development Committee and the Research and Development Department in NHS Greater Glasgow and Clyde. The West of Scotland Research Ethics Committee has also reviewed the study to ensure that it meets standards of ethical conduct.

Can I speak to someone who is not involved in the study?

Yes you can. Dr Caroline Bruce, University Teacher at the University of Glasgow, who is not involved in the study can answer questions or give advice about participating in this study. Her telephone number is 0141 211 0607.

What will happen if there is a problem or if I want to make a complaint?

If you have any concerns about the study or the way it is conducted or if you want to complain about any aspect of this study, please contact the Chief Investigator, Prof. Andrew Gumley, Mental Health and Wellbeing, Gartnavel Royal Hospital, 1st Floor, Admin Building, University of Glasgow, Glasgow G12 0XH in the first instance. The normal NHS complaint mechanisms will also be available to you.

Thank you.

Appendix 2.14: Keyworker Consent Form

KEYWORKER CONSENT FORM (Version 1.3: 30/10/15)

Title of Study: **Attachment Style, Therapeutic Alliance and Recovery in forensic mental health (A-STAR Study)**

Contact Address: *Miss Joanna McNaughton, Mental Health and Wellbeing, Gartnavel Royal Hospital, 1055 Great Western Road, Glasgow, G12 0XH*

Please Initial Box

1. I confirm that I have read and understood the information sheet about the study dated 30th October 2015 (Version 1.3). ☐
2. I confirm that I have had an opportunity to consider the information, ask questions about the study, and have had these answered satisfactorily. ☐
3. I understand that my participation in the study is voluntary and that I am free to withdraw from the study at any time, without giving any reason, and without my legal rights or the participation of service users for whom I am keyworker being affected. ☐
4. I understand that I will be asked to complete 2 questionnaires as part of the research, which will take approximately 15-30 minutes. ☐
5. I understand that my personal information may be looked at by the research team and members of the regulatory authorities where it is relevant to my taking part in this research. ☐
6. (If appropriate) I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers. ☐
7. I agree to participate in the above study. ☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Person taking consent	Date	Signature

When completed: 1 for participant; 1 for researcher site file; 1 (original) to be kept in medical notes.

Thank you for taking part in the study.

Appendix 2.15: Protocol

Study Protocol: Version Number 2.3; Date: 30.10.2015

Title of project: Attachment Style, Therapeutic Alliance and Recovery in forensic mental health (A-STAR Study)

Background Information:

Bowlby (1969/1982) proposed that our early childhood experiences of attachment figures lead to the development of a mental representation or an 'internal working model' (IWM) of the relational world. Within childhood, the IWM develops in the context of the availability and responsiveness of an attachment figure, which enables the child to develop developmentally appropriate autonomy in exploring their environment (Secure Base) and security in the knowledge that their attachment figure is there to return to in times of trouble (Safe Haven). IWM's are thought to be carried forward into adulthood as a broader framework which shapes our expectations and interpretations of the self and of others, guides our interactions with others and also governs our cognitive and affective responses to others and to adverse or stressful life experiences. According to attachment theory, infants are not only biologically predisposed to become attached but also have the inherent ability to be flexible and develop adaptive attachment behaviours in a range of care giving environments, including suboptimal environments (Main, 1990). It is within the context of variation in care giving environments that individual differences in attachment security are thought to develop (Cassidy, 2008).

Although attachment theory is not a model of psychopathology itself, disturbances of attachment have been implicated within a range of mental health problems (Dozier et al, 2008). There are now a growing number of studies investigating the relevance and interaction of attachment factors in psychological models in contributing to an explanation of the aetiology, maintenance and recovery from a number of these disorders. In particular, studies have found higher levels of insecure attachment in individuals with psychosis, than in control groups (Couture et al, 2007). Gumley and colleagues (2014) proposed that attachment theory provides a developmental framework for understanding how processes of affect regulation contribute to individual stress sensitivity and coping styles in the face of adversity. A large number of studies have investigated the interaction between insecure attachment styles and factors which are implicated in recovery from psychosis (Schwannauer & Gumley, 2014). One particular aspect of recovery that has been researched

