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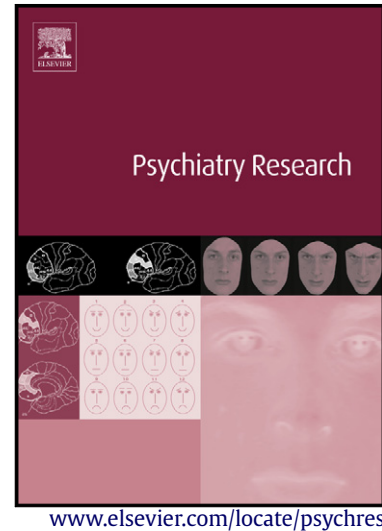
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Depression in First Episode Psychosis:**The role of Subordination and Shame**

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Abstract

Depression in early psychosis is linked to poor outcome, relapse and risk of suicide, yet remains poorly understood. This article aims to examine the development of depression in acute and post psychotic phases of first episode psychosis (FEP), and its relationship to persecutors, voices, insight, and recovery. Data were gathered on 92 patients with acute FEP on depression course, severity and experience of positive symptoms, insight and appraisals of illness using validated semi-structured interviews and questionnaires. Measures were repeated at 12 months. Malevolent voices, use of safety behaviours and subordination to persecutors were associated with depression and suicidal behaviour in acute FEP. Loss, Shame, low level continuing positive symptoms and longer duration of untreated psychosis were associated with post psychotic depression. Negative appraisals remained stable despite recovery in other symptom domains. Thus, depression and risk in early psychosis may be propagated by the personal significance and content of positive symptoms experienced. When in recovery, low level symptoms, longer period of illness and negative appraisals are significant factors.

Key Words: Depression, Psychosis, First Episode, Schizophrenia, Appraisals

1. Introduction

Depression in psychosis has clearly been identified as a significant predictor of unmet need (Landolt et al., 2012), and is strongly associated with poor outcome and suicide (Challis et al., 2013; Upthegrove et al., 2010). Depression in the acute phase of schizophrenia often occurs at higher rates here than at other stages (Tapp et al., 2001), yet the relationship between depression and acute psychotic symptoms is poorly understood (Cotton et al., 2012). Much of the current literature focuses on the post psychotic or chronic phase of illness (Buckley et al., 2009), often with little distinction between the two. We have previously shown that depression in the prodrome to first episode psychosis (FEP) will convey an increased risk of depression and suicidal behaviour at future points, however also that depression can break through at any time unheralded by previous depression (Upthegrove et al., 2010). In post psychotic depression (PPD) few studies have focused on depression occurring after the *first* episode, however those that do show a higher rate of depression here than following relapse in established psychosis (Upthegrove, 2009; Upthegrove et al., 2010). Depression in schizophrenia and “non-affective psychosis” has been described as an intrinsic part of the syndrome itself, “revealed” as positive symptoms abate, or the result of anti-psychotic medication (Siris, 2004). Whether there is overlap between depression and features of negative symptoms, for example anhedonia and lack of volition, has been debated for some time with authors concluding that it is possible to identify depression within non-affective psychotic illness (Addington et al., 1992; Siris, 2004). Yet whether depression with and without psychosis is driven by the same process as is under-researched. We have yet to investigate the phenotype of depression in FEP in any real depth. A psychological model of post psychotic depression suggests a cognitive process of regained insight and appraisal of illness, and the impact of diagnosis as a label itself (Birchwood et al., 2005; Freeman and Garety, 2003). Recently increased interest has focused on the role of trauma for increasing the risk of affective instability and psychosis through enduring biological impacts (Collip et al., 2013). Positive psychotic symptoms and illness appraisals can also provide fuel for this traumatic pathway, yet have not been studied in the acute phase, or to date in PPD following the first episode. The early years of psychosis remain high risk in terms of both suicidal behaviour and setting the trajectory for future functional outcome (Crumlish et al., 2009; Nordentoft et al., 2002). A fuller understanding of depression in FEP here has potential to translate in to more accurately targeted therapies and better outcomes for patients. This study aims to address this knowledge gap. Early psychosis, prior to longer term pharmacotherapy and during the first experience of acute psychotic symptoms, provides an ideal period to explore potential associations. We propose that psychological appraisals of positive symptoms and illness itself during this first experience will have maximum impact on the presence and persistence of depression.

