Insight, duration of untreated psychosis and attachment in first-episode psychosis

Insight, Duration of Untreated Psychosis and Attachment in First Episode Psychosis: a prospective study of psychiatric recovery over 12-month follow-up.

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Abstract

Background: Increasing evidence shows attachment security influences symptom expression and adaptation in people diagnosed with schizophrenia and other psychoses.

Aims: The study aimed to establish distributions of attachment in a cohort of individuals with First Episode Psychosis (FEP), and explore the relationship between attachment security and recovery from positive and negative symptoms in the first 12-months.

Method: The study was a prospective 12-month cohort study. The role of attachment, duration of untreated psychosis (DUP), baseline symptoms and insight in predicting and mediating recovery of symptoms was investigated using multiple regression analysis and path analysis.

Results: Of the 79 participants, 54 completed the Adult Attachent Interview (AAI): 37 (68.5%) were classified as Insecure, of which 26 (48.1%) were Insecure Avoidant and (11) 20.4% Insecure Preoccupied. DUP and insight predicted recovery of positive symptoms at 12-months. Attachment security, DUP and insight predicted recovery of negative symptoms at 12-months.

Conclusions: Attachment is an important construct contributing to understanding and development of interventions promoting recovery following FEP.

Declaration of Interest: None

Key Words: Attachment, Psychosis, Schizophrenia, Insight, Duration of Untreated Psychosis

Introduction

Adverse developmental experiences including abuse, deprivation and loss are well-established risk factors for psychosis[1]. Early adversity impacts on later expression of psychosis by increasing stress sensitivity to later stressful life events[2,3]. Attachment theory[4] has been successful in understanding adaptation to the long-term impact of adverse developmental experiences and stressful life events.[5] Attachment security is a significant building block to resilience and is linked to successful adaptation and recovery in the context of adversity.[6] Attachment theory provides a developmental understanding of affect regulation, emerging from the evolutionary necessity for the infant to establish a safe haven (for distress) and secure base (for exploration). In adulthood, attachment security is characterised by freedom and autonomy to reflect on and explore painful feelings, and a valuing of interpersonal relationships. In adulthood insecure attachment is reflected in two predominant strategies relating to adaptation and affect regulation. Preoccupied attachment is characterized by rumination, confusion and heightened emotional expression. Avoidant attachment is characterized by minimizing and downplaying of attachment related experiences, emotions, thoughts and memories. A recent systematic review[7] of 21 studies comprising 1,453 participants established the validity of attachment research in psychosis. Attachment security is associated with

improved engagement with services, less interpersonal problems and reduced trauma. Attachment security is associated with less positive and negative symptoms and lower affective symptoms. However the use of chronic, cross-sectional convenience samples limits generalizability of findings. This study was designed to provide a prospective study of attachment and it's relationship with psychiatric recovery over time. The study aimed to establish the distribution of secure and insecure attachment representations in a cohort of individuals with FEP, and to explore the relationship between attachment and recovery of positive and negative symptoms in the first 12-months following initiation of treatment.

Hypotheses

1) Most individuals with a first episode of psychosis would be classified as insecure in their attachment; and

2) Controlling for symptomatology, DUP and psychiatric insight, greater attachment security would predict better recovery of positive and negative symptoms.

Methods

The study was a prospective 12-month prospective study of individuals with FEP. Ethical (REC: 04/S0703/91) and managerial approval was granted before the start of the study. The study was conducted between 1st September 2006 and the 31st August 2009.

Participants:

Recruitment took place in NHS mental health services in Glasgow and Edinburgh. All potential participants were approached for informed consent. Inclusion criteria were: (a) inpatients or outpatients with (b) first presentation to mental health services for psychosis (c) DSM-IV criteria for schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder, bipolar disorder[8]. Members of the clinical teams providing their care identified individuals meeting these criteria and an invitation to participate in the research was extended by a member of the research team. Participation was voluntary and following receipt of informed and written consent participants were entered into the study. At the end of the 12-months participation in the study, participants were compensated for their involvement in completing assessments and given £20.

Measures:

All diagnoses were confirmed according to DSM-IV criteria[8] based on semi-structured interviews completed by Research Assistants. The two principal authors (AG&MS) then made diagnostic decisions at monthly research meetings.

Severity of psychiatric symptoms was assessed using the Positive and Negative Syndrome Scale[9], a 30 item semi-structured interview for psychotic symptomatology. We examined two measures of outcome based on the PANSS scale: Positive and Negative Symptoms. PANSS assessments were conducted following entry to the service, and at six-month and 12-month

follow-up. PANNS recordings were rated by the principal authors (AG&MS), to establish inter-rater reliability at the outset of the study. We repeated checks on a six-monthly basis to ensure continuing reliability over the course of the study. All estimates of reliability were above *rho* = .80. For analysis of insight we utilised the insight item (G12) from the PANSS. A higher score on this item reflects less acceptance and insight into having a psychiatric illness and needing treatment. Ceskova et al[10] has demonstrated the validity of PANSS Insight (G12) item in first episode psychosis.

