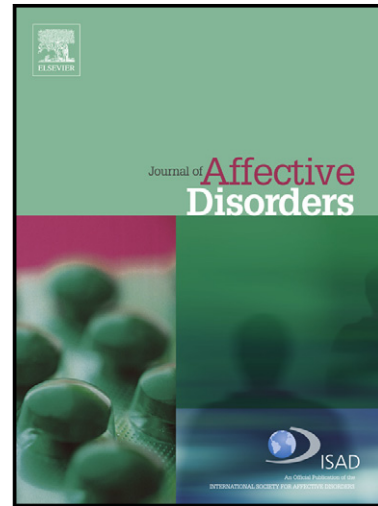


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**Social anxiety in first-episode psychosis: The role of childhood trauma and
adult attachment**

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Abstract

Background: Social anxiety is among the most prevalent affective disturbances among people with psychosis. The developmental pathways associated with its emergence in psychosis, however, remain unclear. The aim of this study is to identify the developmental risk factors associated with social anxiety disorder in first-episode psychosis and to investigate whether social anxiety in psychosis and non-psychosis is associated with similar or different adult attachment styles.

Method: This is a cross-sectional study. A sample of individuals with social anxiety disorder (with or without psychosis) was compared with a sample with psychosis only and healthy controls on childhood trauma, dysfunctional parenting and adult attachment.

Results: Childhood trauma and dysfunctional parenting ($p < 0.05$) were significantly elevated in people with social anxiety (with or without psychosis) compared to those with psychosis only and healthy controls. There were no differences in childhood trauma and dysfunctional parenting between socially anxious people with and without psychosis. Higher levels of insecure adult attachment ($\chi^2_1 = 38.5, p < 0.01$) were reported in the social anxiety group (with or without psychosis) compared to the psychosis only and healthy controls. Childhood adversities were not associated with insecure adult attachment in people with social anxiety (with or without psychosis).

Limitations: Due to the cross-sectional nature of the study we cannot infer causal relationships between early risk factors, including childhood trauma and dysfunctional parenting, and social anxiety. Also, the use of self-report measures of attachment could be subject to biases.

Conclusion: Shared developmental risk factors are implicated in the emergence of affective disorders in psychosis and non-psychosis. Social anxiety in psychosis is associated with insecurity in adult attachments which does not arise as a result of adverse developmental pathways. Understanding the bio-psycho-social risk factors for affective dysregulation in psychosis could inform psychological interventions about the role of developmental anomaly and trauma in the emergence of affective dysregulation in psychosis.

Keywords: childhood trauma; attachment; social anxiety; psychosis

Introduction

Social anxiety is among the most prevalent and debilitating affective disturbances manifest in people with psychosis with rates ranging between 8% to 36% (1, 2, 3, 4, 5, 6, 7, 8). Social anxiety is usually accompanied by high levels of depression and exerts a significant impact on social disability (2, 5, 7, 8, 9). The developmental pathways associated with the emergence of social anxiety in psychosis, however, remain unclear. It is not known whether similar or different developmental risk factors (e.g. trauma, abuse, attachment difficulties) predate the onset of social anxiety in psychosis and non-psychosis and the impact of these early risk factors on interpersonal functioning and attachment relationships.

Childhood adversities and social anxiety

Multiple, inter-related factors present during childhood and adolescence have been shown to increase susceptibility for the development of SaD in adulthood. A review of the environmental risk factors for social anxiety (10) shows that dysfunctional attachment relationships, maladaptive parenting and traumatic events such as physical and sexual abuse during the early years of life are directly implicated in the development of social anxiety. Recent findings confirm that childhood adversities and dysfunctional parenting are major contributing factors to the development of SaD (11, 12).

Similar developmental risk factors have been identified in the onset of psychosis in general. A review by Read et al (13) revealed that early abuse and maltreatment are among the most prominent factors consistently reported in the developmental pathways of those who develop psychosis with evidence supporting a dose-response relationship (14, 15, 16, 17). A recent study by Kelleher et al (18) confirms the predictive role of childhood trauma in psychosis and shows that *cessation* of traumatic experiences reduces the subsequent risk of psychotic experiences. In first-episode psychosis, in particular, exposure to childhood adversities has been linked to negative outcomes (13) including greater severity of positive symptoms and suicide attempts (19) as well as greater levels of dissociation (20).

We argue that these early risk factors for psychosis (trauma, abuse, attachment difficulties) are similar to those for non-psychotic affective disturbance such as SaD, and that it is these shared risk factors that account for the high rate of affective disorders observed in psychosis (8, 21).