1.1 Aims and Hypotheses

This study aims to provide an in-depth examination of depression in first episode psychosis, its relationship to other symptom dimensions and recovery in a phase specific manner.

We hypothesise that in the acute phase of FEP threat from persecutors and voices, insight and negative illness appraisals will be associated with the presence of depression. In post psychotic depression following FEP, we hypothesise that greater insight and negative illness appraisals will continue to be related to the presence of depression.

2. Methodology

A cohort study using validated questionnaires and semi structured interviews was conducted. The study was set in the Birmingham Early Intervention Service (EIS), responsible for the assessment and treatment of all FEP presenting to Birmingham and Solihull Mental Health Foundation Trust (BSMHFT). The City of Birmingham, UK, has a population of 1.2M, and is a city of diverse socio-economic and ethnic communities. All patients meeting inclusion criteria were invited to participate at their first point of contact with the service. Research measures were completed by participants at home or inpatient unit with researchers (RU, KR, KB and RM) trained in the use of all measures to acceptable reliability.

UK National Research Ethics Committee (NRES) approval was obtained for the study, reference number 0205437

2.1 Inclusion and Exclusion Criteria

Inclusion:

- Age 16-35 years
- Presenting in the acute phase of illness
- Within 4 weeks of onset of treatment
- First episode of psychosis: conforming to any ICD-10 category of psychotic illness (F20-29, F30.2, F31.2, F31.5 and F32.3(WHO, 1992). A broad diagnostic range was chosen in order to avoid premature exclusion of participants during a period of diagnostic uncertainty.

Exclusion:

- Any previous treated episode of psychosis
- Organic process as the primary diagnosis
- Unable to communicate verbally in English

2.2 Definitions

Acute phase of FEP was defined as the onset of psychosis and before significant reduction in positive symptoms. Participants were grouped into those with and those without depression in the Acute as defined by a Calgary Depression Scale for Schizophrenia (CDSS) score of >7 (Addington et al., 1993).

Post psychotic phase of illness was defined scoring on Positive and Negative Symptom Scale (PANSS) of less than 14 on positive scale total and less than 3 on any individual P1-7 item occurring following treatment as usual (with antipsychotic medication, case management and supportive therapy). Post Psychotic Depression (PPD) is defined as a depressive episode based on CDSS score of 7 or more at follow up. This is in keeping with ICD-10 definition of F20.4 post schizophrenia depression requires that positive symptoms “no longer dominate”(WHO, 1992)

2.3 Research Measures

Baseline Measures; data collected at first presentation with FEP, therefore participants were in the acute phase of FEP, defined as the onset of psychosis and before significant reduction in positive symptoms:

2.31 Demographic details:

Demographic data of age, gender, ethnicity, frequency and type of substance misuse were recorded.

2.32 Best-estimate lifetime diagnosis:

Schedule for Clinical Assessment in Neuropsychiatry 2.1(SCAN)(WHO, 1999): This semi-structured interview, supplemented with informant responses and case note information, was used to assess lifetime diagnosis. Interviewers using the SCAN received formal training to acceptable reliability. SCAN diagnoses were generated using the CATEGO algorithms, with any discrepancy between clinical and computer generated diagnoses discussed by at least two researchers and a consensus reached. SCAN was also used to rate presence absence and date of any episodes of self harm.

2.33 Severity of current psychotic symptoms:

Positive and Negative Symptom Scale (PANSS)(Kay et al., 1987):The current severity of psychotic symptoms, was captured using PANSS ratings, made on the basis of the standard semi-structured interview.

2.34 Duration of Untreated Psychosis (DUP):

DUP was calculated using standardised and robust criteria as the interval between the onset of psychosis (the period when the patient experiences prominent psychotic symptoms as identified by the patient or by people observing the patient, equating to a score of 3 or more on any individual PANSS positive item score or 14 or more on the total positive scale) and the onset of criterion treatment (defined as antipsychotic medication for more than 14 days) following Larsen criteria (Larsen et al., 1996).