Duration of Untreated Psychosis (DUP)[11,12]. Information about onset and development of psychotic symptomatology was collected from the individual and (where possible) a carer or loved one. DUP (interval between onset of psychotic symptomatology and onset of treatment) was estimated by the methods of Skeate et al[12]. The test-retest reliability was reported as good (intraclass coefficient $r = 0.96$, $p<0.01$). Each participant was administered a semi-structured interview to ascertain the age of onset of any psychiatric symptoms and onset of psychotic symptoms. DUP was calculated from the time of onset of the first psychotic symptoms of the presenting episode to the time of having received antipsychotic therapy for a period of 2 months unless significant response to medication was achieved earlier. In cases where the first onset of psychotic symptoms was not linked with the presenting episode and there were one or more brief episodes of psychotic symptoms separated by long periods of remission only the periods of active psychotic symptoms were included in the calculation of DUP. For participants who did not accept

antipsychotic treatment, DUP did not end until the consistent administration of antipsychotic therapy. In this study, estimation of DUP was assisted by diagrammatically charting it on a timeline specifying the interaction between life events, symptoms, social support and help-seeking. Timelines were constructed collaboratively and shared directly with participants to aid clarification and understanding. Timelines were shared for discussion at monthly research team meetings where DUP for each participant was agreed. Where exact dates were unavailable the middle date of the calendar month was taken as the date of onset.

The Adult Attachment Interview (AAI)[13] is a semi-structured interview, consisting of 20 questions and probes, allowing categorisation of an adult individual's state of mind with regard to attachment. Each interview is transcribed verbatim and coded for attachment status by coders trained and reliable in the AAI coding system (Version 7.1)[14]. Specifically, Coherence of Transcript (CohT) is an overall indication of the quality of the narrative throughout the transcripts both reflecting on the participant's probable attachment experiences during childhood (e.g. loving, neglecting, rejecting), attachment related experiences (including illness, separation, abuse and loss) and participant's state mind with respect to these experiences (i.e. Secure, Avoidant and Preoccupied) as reflected in the transcript. CohT is scored on a scale of 1 to 9 with higher scores indicating greater levels of coherence of discourse; this is the key index of, which is defined as the degree to which speakers portray their attachment experiences in a coherent and collaborative

manner[14]. Macbeth and colleagues[15] have demonstrated the validity of the AAI in an FEP sample.

Transcripts are allocated one of three “Organised” categories: One ‘Secure’ Category – “Freely Autonomous and Secure” - and two ‘Insecure’ categories – “Avoidant” and “Preoccupied”. Based on the AAI manual speakers scoring ≥ 5 are allocated to the Freely Autonomous and Secure Attachment classification. Freely autonomous and secure speakers tend to value attachment relationships, regard attachment experiences as influential, appear relatively independent and autonomous and appear free to explore both positive and painful thoughts and feelings. Avoidant or dismissing speakers tend to limit the influence of attachment related experiences by denying, closing down or minimising these experiences. These speakers will often implicitly claim strength, normality and independence and provide a very positive description of early development, which is not substantiated by episodic memories. Preoccupied speakers often appear confused. Discussions of attachment and other relational experiences are often prolonged, vague and uncritical or angry and conflicted and overwhelmed by trauma and loss. In addition, transcripts can be assigned a fourth category of “Unresolved” with regard to trauma and loss, where the coherence of an interviewee’s narrative breaks down in relation to discussions regarding trauma and loss. Where there was the presence of two or more contradictory attachment strategies a ‘Cannot classify’ (CC) is assigned to these transcripts denoting a global breakdown in discourse and alternating use of attachment strategies[16].

Safeguards were included in the research protocol to ensure that the AAI was not conducted when participants were acutely psychotic or thought disordered. In order to enable interviewers and participants to establish rapport, lengthy interviews containing other baseline assessments including PANSS and DUP were always completed prior to the AAI. Since threats to validity of CohT arise from the presence of psychotic symptoms such as delusions and hallucinations, the CohT score can be adjusted to take account of these violations of narrative by assigning a Coherence of Mind (CohM) Score. In our sample the association between CohT and CohM was r=0.98. Interview stability has been reported as 90% at 3 months (kappa = .79)[17]. After data collection for the study was completed transcripts were coded by two researchers (AM,RF) with certified reliability in 3-category AAI classifications by Mary Main and Erik Hesse.

Data analysis:

We proposed linear multiple regressions incorporating two covariates (Age and Gender) and four predictors (corresponding baseline symptoms, DUP, Baseline Insight, and CohT). For our analyses we used the CohT score as our measure of attachment security with higher scores indicating greater security of attachment. The planned analyses consisted of two sets of linear multiple regressions in which all predictors and covariates were entered independently into the regression algorithm to avoid artificial inflation of estimated R^2. In addition to the regression, path analysis was also performed

as part of our planned analysis. Path analysis is an appropriate way of approaching our hypothesis that attachment security, DUP and insight play a role in the symptomatic recovery in FEP patients, given that this method is well suited for testing interactions between independent variables in their effect on symptomatic recovery, whilst also estimating overall fit of the hypothesized models on the data. Owing to the relatively small sample size, the path models were constructed from observed variables

We calculated the sensitivity of estimated effect sizes and power for these procedures using Sample Power 2.0[18] and Gpower 3.0[19]. We conservatively estimated a small effect size for the set of covariates and a medium effect size for the set of predictor variables would achieve power of 0.88 with a sample of n=60. A sample n=51 would give us a power of 0.80 using the same parameters. We conducted a sensitivity analysis of the sample size required to detect significant changes in R^2 assuming an effect size range of $f^2 = 0.2 – 0.3$. Estimation of a medium effect size was based on meta-analytic data on the strength of relationship between DUP and psychiatric symptomatology[20]. We also adopted a medium effect size to denote a clinically significant magnitude of effect to reflect health services practice and service design.