Adult attachment and social anxiety

Attachment theory has been used as a framework for the understanding of the developmental origins of social anxiety (22). Bowlby (23) has argued that the quality of children's attachment with their caregiver is determinant of their emotional development. Poor quality of these bonds or their early disruption could lead to the later development of affective disturbances such as anxiety, depression, anger and fear of separation (24). Bowlby (23) has argued that dysfunctional attachment relations increase the risk of emotional detachment during adulthood manifest in the impaired ability of individuals to form and maintain meaningful attachment bonds. Adult attachment refers to individuals' views of the self and others in intimate relationships (25). Bartholomew (26) has categorized adult attachment styles into one of four categories based on how individuals perceive themselves and others: (a) a *secure* attachment style is characterized by a positive view of self and others and comfort with intimacy and autonomy; (b) a *preoccupied* attachment style is characterized by a negative view of self, positive view of others, and overdependence on others; (c) a *fearful* attachment style is characterized by a negative view of self and others, and fear of developing close relationships; and (d) a *dismissing* attachment style is characterized by a positive view of self, negative view of others, and avoidance of close attachments.

The relationship between adult attachment and social anxiety in non-psychosis has been widely examined, however, few studies have focused on clinical samples (27, 28, 29). Findings from these studies have consistently reported that individuals with social anxiety are characterized by preoccupied and fearful attachment styles which signify fear of rejection, less comfort in close relationships, difficulty in trusting others or, in the case of a preoccupied attachment style, overreliance on others. Eng et al (28) has also reported that insecure attachment in individuals with generalized social phobia (GSP) was associated with greater severity of GSP symptoms and functional impairment and lower quality of life.

However, the relationship between insecure adult attachment and SaD in the context of psychosis has not been investigated yet. It is not known whether similar or different adult attachment patterns characterize those with social anxiety in psychosis and non-psychosis. We know that insecure attachment is significantly prominent among people with psychosis (29, 30) and it is associated with greater severity of positive and negative symptoms, greater interpersonal difficulties, poorer engagement with services and poorer coping strategies (30). Insecure attachment is also associated with the presence and severity of affective symptoms

in psychosis, including depression and anxiety (31). Gajwani et al (31) has shown that in individuals at high risk of developing psychosis insecure attachment was significantly associated with social anxiety and depression. This was particularly relevant for individuals with a preoccupied and fearful attachment style.

Aims of the Study

The aim of this study is to identify the developmental risk factors associated with social anxiety in people with psychosis and without psychosis and compare these to those without social anxiety. We will also investigate the phenomenology of adult attachment in people with social anxiety (with or without psychosis) and we will examine the impact of adverse developmental experiences on adult attachment relationships in those with social anxiety (with or without psychosis).

The following hypotheses were tested:

1. People with social anxiety disorder (with or without psychosis), compared to those without social anxiety will report:
 - i) greater levels of early traumatic experiences and dysfunctional parental bonding and
 - ii) higher levels of insecure adult attachment
2. In people with social anxiety disorder (with or without psychosis), severity of early traumatic experience will be linked with greater social anxiety and avoidance.
3. In people with social anxiety disorder (with or without psychosis), greater levels of early traumatic experiences and dysfunctional parental behaviour will be associated with: lower levels of closeness and ability to depend on others; and greater anxiety in adult attachment relationships

Material and methods

Sample

Inclusion criteria

Four groups of participants aged between 16-35 years were sampled with: a) non psychotic social anxiety disorder (SaD), b) first-episode psychosis (FEP), c) first-episode psychosis with social anxiety disorder (FEP/SaD) and d) healthy controls. All participants were assessed using the Schedules for Clinical Assessment in Neuropsychiatry (32) by MM who received formal training¹ to criterion levels of reliability. Individuals in the SaD group were required to conform to ICD-10 (33) criteria (F40.1) for SaD; and in the FEP group, with ICD-10 criteria for schizophrenia or related disorder (F20, 22, 23), in the absence of a primary diagnosis of organic disorder. A community sample age matched with no psychiatric disorders was drawn from the general population and invited to take part in the study.

Recruitment

Participants with first-episode psychosis were recruited from consecutive cases managed in the Early Intervention Service of Birmingham and Solihull Mental Health NHS Foundation Trust, UK. The service manages all cases of FEP, 14-35 years, in Birmingham.

People with SaD were recruited via a self-help organization, Social Anxiety UK (www.social-anxiety.org.uk) and via local community mental health teams.