extensively is interpersonal functioning in psychosis with research demonstrating that the quality of individuals' social relationships is a key determinant in the course of psychosis (Penn et al., 2004; cited in Schwannauer & Gumley, 2014). In particular, many studies have looked at the impact of insecure attachment on individuals' relationship and engagement with services (Blackburn et al, 2010). Such studies have demonstrated that insecure attachment is associated with more difficulties in the therapeutic relationship, and that in particular a dismissing attachment style may have a particularly negative impact on the therapeutic alliance and engagement (Berry et al, 2007).

Given the empirical evidence outlining the association between attachment styles and service-users engagement with services, it is now proposed that attachment theory should be used to inform clinical practice and also considered as a framework for the design of all psychiatric services. As such, the British Psychological Society's National Advisory Group on Mental Health, Safety and Wellbeing (Seager, 2007) argued that all staff should be attachment informed and trained to respond therapeutically to service-users as "*in mental health it is primary relationships that can kill and cure*" (pp. 1). Research has demonstrated that a key component in the process of recovery, regardless of the therapeutic approach, the model used and the health professional providing the treatment, has been found to be the development of a meaningful relationship (McCabe 2004). There is now a growing body of literature examining the role of mental health professionals as attachment figures and the implications of this on therapeutic relationships, engagement with services and SU outcomes (Berry & Drake, 2010).

Within forensic services, attachment theory may assist in understanding service-users' early experiences, their offending behaviours and their relationships with services. The reported prevalence rates of psychosis in male prisoners in 1998, was reported to be twenty times that of the general population (JCPMH, 2013). There is also an over-representation of forensic service-users with a diagnosis of personality disorder, with estimates of between 60-80 per cent within forensic services, compared with the 4 per cent prevalence found in the general population (Adshead & Aiyegbusi, 2014). A number of studies have found early attachment insecurity to be an established risk factor for the development of personality disorder (Adshead & Aiyegbusi, 2014). Moreover, there are also strong links with early attachment and the risk of becoming an offender, with poor maternal mental health, poor parenting and abusive home relationships thought to be key contributory factors (JCPMH, 2013). In forensic services, building relationships and creating a safe and secure environment to promote rehabilitation and recovery is an extremely challenging area of work for staff. The IWM's held by forensic mental health service-users' are often based on experiences of abusive, broken or turbulent relationships. It is within these suboptimal experiences

that their cognitive, affective and behavioural responses to others and to stressful experiences are formed. These responses are often noticeable in the problematic behaviours presented by service-users to staff, including self-harm, aggression and the sabotage of treatment plans often in the face of threats to attachment relationships, such as discharge or loss of a specific keyworker (Adshead, 1998). Within services, there is a risk that if attachment related responses are misunderstood by staff, that harmful interpersonal styles may be reinforced and maintained (Aiyegbusi, 2004). Indeed, those with a dismissing attachment style may be overlooked by staff and those with an anxious attachment style may be seen as demanding and may evoke highly negative feelings in staff teams (Adshead, 2004).

As such, attachment theory is a useful framework for the provision of training, support and supervision to help forensic mental health staff to understand service-users' interpersonal styles, to develop insight into their own attachment patterns and the interaction with those of service-user's, to respond appropriately to attachment related behaviours and to inform the development of interventions targeting relationships between staff and service-users (Berry & Drake, 2010). Staff can also be aided to understand the function of attachment related behaviours and therefore improve their capacity to more appropriately support service users and promote their engagement in numerous aspects of rehabilitation (Adshead, 1998).

There is growing empirical evidence highlighting the importance of attachment pathways to understanding psychiatric problems commonly found in forensic mental health services. It is also recognised that using attachment theory is useful as a framework for conceptualising the relationship between forensic service-users and staff and services. However, there is scarce literature exploring whether staff working within forensic services recognise attachment styles within their service-users in order to meet attachment needs. No other study has investigated whether attachment styles within forensic service-users are associated with factors found to be predictive of recovery in service-users experiencing psychosis and if these difficulties impede forensic service-users' abilities to meet recovery based values.