2.35 Depression Measures:

a) *Presence/absence of prodromal depression;*

The SCAN interview was used to determine the presence/absence of an episode of depression in the prodrome of first episode psychosis, with the prodromal period defined as the 6 month period before onset of psychotic symptoms.

b) *Presence/absence of acute depression*

Calgary Depression Scale for Schizophrenia (Addington et al., 1993); The CDSS is a structured interview which ensures separation from negative or extra pyramidal symptoms and is scored for the preceding 2 weeks. A score of 7 or more has 82% specificity and 85% sensitivity to predict a moderate or severe depressive episode (Addington D, 1996).

2.36 Insight and Illness Appraisals:

a) *Insight Scale (IS)* (Birchwood et al., 1994); The self-report Insight Scale (IS) consists of 8 questions which measure the three standard dimensions of current insight; awareness of illness, awareness of symptoms and need for treatment. It has demonstrable validity and reliability. A total score is available for overall insight on a 0-12 scale whereby 12 is full insight. Scores over 9 represent “good” insight. The IS compares favourably with other standard measures of insight used in psychosis research and has the benefit of being brief (Sanz et al., 1998).

b) *Personal Beliefs about Illness Questionnaire (PBIQ-R)* (Birchwood et al., 2000); The PBIQ-R is a self-report questionnaire grounded in social ranking theory, and was designed to evaluate how individuals appraise the personal threat of their illness. The PBIQ-R yields five subscales, assessing appraisals in terms of: ‘loss’, referring to the loss of social goals, roles and status; ‘entrapment’, evaluating the degree to which individuals feel unable to escape from their situation; ‘shame’, assessing the degree of shame experienced; ‘control’, referring to the degree to which individuals feel in control of their illness; and ‘group fit’, referring to the extent to which individuals feel that they no longer ‘fit in’ or are socially excluded because of their illness.

c) *Beliefs about Voices Questionnaire – Revised (BAVQ-R)* (Chadwick et al., 2000): The BAVQ-R is a validated self-report measure of patient’s beliefs and behaviour about auditory hallucinations. It assesses the perceived malevolence, benevolence and omnipotence of voices and patients’ resistance and engagement with their auditory hallucinations, and their emotional and behavioural reactions to them. The three sub-scales relate to: malevolence (six items: e.g. ‘My voice is punishing me for something I have done’ or “My voice is evil”); benevolence (six items: e.g. ‘My voice wants to protect me’ or “My voice is helping me to develop special powers and abilities”); omnipotence (six items e.g. “My voice is very powerful”) in addition to two sub scales reflecting an individuals’ reaction and behaviour in relation to their voice: resistance (7 items e.g. in relation to my voice I “tell it to leave me alone”) and engagement (8 items e.g. “I willingly do what my voice tells me to do”). All responses are rated on a 4-point scale: disagree (0); unsure (1); agree slightly (2); agree strongly (3). The measure thus assesses degree of endorsement of items.

Individuals hearing more than one auditory hallucination complete the questionnaire for their 'dominant voice'.

d) *Voice Power Differential Scale* (Trower et al., 2004) The perceived power of voices was rated using the Voice Power Differential Scale (VPD). This uses a differential scale linked to the concept of power and omnipotence. The voice hearer is asked the question, "in relation to my voice I feel.....much more powerful than my voice " to "we have the same power as each other" and "my voice is much more powerful than me", giving a total power score.

e) *Details of Threat Questionnaire* (DOT) (Freeman et al., 2001) The DOT is a validated semi-structured interview that gains information as to the identity, type of threat and power of persecutors. Distress and ability to cope should the threat occur are self-rated on 0-10 linear scales and strength of belief on a self-report 0-100% scale

f) *Safety Behaviours Questionnaire* (SBQ) (Freeman et al., 2001): The SBQ is a validated semi structured interview that rates seven specific types of safety behaviour; Avoidance, In-Situation safety behaviours, Escape, Compliance with persecutors demands, Help seeking, Aggressive acts and those carried out by the participant in the hope of reducing threat but judged by the interviewer to have no logical relation to the achievement of this aim (Delusional). For each positive response, frequency of engagement with safety behaviours is rated on a four-point scale. The SBQ has been shown to have good inter-related reliability and acceptable test-retest reliability (Freeman et al., 2007).