Ethical considerations

The study received approval by Birmingham East, North and Solihull Research Ethics Committee (now called West Midlands-Solihull Research Ethics Committee). Participants who were determined by their consultant psychiatrist not to have capacity to provide informed consent were not approached by the researcher (MM). All participants were provided with the Patient Information Sheet and had 48 hours to consider their participation. If they agreed to take part they were requested to sign three consent forms – one for the researcher, one for their clinical team and one for them to keep. The researcher explained to

¹ The researcher attended a formal training course on SCAN at the University of Leicester. Reliability monitoring was conducted between SCAN trainees and trainers. PANSS training was provided by an official PANSS trainer at the Early Intervention Service, Birmingham & Solihull Mental Health Foundation Trust.

participants that all data collected during the study would be kept anonymous and confidential according to the UK Data Protection Act (34). Participants were also provided with the contact details of the local Patient Liaison Service (PALS) in case they wished to talk to someone independent about the study.

Measures

Social Anxiety

The *Social Interaction Anxiety Scale* (SIAS) (35) is a 20 item scale measuring anxiety in interpersonal encounters. Using a cut off score of 36, the SIAS has been demonstrated to discriminate between social anxiety, other anxiety disorders and community samples (36) with a sensitivity of 0.93 and PPV of 0.84. The *Social Phobia Scale* (SPS) designed to be administered alongside the SIAS, is used to detect and assess performance anxiety in situations where the individual fears s/he is being observed and scrutinized by others (e.g. eating/drinking in public).

Depression

The *Calgary Depression Scale for Schizophrenia* (37) is a nine item observer rated measure specifically designed for schizophrenia, minimizing contamination by negative symptoms and the extrapyramidal side effects of neuroleptics. It is strongly correlated with the Beck Depression Inventory (38) ($r=0.91$) and is responsive to change in psychosis.

Psychosis

The Positive and Negative Syndrome Scale (39) includes scales of positive symptoms, negative symptoms and general psychopathology, and is used widely in schizophrenia research.

Parental Rearing Style

The Measure of Parental Style (MOPS) (40) is a 21-item questionnaire developed to identify and assess dysfunctional parenting. The MOPS is a shorter and simpler version of the Parental Bonding Instrument (PBI) (41) which was designed to measure two parenting dimensions, *care* and *overprotection*. However, the PBI does not directly measure experiences of abusive parenting. The MOPS addresses this limitation and consists of three subscales which correspond to three distinct parental characteristics: a) over-control, b)

indifference and c) abuse. The MOPS has good psychometric properties. Evidence for its validity comes from the high inter-correlations reported between the maternal and paternal forms of this scale and those of the PBI (40).

Childhood Traumatic Experiences

The Childhood Trauma Questionnaire (CTQ) (42) is a 28-item self-report inventory measuring retrospectively experiences of childhood abuse and neglect. It consists of five subscales: emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect. There is an additional 3-item Minimisation/Denial scale aiming to detect false-negative trauma reports (42). Participants are asked to rate the frequency with which they have shared the reported childhood experiences on a 5-point Likert scale (1-5). Higher scores represent greater severity levels of maltreatment. In order to detect cases of abuse and neglect cut-off points for each subscale are provided. The CTQ has been established as a reliable and valid measure of childhood traumatic experiences both in clinical and non-clinical populations (42).

Adult Attachment

The Revised Adult Attachment Scale (RAAS) (43) assesses different dimensions of attachment in adulthood and consists of 18 items divided in three subscales: a) the *close* subscale measures the extent to which individuals are comfortable with closeness and intimacy, b) the *depend* subscale measures individuals' ability to rely on others as well as their beliefs on whether people can be relied upon and c) the *anxiety* subscale refers to fears of being rejected and abandoned. Each item is rated on a 5-point scale and higher scores represent greater comfort with closeness, greater ability to depend on others and greater apprehension about being left and rejected. Based on scores on the three subscales, individuals can be categorized into discrete attachment styles (secure, preoccupied, dismissive, fearful). For example, high scores on the close and depend subscales coupled with low scores on the anxiety subscale define a secure attachment style. High scores on the anxiety subscale coupled with low scores on close and depend subscales define a fearful attachment style. The RAAS has sound psychometric properties (43, 44). Cronbach's alpha for the close, depend and anxiety subscales was 0.77, 0.78 and 0.85, respectively, suggesting high internal consistency (43). The RAAS has been used in a sample of psychotic patients

(45), proving to be a useful tool in revealing links between different coping strategies adopted in psychosis and attachment styles in adult relationships.