For the regression analyses we transformed DUP using Log 10. The regression models for PANSS positive and negative symptoms (at 6-months and 12-months) entered gender and age in a first block of forced entry variables, followed by a second block of respective baseline symptoms, and a

third block of forced entry variables of ^{Log10}DUP, PANSS insight, and CohT. Collinearity statistics for all hierarchical linear regression models reported below were satisfactory, with tolerance generally above .1 and VIF statistics smaller than 10. All regression models were tested via bootstrapping with 1000 random samples; this method involved generating confidence intervals through a process of random resampling. The bootstrapped solutions confirmed the hierarchical regression models.

In order to test hypothesised direct and indirect effects we utilised structural equation modelling (SEM) using EQS version 6.1[21] (Bentler, 2010) to test the path models. The SEM based approach to testing mediation was chosen as it provides two key advantages over alternate methods: it tests the hypothesised parameters simultaneously and it provides an indication of the overall fit of the model[22,23]. SEM based approaches based on observed variables only is further more robust in smaller samples but can carry a conservative bias of models not converging[24]. Goodness of fit of all models was evaluated using the Satorra-Bentler robust fit statistics. The maximum likelihood $\chi 2$ statistic was corrected with the Satorra-Bentler robust $\chi 2$ statistic (S-B $\chi 2$) and the Robust Comparative Fit Index (RCFI)[25]. Chi-square is the most commonly used measure of model fit - a high chi-square value with a significant p value suggests a poor fit of the model to the data. The RCFI ranges from 0 to 1 with values greater than 0.90 indicating a good fit. The Root Mean Square of Approximation (RMSEA)[26] is a measure of fit that takes

into account a model's complexity where a RMSEA of 0.05 or less indicates a good model fit.

Covariance SEM was utilised to examine the goodness of fit of two a priori models relating PANSS outcome variables at 12 months of positive and negative symptoms respectively to the predictor variables: DUP, PANSS insight, CohT and respective baseline symptoms variable. For all path models we systematically tested direct and mediating effects of the main hypothesised mediating factors.

Results

Participant Flow:

The participant flow into and out of the study is illustrated in Figure 1 below.

Insert Figure 1 about here

Basic demographic and clinical characteristics:

Table 1 shows the demographic and clinical characteristics of our sample. We observed significant improvements in PANSS positive symptoms over 12 months ($t=10.91$, $p<.001$) and PANSS negative symptoms over 12 months ($t=2.6$, $p<.012$).

Insert Table 1 about here

Attachment Organisation:

In our sample we were able to complete a total of 54 (75.6%) Adult Attachment Interviews. Table 2 below illustrates 3-way (Secure / Autonomous, Insecure Dismissing, Insecure Preoccupied), 4-way (including those unresolved for trauma and / or loss) and 5-way (for the new and emergent CC category) classifications: 68.5% were classified as Insecure, of which 48.1% were Dismissing and 20.4% Preoccupied. We also show CohT scores for the 3-way categorisation. Overall there was a statistically significant difference between the three groups ($F(2,51)83.2, p<0.001$) which was accounted for by statistically significant differences between the Secure Autonomous group and the Insecure Dismissing ($p<0.001$) and Insecure Preoccupied ($p<0.001$). There were no differences between the two Insecure groups. Seventeen (31.5%) of transcripts were classified as Unresolved for Trauma and / or Loss. Six (11.1%) of transcripts were categorised as CC. Details of subcategories are shown for information.

Insert Table 2 about here

We found no significant correlation between CohT and PANSS conceptual disorganisation at baseline ($r=-0.19$), 6-months ($r=0.12$) or 12-months ($r=-0.07$). We explored 3-way Attachment categorisation in relation to PANSS Positive, Negative, General Symptoms and DUP. Multivariate Analysis of Variance revealed significant effects for 3-way attachment categorization for PANSS

positive at entry (F=4.66, p=0.015) and PANSS positive at 6-months (F=4.71, p=0.014). Post hoc Sheffé analysis revealed that the Insecure Preoccupied Group had higher positive symptoms at entry (p=0.017) and at 6-months (p=0.027) compared to the Freely Autonomous and Secure Group.

Predictors of psychiatric recovery and remission:

Prior to formal analyses we examined correlations between predictor variables (^{Log10}DUP, PANSS Insight, CohT), covariates (baseline PANSS Positive and Negative) and the key outcome variables at 12-months (PANSS Positive and PANSS Negative). All models were replicated for 6-month outcomes and were largely consistent with 12-month results.

Insert Table 3 about here

Table 3 shows that these correlations indicating significant associations between PANSS positive symptoms and PANSS negative symptoms and the key predictor variables insight, DUP and AAI CohT.