2.37 Follow Up Measures at 12 months:

CDSS; IS; PANSS; PBIQ-R

2.4 Statistical Analysis

A database was created and data analysed using IBM® SPSS® Statistics Version 19.

Initial power calculations, based on one main outcome measure (PBIQ –R: Shame) (Iqbal et al., 2000) revealed that a sample size of 36 in each group of depressed and non-depressed participants would have 90% power to detect a medium effect size (defined 0.5 of a population standard deviation between the means respectively) on subscales of the PBIQ-R.

Non-categorical data were tested for normal distribution using the Blom method of p-p plots and parametric tests of significance were used to compare continuous measures between participants with and without depression in the acute and post psychotic phases. ANOVA was used as multiple hypothesis and interactions resulted in an increased chance of type 1 error, which is reduced in ANOVA compared to t-

tests (Rice, 1989). Where data were not normally distributed (DUP) non parametric tests were used.

In order to determine the most significant predictors for the presence/absence of depression in the acute phase and presence/ absence of post psychotic depression, regression models were produced. The presence/ absence of depression in the prodrome, in addition to other significant variables from univariate analysis (as judged by significance <0.1) were entered in to a binary logistical regression analysis, after tests for multicollinearity.

3. Results

A total of 110 individuals met inclusion criteria. 16% (N=18) refused to participate, as they did not want to take part in any research, leaving 92 who entered the study. Those declining to participate did not significantly differ in age, gender or ethnic group from the participant group. The sample were 75% male, 35% White British had a mean PANSS positive score of 18.84 and with 70% meeting diagnostic criteria for schizophrenia. Full demographic and baseline clinical details of the study sample are given in table 1.

Full baseline data on voice appraisals (BAVQ-R scores) were available on 76% (N=70) participants: 19 (21%) reporting no auditory hallucinations and 3% (N=3) not completing the BAVQ-R. Full baseline data on persecutory beliefs (DOT and SBQ scores) were available on 82% (N=76) participants, with 17% (N=16) not reporting persecutors. All 92 participants completed the remaining baseline measures. All continuous variables demonstrated normal distribution, with the exception of DUP which had a right skewed distribution ranging from 0-644 days. 53% (N=49) reported thoughts of self-harm or suicide and 32% (N=30) reported acts of self-harm during the acute first episode. There was no relationship between reporting any depression in the acute phase and current substance misuse (Pearson χ^2 1.65 (d.f.1) $p=0.15$)

89% participants completed 12 month follow up (N= 82). Full data were available for all participants completing follow up. Of those not completing follow up, 4 had disengaged from services and 6 declined to take part in follow up measures. This group did not differ in terms of age, gender or ethnicity from those participating in follow up. Baseline and clinical characteristics are reported in table 1.

3.1 Rates of depression in the prodrome, acute psychotic phase and post psychotic phase:

In the 6 months leading up to the first psychotic episode, 56% (N=51) participants experienced a clinically significant depressive episode (prodromal depression).

In the acute phase of illness, 59% (N=54) presented with a moderate or severe depressive episode. Of all participants with depression in the acute phase of FEP, in 37% (N=20) this occurred "de novo", without prodromal depression, and in 63% (N=34) this was reported as continuous with prodromal depression.

At follow up, 4 out of the 82 participants scored 14 or more on PANSS positive scale or greater than 3 on any individual P1-7 measure and were therefore continuing to experience significant positive psychotic symptoms, were not in a “post psychotic” phase, and thus were excluded from further analysis. Of the remaining 78, 37% (N=29) had a CDSS score of greater than 7. This defined the PPD group.

22% (N=17) were depressed at each stage (prodromal, acute and PPD); 17% (N=14) were depressed in the prodrome and acute phases only; 20% (N=16) were not depressed in the prodrome, then were depressed in acute phase with or without PPD; 20% (N=16) were not depressed throughout. 5% (N=4) presented with PPD only. This pathway data has been previously reported in more detail (Uptegrove et al., 2010).

When comparing depressed versus non depressed groups both at baseline and follow up, no significant differences were found in age, gender, or ethnicity.

3.2 Depression in the Acute Phase of FEP

Participants in the depressed group did not have significantly higher scores on PANSS positive or negative rating scales.