Statistical analysis

Hypothesis 1

- (i) Early traumatic experiences and dysfunctional parental bonding

A 2 X 2 between-subjects multivariate analysis of variance (MANOVA) will be performed with social anxiety disorder (present, absent) X psychosis (present, absent) as independent variables. The CTQ subscales – emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, - and the MOPS subscales – maternal indifference, maternal over-control and maternal abuse as well as paternal indifference, paternal over-control and paternal abuse- will be used as dependent variables. Depression scores (CDSS) will be entered as a covariate in order to examine whether retrospective reports of early adverse developmental experiences were affected by depressed mood and related cognitions.

- (ii) Adult attachment

Based on scores on the three RAAs subscales, participants will be categorised as secure, preoccupied, dismissive or fearful (43). The last three styles (preoccupied, dismissive, fearful) indicate insecurity in attachment relations. Therefore, participants identified as preoccupied, dismissive and fearful will be classified as having an Insecure Attachment Style. Chi-square will be used to test whether those with social anxiety disorder (with and without psychosis) reported higher levels of insecure adult attachment compared to those without social anxiety.

Hypothesis 2

In order to detect severe cases of abuse and neglect we will use the published cut-off points for each CTQ subscale: ≥ 13 for emotional abuse; ≥ 10 for physical abuse; ≥ 8 for sexual abuse; ≥ 15 for emotional neglect and ≥ 10 for physical neglect. Individuals who score below the above cut-off points will comprise the “*non-severe trauma*” group whereas those who score above will comprise the “*severe trauma*” group. A multivariate analysis (MANOVA) with the SIAS and SPS as dependent variables will be used to examine differences in social anxiety and avoidance between socially anxious individuals (with and without psychosis) with severe vs. non-severe trauma.

Hypothesis 3

Pearson's correlation will be used to test for the relationship between CTQ and MOPS subscales and the three RAAS subscales: close, depend and anxiety. Bonferroni adjustment will be employed.

Results

The sample

Eighty-four patients with first-episode psychosis (FEP) were approached to take part in the study of whom eighty (95.2%) consented. Twenty (25%) out of the sample also received an ICD-10 diagnosis of social anxiety disorder (FEP/SaD) based on the SCAN. In addition, all twenty scored above the cut-off points on both the SIAS (> 36) and the SPS (> 26). An age matched healthy control group ($n=24$) was also recruited. Table 1 presents information on the demographic characteristics of the samples. The SaD group was approximately 3 years older than those in the other groups. Also, both SaD groups showed a female excess whereas in the FEP (no SaD) group the expected male excess was observed. Chi-square tests showed significant differences in ethnicity ($\chi^2_{(12)}=59.7, p<0.01$), education ($\chi^2_{(9)}=43.5, p<0.01$), occupation $\chi^2_{(9)}=42.3, p<0.01$) but not in marital status ($\chi^2_{(9)}=9.1, ns$). These differences reflect the expected higher functioning of the non-psychotic socially anxious participants. The main clinical characteristics of the sample are presented in Table 2. The two social anxiety groups with (FEP/SaD) and without psychosis (SaD) reported similar levels of social anxiety, (SIAS: $F_{1,49}=2.55, ns$), social avoidance (SPS: $F_{1,49}=1.65, ns$) and depression ($F_{1,49}=0.26, p=ns$), with 64.5% of the SaD and 65% of the FEP/SaD groups shown to be at least moderately depressed. The two psychotic groups (with vs. and without social anxiety) reported no significant differences in the overall occurrence of delusions ($F_{1,69}= 0.137, ns$) including delusions of grandiosity ($F_{1,69}= 0.76, ns$) and persecution ($F_{1,69}= 2.24, ns$); similarly, the level of hallucinations did not differ between the two groups ($F_{1,69}< 1, ns$).

[TABLE ONE]

[TABLE TWO]

Hypothesis1

- (i) Early traumatic experiences and dysfunctional parental bonding

Depression (CDSS) was found to be a significant covariate ($F_{11,87}=1.9, p<0.05$). The overall multivariate model was significant for social anxiety disorder ($F_{11,87}=1.9, p<0.05$). In line with the first hypothesis, people with social anxiety disorder (with and without psychosis) compared to those without social anxiety (FEP/no SaD and healthy controls), reported:

- a. significantly greater levels of early traumatic experiences, particularly CTQ emotional abuse ($F_{1,97}=4.8, p<0.05$) and sexual abuse ($F_{1,97}=3.7, p=0.05$) and
- b. higher levels of dysfunctional parental behaviour, particularly MOPS paternal indifference ($F_{1,97}=5.6, p<0.05$) and paternal abuse ($F_{1,97}=6.1, p<0.05$). A strong trend was found for MOPS maternal over-control ($F_{1,97}=3.7, p=0.06$) and paternal over-control ($F_{1,97}=3.7, p=0.06$) (Table 3)