Recovery; positive symptoms:

All final regression models are summarised in Table 4. For PANSS positive symptoms at 6-months Model one, comprising age and gender accounted for 10.6% of the variance (F(2,48)=2.83, p=0.06). Model two accounted for 13.5% of the variance, with no significant change after

symptom severity was taken into account (R^2 change=0.03, F(1,47)=1.57, p=0.217); and Model 3 accounted for 30.9% of the variance, (R^2 change=0.175, F(3,44)=3.71, p=0.018). The overall regression model for PANSS positive symptoms at 6-months accounted for 30.9% of the variance (F(50)=3.28, p=0.009). The significant predictor variables for positive symptoms at 6-months were duration of untreated psychosis (DUP) (β=.280, t=2.14, p=.038) and insight as measured by the PANSS (β=.388, t=2.34, p=.023).

For PANSS positive symptoms at 12-months the hierarchical regression model accounted for 27.6% of the variance (F(48)=2.66, p=.028). Model one accounted for 10% of the variance, with Model two, PANSS positive symptoms at baseline not contributing to the model variance (R^2 change=0.36, F(1,45)=1.85, p=0.180), Model three accounted for 27.6% of the variance (R^2 change=.140, F(3,42)=2.71, p=0.050). In the complete model the only significant predictor variable for PANSS positive symptoms at 12-months was insight (β=.396, t=2.28, p=.027).

Table 4 about here

Recovery; negative symptoms:

The hierarchical regression model explained 61.1% of PANSS negative symptoms at 6-months (F(49)=11.28, p<.001). Model one, including age and gender accounted for a small proportion of the variance, 9% (F(2,47)=2.43, p=.099). Model two 52.4% of the variance, with negative symptoms at

baseline significantly adding to the regression model (R^2 change=.430, F(1,46)=41.4, p<.001); and Model 3 61.1% of the variance (R^2 change=.088, F(3,43)=3.24, p=.031). Significant predictor variables for negative symptoms at 6-months were CohT (β=-.245, t=-2.30, p=.026) and PANSS negative symptoms at baseline (β=.522, t=4.62, p<.001).

For negative symptoms at 12-months the hierarchical regression model overall accounted for 40.3% of the variance (F(47)=4.62, p=.001). Model one, age and gender, accounted for 9% of variance (F(2,45)=2.23, p=.119), Model two explained variance of 23.2%, with negative symptoms at baseline significantly adding to the model (R^2 change=.142, F(1,44)=8.10, p=.007), and Model three with 40.3% of explained variance (R^2 change=.172, F(3,41)=3.93, p=.015). The predictor variables for negative symptoms at 12-months were insight as measured by the PANSS (β=.312, t=2.20, p=.033) and CohT (β=-.307, t=-2.28, p=.028).

PANSS positive symptoms, path model

The hypothesised mediation model with associated fit indices is displayed in Figure 1. This model fitted the data well (S-B $\chi 2$ = 13.82 (p=0.061); RCFI=0.973; RMSEA=0.051; RMSEA 90% confidence interval (CI)=.042,.059). All direct and indirect paths were included in the analysis. Both PANSS insight at baseline and DUP had a direct effect on PANSS positive symptoms at 12-months. There were no significant direct effects of CohT and baseline PANSS positive symptoms as indicated in the linear

regression model. Contrary to our initial predictions both DUP and CohT showed very weak or insignificant direct effects on symptoms at 12-months. However, the path model clearly demonstrated a fully mediated effect of attachment with insight and DUP acting as mediators, and a partial mediation effect of DUP, which is clearly increased by insight. It is also of interest to note that CohT has a significant direct effect on DUP.

Figure 2 about here

PANSS negative symptoms, path model

This model also fit the data well (S-B $\chi 2$ = 9.89 (p=0.094); RCFI=.926; RMSEA=0.042; RMSEA 90%(CI)=.037,.046). The hypothesised mediation model with associated fit indices is displayed in Figure 2. All direct and indirect paths were included in the analysis.

Figure 3 about here

The mediational model for PANSS negative symptoms at 12-months showed more significant paths; PANSS insight at baseline and DUP have significant direct effects on negative symptoms; small significant effects can be observed for PANSS baseline negative symptoms and CohT. We observed clear mediational effects in that CohT has strong effects on insight, DUP and baseline negative symptoms, which were partially mediated in their effects on

PANSS negative symptoms at 12-months. The effect of CohT on negative symptoms is therefore partially mediated by baseline negative symptoms, DUP and insight.

Discussion

Firstly, we aimed to establish the distribution of attachment representations in a cohort of individuals with FEP. We found most participants were insecure in their attachment (n = 37,68.5%), 26 (48.1%) were classified as dismissive and 11 as preoccupied (20.4%). Rates of unresolved attachment were 31.5% (n=17). Of significance most of our preoccupied group were also unresolved for loss. These data are consistent with previous findings reported by Macbeth and colleagues[15] but differ from Tyrrell & Dozier's[27] finding that most of their chronic group were avoidant of attachment.