Voice hearers in the depressed group had higher BAVQ Malevolent and lower BAVQ Benevolence scores than voice hearers who did not have depression ($F(1,68)=11.30$ and $F(1,68)=11.64$ respectively, both $p=0.001$). In addition, depressed participants had significantly higher scores on BAVQ engagement $F(1,68)=8.64$, $p=0.004$).

Participants reported a range of identities for persecutors, the most frequently cited being members of community (neighbours, friends, past acquaintances); 50%, and family members; 10%. Type of threat varied from direct physical threat (e.g. being killed, attacked or poisoned) to emotional threats (e.g. spreading rumours, controlling destiny, being cursed) with the most commonly cited as being imminently physically attacked at 47%.

Depressed participants reported more powerful persecutors on the DOT measure ($F(1,64)=4.34$, $p=0.04$) and were more distressed by the threat from persecutors ($F(1,65)=28.16$, $p=0.001$) than those who were not depressed. In addition, they reported a higher strength of conviction ($F(1,64)=4.51$, $p=0.03$) and a diminished ability to cope with the current threat ($F(1,65)=4.79$, $p=0.03$). SBQ results revealed significantly more use of safety behaviours (total score) in the depressed group than the non-depressed group ($F(1,72)=9.56$, $p=0.003$). See table 2, figure 1.

The mean total IS score for the full sample was 9, indicating moderate insight across the sample. Total IS score did not differ between depressed and non-depressed participants; however, mean score on the key subscale, Awareness of Illness, was significantly higher in the depressed participants ($F(1,90)=4.64$, $p=0.03$), see table 2.

Negative illness appraisals were greater in the depressed compared to non-depressed participants. As measured by the PBIQ-R, depressed participants reported significantly higher appraisals on all measures: Loss ($F(1,90)=23.19$,

$p=0.001$), Shame ($F(1,90)=10.22$, $p=0.002$), Entrapment ($F(1,90)=26.62$, $p=0.001$), Control ($F(1,90)=21.88$, $p=0.001$) and Group fit ($F(1,90)=20.35$, $p=0.001$); see table 2, figure 1.

The regression model contained 9 variables: prodromal depression, voice malevolence, benevolence (BAVQ-R), voice power (VPD), power of persecutors (DOT) and total safety behaviours (SBQ) together with loss, shame, entrapment (PIBQ-R). Due to multicollinearity with other significant variables, voice resistance (BAVQ-R), group fit and control (PBIQ-R) were not entered.

The full model explaining depression in the acute phase of psychosis was significant, ($\chi^2 71.5$, $p<0.001$ N78). The model as a whole explained between 54% (Cox and Snell R square) to 73% (Nagelkerke R square) of the variance of depression status, and correctly classified 85% of cases. 4 variables made a uniquely significant contribution to the model; depression in the prodrome (O.R. of 1.19), followed by Voice Malevolence (O.R. 1.36), Safety Behaviours (O.R. 1.11) and Entrapment (O.R. 1.36). Other variables entered were not significant in the model. See table 4 for full details.

3.3 Post Psychotic Depression:

Participants with PPD had significantly longer DUP ($p=0.02$) and higher current PANSS positive score ($F(1,79)=3.9$, $p=0.04$) than those who were not depressed. It should be noted that PANSS positive scores were those rating 1-3, ie at minimal levels, as participants scoring higher than 3 on any individual positive measure or over 14 on total positive score were excluded from the PPD group. Thus on-going but low level positive symptoms were higher in the PPD group.

Participants with PPD did not have significantly higher scores on total insight however did score significantly higher on the "need for treatment" subscale ($F(1,81)=4.33$, $p=0.04$). Participants with PPD also scored significantly greater on PBIQ-R subscales of Control, Loss and Shame ($F(1,81)=8.54$, $F(1,75)=9.78$ and $F(1,75)=11.96$ respectively, $p < 0.05-0.005$). See table 3.

The regression model contained 8 variables: presence/absence of depression in the prodrome, presence/absence of depression in acute FEP, follow up PANSS positive score, DUP, Need for Treatment (I.S.), Loss, Shame and Control (PIBQ-R). The full model was significant, $\chi^2 32.53$, $p<0.001$ N82). The full model explained between 34% (Cox and Snell R square) and 47% (Nagelkerke R square) of the variance of depression status, and correctly classified 62% of cases. 2 variables made a uniquely significant contribution to the model; DUP O.R. 1.1 and Loss O.R. 1.2. Other variables entered were not significant in the model. See table 4.