The social anxiety X psychosis group interaction was also significant ($F_{11,87}=2.1, p<0.05$). Univariate tests indicated this interaction was significant for childhood emotional neglect ($F_{1,97}=8.1, p<0.01$) and paternal indifference ($F_{1,97}=4.8, p<0.05$). Further t-tests were conducted in order to unpack the interaction effects (*alpha* value was set at 0.0125 following Bonferroni adjustment). Examining the simple main effect of *social anxiety* at the two *psychosis* levels (present vs. absent), results revealed that childhood emotional neglect ($t(52)=4.2, p<0.001$) and paternal indifference ($t(50)=5.3, p<0.01$) were significantly greater in the SaD (no psychosis) group vs. the healthy control group (no SaD/no psychosis). Similarly, examining the simple main effect of *psychosis* at the two *social anxiety* levels (present vs. absent), revealed significant differences in paternal indifference ($t(62)=2.7, p<0.01$) between the FEP (no SaD) group vs. healthy control group (no SaD/no psychosis). No differences were detected between the FEP/SaD and SaD groups in levels of emotional abuse and paternal indifference.

These findings indicate that developmental risk factors of childhood traumatic experiences and dysfunctional parental bonding are a feature of the developmental trajectory of social anxiety disorder, irrespective of the presence of psychosis.

[TABLE THREE]

- (ii) Adult attachment

Table 3 summarises data on the attachment styles of the groups. In the social anxiety group (with and without psychosis), 78.4% were classified as having an insecure adult attachment style. In line with the hypothesis, individuals with social anxiety (with and without psychosis) reported greater levels of insecure adult attachment compared to those without social anxiety ($\chi^2_1=38.5$, $p<0.01$). No significant differences in attachment style ($\chi^2_1=0.6$, $p=ns$) were reported in the social anxiety groups with (FEP/SaD) vs. without psychosis (SaD).

Hypothesis 2

Forty-five per cent (45%) of those in the social anxiety group (with or without psychosis) ($n=51$) reported severe levels of emotional abuse followed by emotional neglect (41.2 %); physical neglect (17.65); sexual abuse (15.7%) and physical abuse (11.7%).

The results showed no significant differences in social anxiety and avoidance between those with severe vs. non-severe trauma. Lowering the threshold to include individuals with moderate levels of trauma still did not reveal any differences in social anxiety and avoidance between the two groups (moderate/severe vs. no/minimal trauma). Hence, our findings did not support a dose-response relationship between trauma and social anxiety.

Hypothesis 3

No significant relationships were detected between childhood adversities including early trauma, dysfunctional parental bonding and levels of closeness, dependability and anxiety in adult attachment in people with social anxiety disorder (with and without psychosis). It appears that the quality of adult attachment relationships remained unaffected by disturbances in the developmental trajectory of people with social anxiety.

Discussion

Developmental risk factors and social anxiety

The findings of this study show that early developmental experiences in the form of early trauma and dysfunctional parenting are features of the developmental pathways of those who later develop social anxiety, whether in the context of psychosis or not. Childhood abuse accompanied by dysfunctional parental behaviour, such as overcontrol and indifference, were significantly greater in those with SaD (with or without psychosis) compared to those without. This is consistent with Kessler et al (46) who showed that childhood adversities and particularly those associated with maladaptive family functioning were the strongest predictors of psychopathology. Parental overcontrol and overprotection have been previously linked to the development of social anxiety (47, 48). Emotional abuse and emotional neglect are the most frequently reported types of childhood trauma by individuals with SaD (11, 49). This was also evident in our social anxiety group both in those with and without psychosis. These risk factors were also greater in the psychosis group compared to healthy controls. We can conclude therefore that the social risk factors observed in psychosis also raise the risk for major 'co-morbid' affective disturbance, in this case social anxiety disorder.

Our findings did not support a dose-response relationship between trauma and social anxiety. Those with severe trauma reported similarly elevated levels of social anxiety and avoidance as those with non-severe trauma. This does appear to be in contrast with earlier findings by Kuo et al (11). However, the authors of that study used the CTQ cut-off points to determine the presence rather than the severity of each type of childhood trauma, including therefore in their analysis low and minimal levels of trauma.