Secondly, we explored the relationship between attachment and recovery of positive and negative symptoms in the first 12-months. In terms of recovery of positive symptoms at 6-months we found that Baseline PANSS positive and insight were significant predictors, however at 12-months only insight remained significant. Contrary to our expectations, we did not find that attachment predicted positive symptom recovery. Previous studies have shown an association between attachment and positive symptoms, particularly for avoidant attachment[7]. However, these studies differ from the current study in that they use self-report methods, were conducted in chronic

samples and tended to report bivariate associations. In addition, clinically important interaction effects between covariates tend to be masked in the linear regression models. In light of this, the findings of our positive symptoms path model are of interest. We found that increasing attachment security was associated with better insight at baseline and shorter DUP and the relationship between attachment and PANSS positive symptoms at 12-months was fully mediated by insight at baseline and DUP. These findings suggest that attachment security may exert an influence on the recovery of positive symptoms by acting on DUP and insight.

In terms of recovery of negative symptoms, attachment and baseline insight predicted recovery of negative symptoms at both 6- and 12-months. Path analyses demonstrated a small significant direct relationship between attachment and outcome of negative symptoms. In addition the relationship between attachment and negative symptoms was partially mediated by insight and negative symptoms at baseline. Previous studies have also shown mixed results for the relationship between attachment and negative symptoms[7]. Unlike these studies we measured attachment using the AAI. The AAI provides an assessment of affect regulation during the discussion of salient interpersonal experiences. We note that the majority of our participants were insecure in their attachment and that almost half of our participants were Avoidant. Attachment avoidance is linked to the deactivation of positive and negative affect, interpersonal distancing, impaired mentalisation, avoidance of affect-linked autobiographical

memories, and a lack of trusting and confiding relationships[29]. Therefore the association with negative symptoms is of interest particularly in light of the lower levels of recovery in this outcome domain. One hypothesis would suggest that attachment processes may have a role in the unfolding of negative symptoms and that deactivation strategies linked to insecure attachment may be linked to the deactivation of positive and negative affect. Our findings in relation to positive symptom outcomes are consistent with this "affect regulation hypothesis". Attachment security exerted an influence on positive symptom recovery via shorter DUP and higher insight. Attachment security is a marker for resilience and is characterised by openness to seeking help (shorter DUP) when distressed and greater awareness of thoughts, feelings and memories (improved insight).

We also want to highlight that the neurobiology of attachment is increasingly being understood particularly in relation to the role of dopamine and oxytocin circuitry[30]. It has been proposed that difficulties in social cognition are underpinned by disruption in the amgydala and the dopamine and oxytocin circuitry linked to socio-emotional processing, which are also implicated in schizophrenia[31]. Attachment theory provides a framework to link models of affect regulation and adaption, impairments in social cognition and neurobiological mechanisms underpinning recovery following FEP.

Limitations

Our study has some important limitations. We note that the choice of SEM for the investigation of indirect and mediating effects in a small sample like ours has some drawbacks. It offers a conservative method that forced use of observed rather than latent constructs, limiting the complexity of the associations that we were able to investigate. However, it also offered clear advantages in that we were able to assess the overall fit of the model and as well as the strength of the associations and interactions between the variables. The analysis further highlights clearly significant and meaningful interaction effects that are masked in the linear regression models.

The direct relationship between attachment and negative symptoms does not allow us to infer causality. It may be that negative symptoms themselves impact on our measure of attachment security through impairments in memory functioning. Aleman and colleagues[32] found a small but statistically significant association between negative symptoms and memory. This was across a range of memory domains including immediate and delayed recall of verbal and non-verbal behaviour and was not specific to measures of autobiographical memory (AM) relevant to attachment functioning. In contrast, there is increasing evidence to show that AM impairment in schizophrenia is related to experience of trauma[33]. In this model, some negative symptoms may arise from the attachment system's regulation of negative affect through truncated recall of affect laden AM related to attachment related experiences which would also include loss and trauma experiences.

We did not utilize a self-report measure of attachment. However, Berry, Barrowclough and Wearden[28] have noted that patients' retrospective reports of attachment experiences may be subject to biases arising from the attachment system itself, meaning that individuals who are avoidant in their attachment are motivated to present their experiences as normalized and secure. Their comment that "*the desynchrony between semantic and episodic portrayal of attachment-related experiences is used to assess attachment on the empirically robust Adult Attachment Interview*" (p285) overcomes the aforementioned problem and is a strength of this study.

We did not measure pre-morbid functioning in our analyses. In a systematic review of the literature,[34] premorbid adjustment had a modest effect on negative symptoms. However the effects on positive symptoms were negligible. Future studies should focus on the relationships between pre-morbid social and academic functioning and its relationship to attachment and outcome.

We also note that individual patients who declined consent may have been more likely to have difficulties related to their engagement with services. Therefore our sample may underestimate the prevalence of insecure and possibly dismissive attachment in a FEP group. It has been previously shown that clients with dismissing / avoidant attachment pose particular challenges for engagement with keyworkers[7]. Insecure attachment (particularly avoidant) may be a key risk feature for the unfolding of problematical recovery, which expresses itself primarily through the individual's

interpersonal relationships including those with service providers. Consistent with this, Owens and colleagues[35] found that attachment anxiety and therapeutic alliance were significant predictors of emotion regulation problems in people with diagnosed with schizophrenia. Further research is clearly merited in this area.