Aims:

1. To explore the extent to which service-user self-ratings and keyworker staff informant-ratings of attachment are associated with each other.

2. To explore associations between attachment, service attachment, working alliance, perception of ward climate and recovery.

Hypotheses:

1. The primary hypotheses is that there will be a high intra class correlation (ICC=0.8) between service-users self-ratings of attachment and key workers informant-ratings of service-users' attachment.

2. Greater self-rated attachment security (lower ratings of anxiety and avoidance) will be associated with higher ratings of service attachment and higher self- and keyworker ratings of therapeutic alliance.

3. Greater informant-rated attachment security will be associated with higher service-user ratings of service attachment and higher self- and keyworker ratings of therapeutic alliance.

4. Greater self- and informant-rated attachment security and higher ratings of service-user service attachment will be associated with more positive ratings of ward climate perceptions.

5. Finally, greater self- and informant-ratings of attachment security will be associated with higher self-rated recovery.

Methodology:

Participants:

Male and female forensic mental health service-users will be recruited from low and medium secure services within NHS GG&C's DFMHLD. Their respective key workers will also be recruited.

Service-Users:

Inclusion Criteria: Participants must have a named primary keyworker, must be able to provide informed consent and are required to speak English. **Exclusion Criteria:** Participants who are unable to provide informed consent, are acutely psychotic or lack capacity.

Keyworkers:

Inclusion Criteria: Participants must be the named primary key worker for a service-user participant.

Recruitment Procedures:

Responsible Medical Officers (RMO's), Senior Charge Nurses and Clinical Psychologists at Leverndale Hospital (Low secure services) and Rowanbank Clinic (Medium secure services) will be approached to identify potentially eligible participants. They will be asked to approach potential participants who match the inclusion criteria to invite them to participate in the research study and to provide interested individuals with a Participant Information Sheet (PIS). Participants will be given a minimum period of 24 hours at least to decide whether they wish to participate. They may be given longer if this is deemed necessary. An appointment will be arranged with interested participants to allow an opportunity for individuals to ask any questions about the research. The researcher will obtain informed consent. Participants will be recruited on a first come first served basis and recruitment will continue until the required number of participants is met. Key workers and RMO's will be informed of patient participation.

Informant measures will be completed by participants' key workers. Keyworkers will be approached by the researcher to inform them of the participant's decision to participate and to provide them with a PIS. The PIS will explicitly state that should a keyworker decide not to participate that this will be confidential, will have no impact on the participation of the service-user(s) for whom they are keyworker and that service-users' data will be retained and analysed as part of the study regardless of keyworkers' decisions to participate. The researcher will arrange an appointment to provide them with an opportunity to ask questions and obtain written consent.

Measures:

Psychosis Attachment Measure (PAM):

To explore the association between self- and informant-rated attachment style, the PAM will be used (both self-report and informant versions). It is a 16-item self-report measure of adult attachment style for people with psychosis. The informant version includes parallel items to those included in the self-report measure, asking informants to rate observable behaviours (Berry et al, 2008). It assesses two dimensions of anxious and avoidant attachment. A number of studies have demonstrated the PAM has internal consistency, with Cronbach's alpha coefficients ranging from

0.70 to 0.86 for the anxiety dimension and from 0.60 to 0.91 for the avoidance dimension (Gumley et al, 2014).

Service Attachment Questionnaire (SAQ):

To measure the association between a) self-rated attachment style, and b) informant-rated attachment style and attachment to services, the SAQ (Goodwin et al, 2003) will be used. It is a 25-item self-report measure which assesses the security of mental health service-users' attachment to staff members and to the hospital itself. The SAQ has demonstrated acceptable internal consistency, with Cronbach's alpha of 0.88 (Blackburn et al, 2010).