In the present study those with social anxiety in the context of psychosis reported equally high levels of early attachment difficulties and trauma as their counterparts without psychosis. This indicates that shared developmental risk factors could be implicated in the emergence of affective disturbances in psychosis and non-psychosis. This lends supports to our model (Figure 1) describing the interaction between developmental trauma and social risk factors leading to the emergence of ('comorbid') affective dysregulation in psychosis.

According to this model (8, 21), early risk factors known to operate in psychosis (e.g. early trauma, dysfunctional parenting) also create a vulnerability for the development of affective disturbances during adolescence. These shared developmental risk factors interact with

additional biosocial risk factors (e.g. heritability, poverty) to create certain ‘at risk’ mental states which in parallel, place individuals at high risk of developing psychosis (e.g. maladaptive emotional and interpersonal responses, heightened sensitivity to stress, social avoidance).

In other words, we argue that the high level of affective dysregulation in psychosis arises as a result of shared social risk factors (for psychosis and SaD). It has also been recently argued that affective dysregulation is not merely a co-morbidity, but an essential part of the pathway to psychosis (50).

[FIGURE 1 HERE]

Adult attachment and social anxiety

The association between insecure adult attachment and social anxiety in non-psychosis has been consistently reported in literature (27, 28). However, the relevance of this link in psychosis is yet to be explored. The findings of this study show that insecure adult attachment was significantly greater in those with social anxiety (with or without psychosis) compared to those without social anxiety. Similar levels of insecurity in adult attachment relationships were reported in socially anxious people with and without psychosis. These findings confirm the link between insecure attachment and non-psychotic social anxiety and further demonstrate that analogous dysfunctional patterns of adult attachment are manifest in social anxiety in psychosis.

Gajwani et al (31) has reported similar findings in a group of people at high risk of developing psychosis. Eighty per cent of the group was classified as insecurely attached and insecure attachment was associated with elevated levels of social anxiety and depression. It is evident, therefore, that interpersonal disruption in the form of dysfunctional adult attachment, is a prominent feature of social anxiety, whether in the context of psychosis or not.

Investigating the role of developmental risk factors on interpersonal functioning in those with social anxiety (with and without psychosis), our findings showed that exposure to childhood adversities was not associated with dysfunctional adult attachment patterns. Attachment has been used as a theoretical framework for the understanding of childhood adversity and affect regulation in psychosis (51, 52). According to this, early adverse experiences such as abuse or neglect are suggested to contribute to the development of the main precursors of psychosis and the emergence of a negative trajectory of psychosis characterised by dysfunctional

emotional and interpersonal adaptation (e.g. insecure attachment), negative cognitive schemata about self and others, heightened sensitivity to interpersonal stress and dysregulated affect. The role of internal working models in the development and maintenance of affective and interpersonal difficulties in psychosis has also been emphasized (29).

We provide here an alternative explanation for the interplay between childhood adversity, adult attachment and affect dysregulation in psychosis. It is known that social anxiety is associated with significant shamefulness and perceived loss of social status (53, 54). The relationship between shame and social anxiety has been theoretically and empirically validated (53, 54, 55, 56, 57). Our previous research supports and extends these findings in psychotic samples (7, 58) where we have shown that shame cognitions arising from a stigmatized illness (i.e. psychosis) accompanied by feelings of humiliation and social rejection play a significant role in the development and maintenance of social anxiety. We have suggested that fear of the mental illness being revealed to others and the consequences of this discovery in terms of social exclusion and rejection leads individuals to conceal their stigmatized identity through submissiveness, avoidance and withdrawal from social interactions (58). It is suggested, therefore, that this fear of discovery of the individual's mental illness by others, further impacts upon the formation and maintenance of close relationships following the diagnosis and underlies dysfunctional attachment patterns manifest in lack of ability to trust others, fear of rejection and abandonment and increased anxiety. The interpersonal disruption evident in our social anxiety group could be catalysed by the increased shamefulness associated with the stigma of mental illness and related negative appraisals about the self and others and not solely by adverse developmental pathways and associated cognitive schemata.

Methodological issues and limitations

This is the first study to undertake a detailed analysis of the developmental pathways associated with the emergence of SaD in psychosis by directly comparing a psychotic with a socially anxious non-psychotic group.

Although important links were revealed between early risk factors, including childhood trauma and dysfunctional parenting, and social anxiety, the cross-sectional nature of the study means we cannot infer causal relationships. Depressed mood and related appraisals may have influenced the retrospective reports of childhood adversities. Given the considerably elevated

levels of depression in our sample, it is possible that the recollection of childhood experiences and quality of parenting was biased by depressive thinking either by selectively retrieving or exaggerating the negative events of their early years. However, after controlling for the effect of mood, the links we established with childhood adversities remained highly significant. Furthermore, recent evidence provides support for the reliability and validity of retrospective self-reports of early adverse experiences by individuals with psychosis (59).