Clinical Implications

Attachment security and the associated capacity to understand and reflect on one's own thoughts, and those of others (metacognition)[15] has been linked impaired functioning[36] and is also associated with a history of sexual abuse[37]. Brune[38] has found that poorer levels of metacognition are related to more negative symptoms. The finding of this study, that attachment is a consistent predictor of especially negative symptom persistence is important in the context of its applications to psychological treatments and models of mental health care for this group. We believe that this indicates a heightened importance of interpersonal processes and behaviours in the context of help-seeking, service engagement and mechanisms targeted in psychological therapies for psychosis. We note that the majority of our participants were insecure in their attachment organisation and that almost half of our participants were Insecure / Dismissive. This particular attachment strategy is linked to deactivation of positive and negative affect, distancing, impaired mentalisation, avoidance of AM and a lack of trusting and confiding relationships. Attachment as measured by the AAI provides an assessment of

affect regulation during the discussion of salient interpersonal experiences. Therefore the association with negative symptoms is of interest particularly in light of the lower levels of recovery in this outcome domain. This has clear implications for current psychological treatment models which focus on levels of deficit rather than processes of adaptation. Greater efficacy in psychological treatments for psychosis can be achieved by a clear integration of interpersonal and metacognitive aspects of the clients functioning, as well as a clear focus on adaptive reactions to emotionally salient events.

With regard to treatment implications, accessing attachment security via narrative coherence may give a richer representation of the individual's capacity to integrate the experience of psychosis, linking to concepts of resilience, and recovery in FEP. Exploration of psychological therapies that facilitate the development of mental state understanding combined with the acquisition of productive affect regulation strategies, and a restitution of an understanding of self and others may also be merited. Attachment provides a framework to understand processes of affect regulation and recovery. In particular, we identify that those individuals with dismissing attachment may well be particularly vulnerable to problematic adaptation via impoverished reflexivity and avoidant coping[39].

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Figure 1: Participant Flow

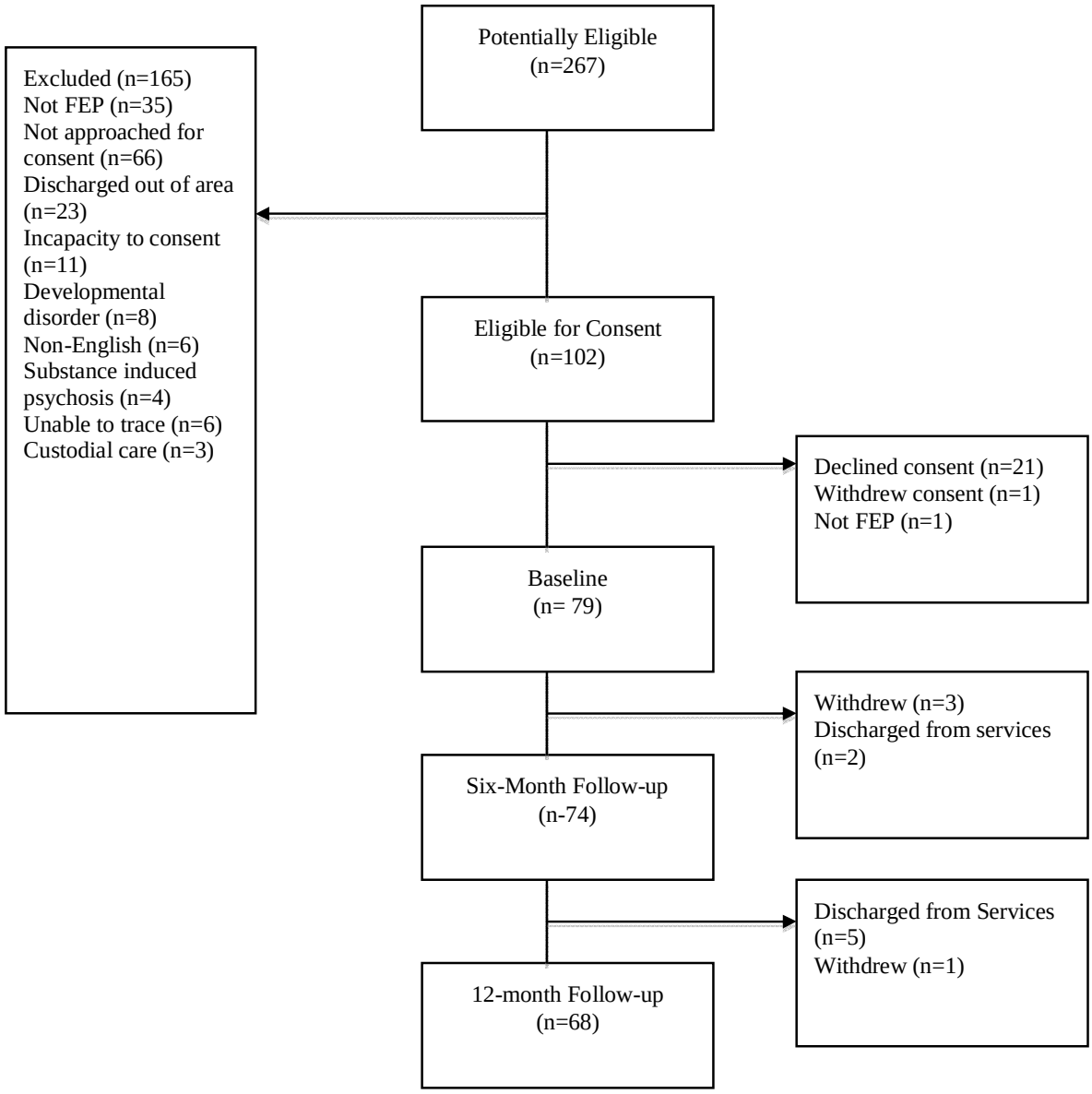
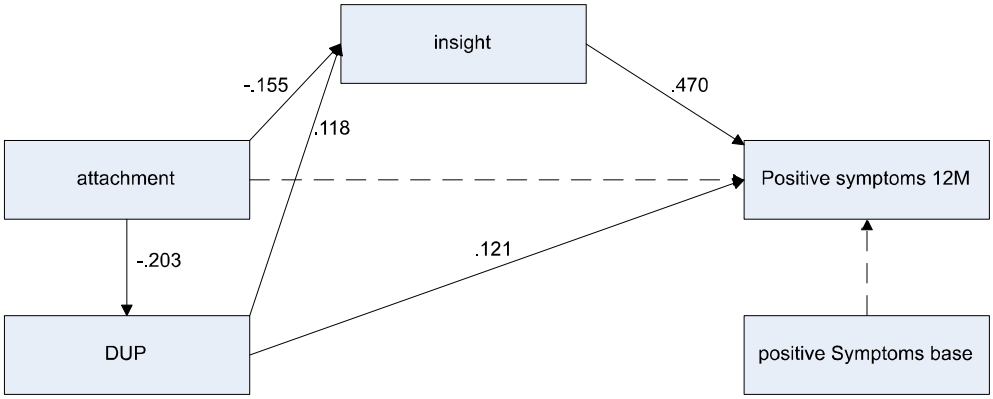
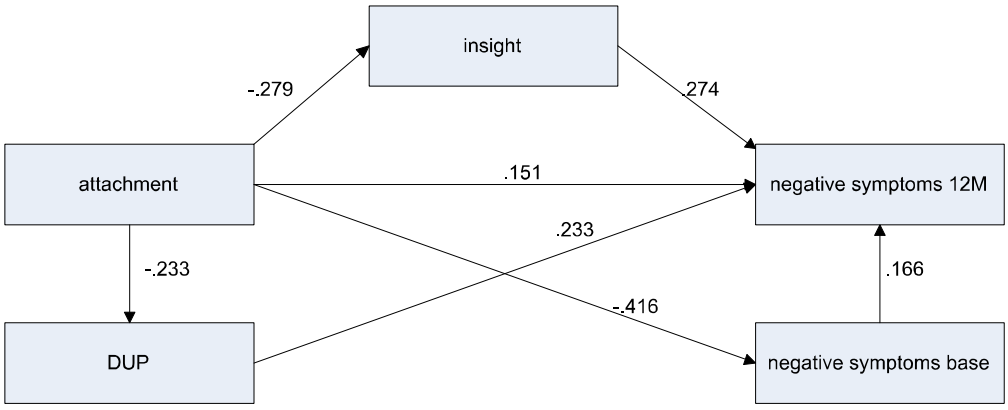