Working Alliance Inventory – Short Revised (WAI-SR) and Working Alliance Inventory – Short Revised – Therapist (WAI-SRT):

To measure the association between self-rated attachment style and self- and keyworker-rated therapeutic alliance and the association between informant-rated attachment style and self- and keyworker-rated therapeutic alliance, the WAI-SR self- and WAI-SRT therapist-report will be used. The WAI-SR has 12-items and the WAI-SRT has 10-items for measurement of therapeutic alliance. They assess three aspects of the therapeutic alliance, including: agreement on therapeutic a) tasks, and b) goals, and c) the affective bond between service-user and therapist. Internal consistency of the WAI-SR was excellent in outpatient and inpatient samples, with Chronbach's alpha of 0.90 and 0.93 respectively (Munder et al, 2010).

Essen Climate Evaluation Schema (EssenCES):

To measure the associations between a) self-rated attachment style and b) informant-rated attachment style and self-rated ward climate evaluations, the EssenCES (Schalast et al, 2008) will be used. It is a 17-item self-report measure which assesses the service -users' perceptions of the social and therapeutic atmosphere of forensic psychiatric wards. It assesses three aspects of social climate, including: a) Therapeutic Hold, b) Patients' Cohesion and Mutual Support, and c) Experienced Safety. Internal consistency of the EssenCES was found to be acceptable in UK high secure hospital settings, with Chronbach's alpha ranging from 0.72 to 0.82 (Howells et al, 2009).

Scale for Assessing the Forensic Experience of Recovery (SAFER):

To measure associations between a) self-rated attachment style and b) informant-rated attachment style, and participants' ratings of recovery, the SAFER will be used. The SAFER (Quill et al, 2014) provides a measure of the importance of values, identified as important in recovery processes, to forensic mental health service users and, a measure of whether they are currently living in a way consistent with their values. The SAFER is currently being piloted across the DFMHLD (Quill, 2014) in order to determine its concurrent validity, test-retest reliability and internal consistency.

Design:

This study will employ a cross sectional correlational design. Questionnaire measures will be used.

Research Procedures:

Following receipt of consent, the EssenCES, PAM, SAFER SAQ and WAI-SR will be completed with participants. It is estimated that completion time will be up to 70 minutes. Forensic service-users are a highly complex and co morbid population, in which severe and enduring mental health difficulties, substance misuse and cognitive impairment are prevalent. It is likely that a number of participants may have difficulty maintaining concentration for this length of time and may require some degree of support in completing questionnaires. All participants will be offered a break after 30 minutes and where necessary, may complete questionnaires over two sessions. The researcher will also read aloud each question on all questionnaires to ensure any difficulties participants have with literacy or comprehension does not compromise responding.

Participants' keyworkers will be asked to complete the PAM Informant version and the WAI-SRT. Key workers will be provided with information sheets with instructions on how to complete measures and with contact details for the researcher should any difficulties arise during completion.

Data Analysis:

Initially we will explore data for parametric qualities. In order to conduct the primary analysis we will explore the relationship between self-rated and informant-rated attachment styles using Intra Class Correlations.

For analyses of the secondary hypotheses, the following is planned. This analysis may include data from keyworkers, which violate the non-independence assumption underpinning parametric data analysis. This is because it is commonplace for keyworkers to have responsibility for more than one service user and as such, each keyworker may participate in the study more than once but only once for each individual participant. For this reason we will explore the use of Linear Effects Modelling, which handles correlated (clustered) data. Linear Effects Modelling requires that data are normally distributed and if, as we suspect our data will be non-normally distributed we will transform raw data into z-scores. The Linear Effects Modelling will be conducted with advice from the Robertson Centre for Biostatistics.

Justification of Sample Size:

The sample size is estimated based on the primary outcome of the study. The following parameters were considered in estimating the sample size required. First of all we acknowledge that key workers' ratings of services users attachment will be clustered where a single keyworker is likely to inform on n>1 service users. In other words, within the DFMHLD, it is commonplace for keyworkers to have responsibility for more than one service user and as such, each keyworker may participate in the study more than once but only once for each individual participant.