We used a self-report attachment measure which, although has sound psychometric properties, it could be subject to biases (e.g. individuals avoidant of attachment could perceive themselves instead to be independent and secure in their attachment relations). The alternative would be to use an interview based assessment, such as the Adult Attachment Interview (AAI) (60). However, this interview is particularly lengthy, time-consuming and requires extensive training. Despite these methodological differences, recent evidence supports the construct validity of attachment measurement, including the RAAS and AAI, in individuals with psychosis (30).

Clinical implications

The findings of this study have significant implications for psychological interventions for the treatment of social anxiety and associated interpersonal disruption in psychosis. Our study provides insight into the developmental pathways of SaD and further provides a theoretical framework for the understanding of bio-psycho-social risk factors for affective dysregulation in psychosis. This framework could inform psychological interventions, such as cognitive-behavioural therapy (CBT), about the role of developmental anomaly and trauma in the emergence of affective dysfunction when this is co-morbid in psychosis. It also highlights the importance for practitioners of assessing trauma and enquiring about the role of childhood adversity in order to inform psychological formulations and treatment plans; we note this is congruent with the recent updated recommendations of the NICE guidelines for schizophrenia (61).

We have previously argued that CBT for social anxiety in psychosis could be significantly enhanced with an additional focus on shame and entrapment cognitions linked to psychosis which drive safety behaviours (e.g. avoidance and/or withdrawal from social interactions, submissiveness) in an attempt to conceal the stigmatized identity (58). If adult attachment difficulties and interpersonal disruption is further exacerbated by these safety behaviours, underpinned by fear of discovery of the mental illness by others and the consequences

entailed, then targeting shameful cognitions and reducing concealment-like behaviours could be effective in addressing the maintenance of interpersonal and relational difficulties in those with psychosis.

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Table 1. Demographic characteristics of participants

	FEP(no SaD) (n=60)	FEP/SaD (n=20)	SaD (n=31)	Healthy Community group (n=24)
Sex				
Male	46 (76.6%)	7 (35%)	11(35.5%)	11 (45.8%)
Female	14 (23.3%)	13 (65%)	20 (64.5%)	13 (54.2%)
Age (mean, SD)	24.(4.5)	24.4(5.1)	27.6 (5)	24.2 (5)
Ethnic Origin				
Afro-Caribbean	9 (15%)	2 (10%)	0 (0%)	1 (4.2%)
Asian	30 (50%)	8 (40%)	1 (3.2%)	13 (54.1%)
British-white	11(18.3%)	7 (35%)	29 (93.5%)	10 (41.7%)
British-black	10 (16.6%)	2 (10%)	1 (3.2%)	0 (0%)
Other	0 (0%)	1 (5%)	0	0 (0%)
Education				
Dropped out of school	27 (45%)	5 (25%)	2 (6.4%)	5 (20.8%)
GSCE				
A levels	9 (15%)	5 (25%)	8 (25.8%)	1 (4.2%)
Degree/HND	17 (28.3%)	7 (20%)	12 (38.7%)	2 (8.3%)

	7 (11.7%)	2 (10%)	9 (29.1%)	16 (66.7%)
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Occupation

Employed	10 (16.7%)	4 (20%)	15 (48.4%)	12 (50%)
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Unemployed	41 (68.3%)	12 (60%)	10 (32.2%)	0 (0%)
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Student	8 (13.3%)	3 (15%)	4 (12.9%)	11 (45.8%)
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Household	1 (1.7%)	1 (5%)	2 (6.4%)	1 (4.2%)
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Marital Status

Single	50	17	20	17
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Cohabiting	3	1	5	3
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Married	6	1	6	3
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Separated	1	1	0	1
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Table 2. Clinical characteristics of the sample (means/SD)

	FEP(no SaD) (n=60)	FEP/SaD (n=20)	SaD (n=31)	Healthy Community group (n=24)
Social anxiety				
SIAS	17.4 (10.5)	47.9 (9.8)	54 (15)	11.2 (6.7)
SPS	9.9 (9.1)	40.75 (13.7)	46.3 (15.9)	5.5 (4.5)
Depression				
CDSS	2.4 (3.6)	8.9 (6.4)	7.4 (4.5)	0.7 (1.2)
Positive psychotic symptoms PANSS				
Delusions	4.67 (2.0)	4.88 (2.9)		
Hallucinations	4.41 (1.5)	4.33 (2.0)		
Grandiosity	1.77(1.5)	2.16 (1.8)		
Suspiciousness/ Persecution	3.67 (2.1)	4.55 (2.2)		

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The study did not receive external funding

Contributors

Dr Michail and Prof. Birchwood designed the study and Dr Michail wrote the protocol. Dr Michail managed the literature searches, collected the data and undertook the statistical analysis. Prof. Birchwood provided consultation on the statistical analysis. Dr Michail wrote the first draft of the manuscript. Both authors contributed to and have approved the final manuscript.