Figure 2: Mediation model, PANSS positive symptoms at 12 months



$\chi 2 = 13.82$ ($p = 0.061$); RCFI = 0.973; RMSEA = 0.05

Figure 3: Mediation model, PANSS negative symptoms at 12 months



$\chi 2$ = 9.89 (p = 0.094); RCFI = .926; RMSEA = 0.04

Table 1: Basic demographic and clinical characteristics

			N	%
Gender	Male		54	68.4
	Female		25	31.6
Diagnosis	Schizophrenia		38	52.1
	Schizophreniform disorder		2	2.7
	Schizoaffective disorder		8	11.0
	Delusional disorder		1	1.4
	Bipolar disorder		19	26.0
	Unknown		0	0.0
	Other		5	6.8
Admission at first episode	Yes		40	51.3
	No		38	48.7
Detained in hospital at FEP	Yes		20	26.0
	No		57	74.0
			Mean (SD)	**Median (IQR)**
Age at first contact			24.64 (7.08)	22 (10.75)
DUP (weeks)			44.37 (73.96)	16 (60)
PANSS	Baseline	Positive	20.82 (7.39)	20.5 (11)
		Negative	15.07 (8.31)	12 (10)
		Insight	3.17 (1.87)	3 (2.75)
		Total	74.43 (21.50)	71 (27.75)
	6 month	Positive	11.57 (5.68)	10 (6)
		Negative	13 (6.62)	11 (8.5)
		Insight	2.46 (1.77)	2 (3.0)
		Total	52.88 (17.86)	48 (25.25)
	12 month	Positive	10.7 (4.9)	9 (5)
		Negative	11.68 (7.05)	8 (9)
		Insight	2.18 (1.71)	1 (2.0)
		Total	47.78 (18.78)	42 (23)

Table 2: Summary of AAI Category for 3, 4 and 5-way analysis

AAI Category	CohT Mean (SD)	3 Way	%	4 Way	%	5 way	%
Secure: Autonomous	**6.1 (1.2)**	**17**	31.5	**12**	22.2	**12**	22.2
Insecure: Dismissing	**2.4 (0.9)**	**26**	48.1	**21**	38.9	**20**	37.0
Insecure: Preoccupied	**2.3 (0.8)**	**11**	20.4	**4**	7.4	**3**	5.6
Unresolved				**17**	31.5	**13**	24.1
Cannot Classify						**6**	11.1