The second parameter was selecting an appropriate width of 95% confidence interval (95%CI) around the estimate of the ICC. For this purpose we selected two 95%CI intervals of 0.2 (i.e. 95%CI, 0.7-0.9) and 0.3 (i.e. 95%CI, 0.65-0.95). Table 1 below provides a summary of the range of sample sizes required for 80% power to detect an ICC=0.8 based on 95%CIs (range 0.2-0.3) and number of service users per keyworker (range 3-6). Based on this analysis (conducted according to D.G. Bonett. 2002. Statistics in Medicine, 21(9): 1331-1335) we estimate that we will require to recruit between 31 and 36 participants for the study.

Table 1

Width of Confidence Interval	ICC	Number of service users per key worker			
		3	4	5	6
0.2	0.8	36	31	29	27
0.3	0.8	17	15	14	13

Settings and Equipment:

Appointments with participants will be held in the ward(s) from which participants were recruited, within Leverndale Hospital and Rowanbank Clinic. Appointments will be conducted in clinic/meeting rooms. To respect participants' confidentiality, all participant paper and electronic data will be made anonymous as soon as possible to do so (in accordance with the Data Protection Act, 1998), and participants will be allocated a unique study identifier. All paper copies of questionnaires and consent forms will be stored in a locked filing cabinet within the University of Glasgow and will only be accessible to research study staff and authorised personnel. When questionnaires and consent forms are transferred physically between the study site and the University, they will be stored in a lockable briefcase and kept in a locked boot when being transferred by personal vehicles. Electronic personal identifiable information will also be stored anonymously, using the unique study identifier, and will be stored on the secure University network.

Health and safety issues:

There are potential risks when working with participants within forensic mental health services, who in varying degrees may display unpredictable or aggressive behaviour. As meetings for the purpose of participation in the research will be held in settings of low and medium security, there are a number of security measures already in place in these settings to minimise risk. The researcher has previous experience of working within forensic mental health services and is familiar with the associated risks and security procedures to minimise these. The researcher will consult with participants' keyworkers prior to appointments, to ascertain whether there are elevated risks which may impact on participation that day. Where significant concerns exist, appointments will be cancelled and re-scheduled.

There is a risk that completing measures asking about attachment experiences and areas of potential difficulty may stir painful feelings or memories. At selection, participants will be provided with full information about the purpose of the study and the risks they may face as a result of participation; to allow them to make an informed decision. Participants will be informed that they have the right to withdraw from the study. Should a participant become distressed during participation, the appointment will be brought to a close and the participant's keyworker informed in order for support from the clinical team be provided. Such issues will be documented within participants' medical records.

Ethical considerations:

Ethical approval will be sought from West of Scotland Research Ethics Service and managerial approval from the research and development department within DFMHLD. A PIS will be provided to potential participants and informed consent will be sought before participation. Participants will have the opportunity to opt out at any time and will be informed of this on the PIS. All information from participants will be treated as confidential and will not be used to inform service-user-keyworker relationships. In dissemination or publication of data, information will be presented anonymously to respect confidentiality. Each participant will be allocated a unique study identifier which will be used on all paper and electronic data generated. In the event that a participant presented a risk of harm to self or others during recruitment, the researcher would inform the RMO and senior charge nurse.

Dissemination:

A summary of the results of the study will be disseminated to participants. The results will be presented at local professional and academic development days and relevant conferences. There are also plans to submit to relevant peer reviewed journals. A final report of the findings will also be produced and submitted to the University of Glasgow as part of the Doctorate of Clinical Psychology thesis.