Conflict of Interests

None

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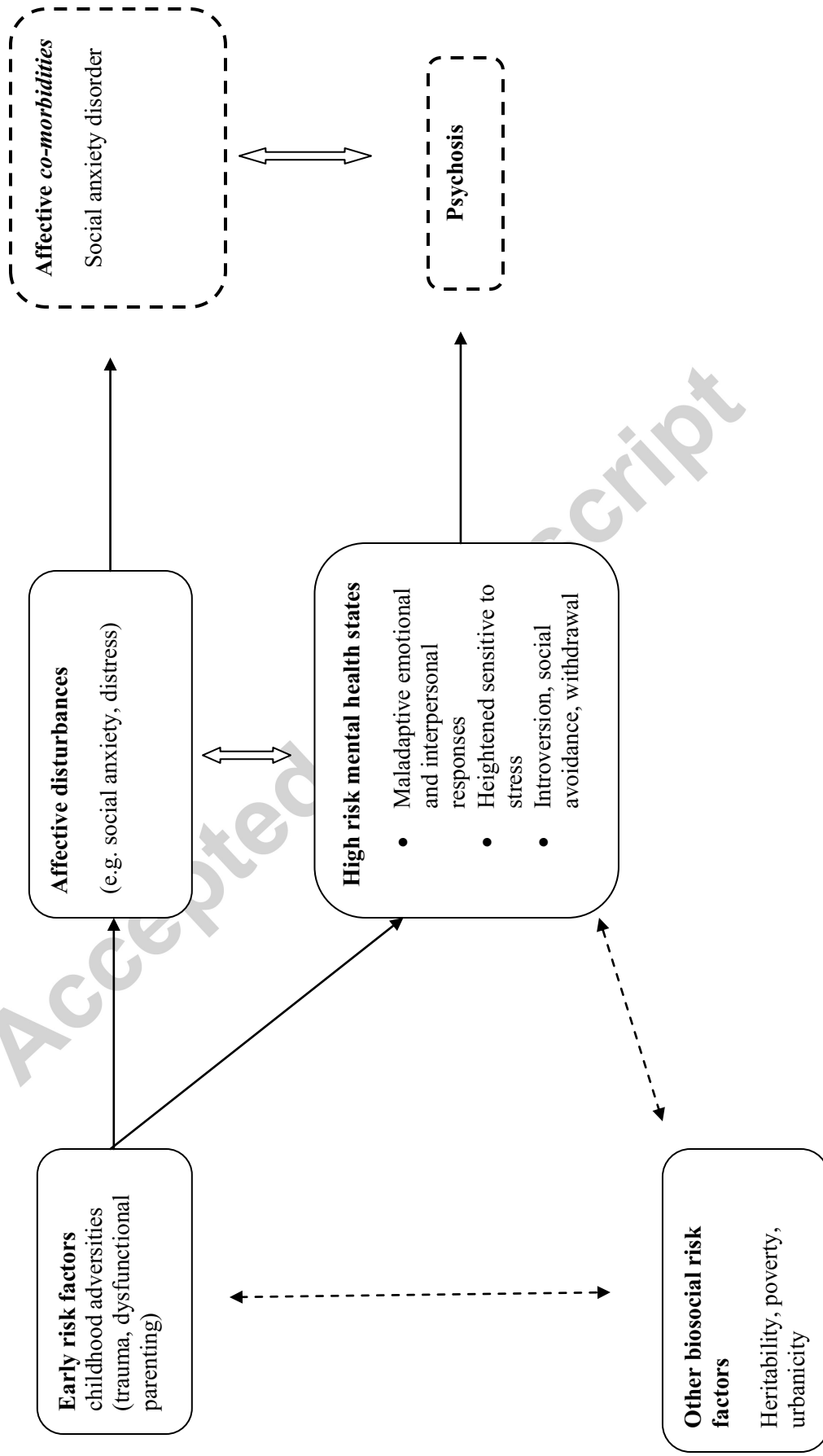


Figure 1. A bio-psycho-social model of risk factors for the understanding of affective dysregulation in psychosis