AAI main category	AAI Sub category	3 Way	%	4 Way	%	5 Way	%
Secure: Autonomous (F)	F1	**2**	3.7	**1**	1.9	**1**	1.9
	F2	**6**	11.1	**5**	9.3	**5**	9.3
	F3	**2**	3.7	**2**	3.7	**2**	3.7
	F4	**3**	5.6	**0**	0	**0**	0
	F5	**4**	7.4	**4**	7.4	**4**	7.4
Insecure: Dismissive (D)	D1	**13**	24.1	**12**	22.2	**12**	22.2
	D2	**2**	3.7	**1**	1.9	**0**	0
	D3	**11**	20.4	**8**	14.8	**7**	13.0
	D4	**0**	0	**0**	0	**0**	0
Insecure: Preoccupied (E)	E1	**3**	5.6	**1**	1.9	**1**	1.9
	E2	**4**	7.4	**1**	1.9	**1**	0
	E3	**4**	7.4	**2**	3.7	**1**	1.9
Unresolved	U			**17**	31.5	**13**	24.1
Cannot Classify	CC					**6**	11.1

Table 2: Summary of AAI Category for 3, 4 and 5-way analysis

AAI Category	CohT Mean (SD)	3 Way	%	4 Way	%	5 way	%
Secure: Autonomous	**6.1 (1.2)**	**17**	31.5	**12**	22.2	**12**	22.2
Insecure: Dismissing	**2.4 (0.9)**	**26**	48.1	**21**	38.9	**20**	37.0
Insecure: Preoccupied	**2.3 (0.8)**	**11**	20.4	**4**	7.4	**3**	5.6
Unresolved				**17**	31.5	**13**	24.1
Cannot Classify						**6**	11.1

AAI main category	AAI Sub category	3 Way	%	4 Way	%	5 Way	%
Secure: Autonomous (F)	F1	**2**	3.7	**1**	1.9	**1**	1.9
	F2	**6**	11.1	**5**	9.3	**5**	9.3
	F3	**2**	3.7	**2**	3.7	**2**	3.7
	F4	**3**	5.6	**0**	0	**0**	0
	F5	**4**	7.4	**4**	7.4	**4**	7.4
Insecure: Dismissive (D)	D1	**13**	24.1	**12**	22.2	**12**	22.2
	D2	**2**	3.7	**1**	1.9	**0**	0
	D3	**11**	20.4	**8**	14.8	**7**	13.0
	D4	**0**	0	**0**	0	**0**	0
Insecure: Preoccupied (E)	E1	**3**	5.6	**1**	1.9	**1**	1.9
	E2	**4**	7.4	**1**	1.9	**1**	0
	E3	**4**	7.4	**2**	3.7	**1**	1.9
Unresolved	U			**17**	31.5	**13**	24.1
Cannot Classify	CC					**6**	11.1

Table 3: Correlations between predictors, covariates and dependent variables

	Six Months		Twelve Months	
	PANSS Positive	**PANSS Negative**	**PANSS Positive**	**PANSS Negative**
Predictors				
DUP (Log 10)	0.42**	0.24	0.26*	0.13
PANSS Insight	0.43**	0.36**	0.31*	0.44**
AAI Coherence of Transcript	-0.18	-0.43**	-0.13	-0.33*
Covariates				
Baseline PANSS Positive	0.26*	0.16	0.17	0.14
Baseline PANSS Negative	0.26*	0.60**	0.28*	0.55**

** $p < 0.01$, * $P < 0.05$

Table 4: predictors of recovery; PANSS positive and negative at six and twelve months

Dependent variable	Independent variable	Beta	t	P value	R^2 (complete model)
PANSS positive (6M)	Age	.168	1.25	.218	.309**
	Gender	-.060	-.46	.626	
	DUP	.280	2.14	.038*	
	PANSS insight	.388	2.34	.023*	
	AAI coherence	-.142	-1.05	.299	
	Baseline PANSS pos	-.044	-.27	.788	
PANSS positive (12M)	Age	.148	1.05	.299	.276*
	Gender	-.174	-1.28	.208	
	DUP	.243	1.77	.083	
	PANSS insight	.396	2.28	.027*	
	AAI coherence	-.031	-.21	.829	
	Baseline PANSS pos	-.001	-.05	.996	
PANSS negative (6M)	Age	.095	.928	.359	.611**
	Gender	.030	.309	.759	
	DUP	.183	1.85	.070	
	PANSS insight	.131	1.17	.245	
	AAI coherence	-.245	-2.30	.026*	
	Baseline PANSS neg	.522	4.62	.001**	
PANSS negative (12M)	Age	.125	.978	.339	.403**
	Gender	-.027	-.219	.828	
	DUP	.159	1.27	.210	
	PANSS insight	.312	2.20	.033*	
	AAI coherence	-.307	-2.28	.028*	
	Baseline PANSS neg	.141	.985	.330	

** $p < 0.01$, * $P < 0.05$