Practical Applications:

Understanding associations between forensic mental health staff and service-users' ratings of attachment style will have implications for understanding whether forensic services are recognising the attachment needs of their service-users and may identify areas for training within DFMHLD. Developing understanding of difficulties associated with attachment styles in forensic service-users enables professionals and services to tailor approaches to engage service-users with services and improve outcomes. Developing insight into factors which impede recovery in forensic mental health service-users may highlight important areas for individual intervention, staff training and outcome measurement. The study will provide an important contribution to the evidence base regarding the application of attachment theory to forensic service-users and services.

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Appendix 2.16: Research Ethics Committee Letter of Approval

WoSRES
West of Scotland Research Ethics Service

NHS
Greater Glasgow and Clyde

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Date 15 December 2015
Direct line 0141 232 1807
E-mail WoSREC3@ggc.scot.nhs.uk

Dear Professor Gumley

Study title:	**Attachment Style, Therapeutic Alliance and Recovery in forensic mental health (A-STAR Study)**
REC reference:	**15/WS/0198**
Protocol number:	**2.2**
IRAS project ID:	**183658**

Thank you for your letter of dated 04 December 2015, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Mrs Liz Jamieson, wosrec3@ggc.scot.nhs.uk.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Appendix 2.17: Total scores for all measures completed

Measure	Mean	Median	Standard deviation	Interquartile range
PAM Self-Report (Anxiety subscale)	0.71	0.5	0.65	0.3-1.1
PAM Self-Report (Avoidance subscale)	1.13	1	0.57	0.6-1.5
PAM Informant-Report (Anxiety subscale)	0.96	0.75	0.63	0.5-1.4
PAM Informant-Report (Avoidance subscale)	1.17	1.25	0.43	0.9-1.4
SAQ Total Score	80	82	11.5	72-89
WAI-SR Total Score	3.9	4	0.82	3.2-4.6
WAI-SR Task Subscale	3.9	4	0.77	3.2-4.6
WAI-SR Goal Subscale	3.8	4.25	0.98	2.8-4.8
WAI-SR Bond Subscale	3.9	4.13	1.03	2.9-5
WAI-SRT Total Score	3.6	3.7	0.6	3.1-3.9
WAI-SRT Task Subscale	3.5	3.7	0.7	3-4
WAI-SRT Goal Subscale	3.6	3.7	0.7	3-4.3
WAI-SRT Bond Subscale	3.7	3.8	0.9	3-4.3
EssenCES Total Score	45.3	47	10	41.5-52.5
EssenCES Therapeutic Hold Subscale	15.3	15	2.5	13.8-17
EssenCES Patient Cohesion and Mutual Support Subscale	10.6	11	4.4	7.8-15
EssenCES Experienced Safety Subscale	14.5	16	4.7	10.8-18
SAFER	2.29	2.3	0.51	1.98-2.7

Appendix 2.18: Sensitivity Analysis 1

a) Calculations on PAM Self- and Informant-Report with removal of data from participant 18 and inclusion of data from participant 20

Normality: The scores for self-rated attachment anxiety were not-normally distributed (W(18)=0.86; p<.05). Scores were normally distributed for informant rated attachment anxiety (W(18)=0.93; p>.05), self-rated attachment avoidance (W(18)=0.95; p>.05), and informant-rated attachment avoidance (W(18)=0.97; p>.05).

Self- and Informant-Ratings of Attachment Style: The absolute agreement between self- and informant rated attachment anxiety and attachment avoidance were evaluated using a two-way random effects Intra-class correlation coefficient. There was good agreement between self-and informant rated attachment anxiety ICC(2,18)=0.73; 95%CI, 0.28, 0.90; (F(17,17)=4.476, p<.01). By contrast, there was poor agreement between self- and informant-rated attachment avoidance ICC(2,18)=0.38; 95%CI, -0.77, -0.77; (F(17,17)=1.568, p>.05).

b) Calculations on PAM Self- and Informant-Report with removal of data from participant 20 and inclusion of data from participant 18

Normality: The scores for self-rated attachment anxiety were not-normally distributed (W(18)=0.89; p<.05). Scores were normally distributed for informant rated attachment anxiety (W(18)=0.92; p>.05), self-rated attachment avoidance (W(18)=0.95; p>.05), and informant-rated attachment avoidance (W(18)=0.97; p>.05).

Self- and Informant-Ratings of Attachment Style: The absolute agreement between self- and informant rated attachment anxiety and attachment avoidance were evaluated using a two-way random effects Intra-class correlation coefficient. There was good agreement between self-and informant rated attachment anxiety ICC(2,18)=0.71; 95%CI, 0.26, 0.89; (F(17,17)=3.674, p<.01). By contrast, there was poor agreement between self- and informant-rated attachment avoidance ICC(2,18)=0.31; 95%CI, -0.97, 0.75; (F(17,17)=1.423, p>.05).

Appendix 2.19: Sensitivity Analysis 2 – Difference between participants with and without corresponding informant measures

An independent-samples t-test was conducted to compare age, self-rated PAM scores (avoidance subscale), SAQ total, WAI-SR total, EssenCES total and SAFER total scores amongst participants for whom the informant-report PAM and the WAI-SRT were and were not completed by keyworkers.

There were no significant differences found in relation to participants age for those for whom the PAM informant-report and WAI-SRT were returned (M=46.1, SD=9.73) and for whom they were not returned (M=54.3, SD=5.13; t(20)=-1.422, p>.05).

There were no significant differences found in relation to participants self-ratings of attachment avoidance for those for whom the PAM informant-report and WAI-SRT were returned (M =1.13, SD =0.57) and for whom they were not returned (M=1.23, SD=0.55; t(20)=-0.304, p>.05).

There were no significant differences found in relation to SAQ total scores for those for whom the PAM informant-report and WAI-SRT were returned (M=81.1, SD=11.0) and for whom they were not returned (M=73.3, SD=14.6; t(20)=1.089, p>.05).

There were no significant differences found in relation to WAI-SR total scores for those for whom the PAM informant-report and WAI-SRT were returned (M=3.9, SD=0.83) and for whom they were not returned (M=3.8, SD=0.95; t(20)=-0.167, p>.05).

There were no significant differences found in relation to EssenCES total scores for those for whom the PAM informant-report and WAI-SRT were returned (M=44.9, SD=10.6) and for whom they were not returned (M=47.3, SD=4.73; t(20)=-0.377, p>.05).

There were no significant differences found in relation to SAFER total scores for those for whom the PAM informant-report and WAI-SRT were returned (M=2.3, SD=0.5) and for whom they were not returned (M=2.0, SD=0.66; t(20)=1.039, p>.05).

As data were not-normally distributed, a Mann-Whitney test was conducted to compare self-rated PAM scores (anxiety subscale) amongst participants for whom the informant-report PAM and the WAI-SRT were and were not completed by keyworkers. There were no significant differences found in relation to participants self-ratings of attachment anxiety for those for whom the PAM informant-report and WAI-SRT were returned (*Mean Rank*=11.03) and for whom they were not returned (*Mean Rank*=14.50; *U*=19.5, *z*=-0.87, *p*>.05).

Appendix 2.20: Post-hoc Analysis

A one-way Analysis of Variance (ANOVA) was conducted to determine whether the participants' legal status, the participants' transfer status and the type of ward in which participants' inhabited had an effect on the participants self-reported SAQ total and WAI-SR total scores.

There was no significant effect of the participants' legal status on SAQ total scores, $F(3, 18)=0.48$, $p>.05$; or on WAI-SR total scores $F(3, 18)=1.09$, $p>.05$.

There was no significant effect of the participants' transfer status on SAQ total scores, $F(5, 16)=0.54$, $p>.05$; or on WAI-SR total scores $F(5, 16)=0.21$, $p>.05$.

There was no significant effect of the type of ward in which participants' inhabited (e.g. assessment or rehabilitation wards) on SAQ total scores, $F(1, 20)=0.00$, $p>.05$; or on WAI-SR total scores $F(1, 20)=0.48$, $p>.05$.