3.4 Stability of Negative Appraisals:

Negative appraisals of illness; Loss, Shame, Entrapment, Control and Group Fit, were high at both baseline and endpoint, despite significant recovery over time on PANSS and depression measures. Entrapment showed a significant improvement; baseline (mean 14.64, sd 1.53) and endpoint (mean 12.90, sd 4.09) $t(76) = 3.28$, $p = 0.002$.

However there was no significant recovery in Loss; baseline mean 17.16 (sd 1.87) endpoint mean 16.67 (sd 5.43) $t(76) = -1.5$, $p = 0.15$; Shame baseline mean 14.33, (sd 1.17) endpoint mean 13.83 (sd 4.23) $t(76) = 0.35$, $p = 0.7$; Control baseline mean 12.25 (sd 1.79) endpoint mean 11.22 (sd 4.13) $t(76) = 1.68$, $p = 0.09$ or Group fit; baseline mean 11.53 (sd 0.92) endpoint mean 10.53, (sd 4.08) $t(76) = 1.93$, $p = 0.06$.

4. Discussion

This study has shown that in acute first episode of psychosis, high rates of depression are present and associated with negative appraisals of illness in terms of relationship to voices, persecutors and the experience of psychosis itself. We also showed that those individuals who experienced post psychotic depression appraised their psychosis as more shaming, felt a greater sense of loss and less control, and also experienced on-going lower level positive symptoms and longer periods of untreated psychosis.

This adds further evidence for the importance of the personal significance of psychotic symptoms previously shown in chronic samples and qualitative work (Birchwood et al., 2005; Sandhu et al., 2013), and the body of evidence surrounding awareness of insight and depression in established psychosis (López-Moríñigo et al., 2012). We have previously demonstrated the significance of depression in this acute phase, in terms of suicidality (Uptegrove et al., 2010), and the need thus for greater understanding of this symptom dimension. In this study we have been able to demonstrate that negative illness appraisals were a significant factor in the prediction of acute depression even after controlling for prodromal depression. Significant predictors in the logistic regression and relatively small odds ratios suggest a complex relationship and multiple smaller scale influences coming together to convey risk.

Positive symptom severity and DUP were not predictive of depression in the acute phase, replicating other research (Schennach-Wolff et al., 2011). We can interpret these findings to mean that there is no direct relationship between positive symptom severity, in terms of number or severity of symptoms, and depression. Rather, within a distinct depressive dimension in psychosis it is the personal significance of illness that is salient. We proposed that the personal threat from voices and persecutors, combined with the use of safety behaviours, would be predictive of depression, independent of severity of psychosis. This was upheld, with the experience of personal threat from voices and persecutors, and use of safety behaviours higher in the depressed compared with non-depressed groups. Findings presented in this study, in combination with other challenges to categorical classification (Craddock

and Owen, 2010; Dutta et al., 2007; Fusar-Poli et al., 2013), highlight the importance and complexity of depression in psychosis. We have raised the possibility that in some patients depression is a reaction to the threat posed by perceived persecutors, demonstrating that voice malevolence, engagement in safety behaviours and entrapment were significantly associated in a model of depression in acute psychosis. Freeman and others (Freeman et al., 2001; Freeman et al., 2007) have also demonstrated the significance of safety behaviours in the development and maintenance of delusional belief and distress. This suggests the personal significance and reaction to perceived threat by voices and persecutors is overriding the severity of symptoms and is most significantly associated with depression.

Models of the development of persecutory beliefs suggest a dynamic relationship between persecutor and subject, mediated by self-esteem; Udachina (Udachina et al., 2009) suggests that low levels of positive self-esteem have a direct association with experiential avoidance (intolerance of negative mental experiences) and the development of persecutory beliefs by preventing disconfirmatory evidence. An additional model is also possible; the personal appraisal of anomalous experiences drives on-going emotional dysfunction and through this further increases in positive symptoms. Thwarted escape, arrested flight and failure to exert or win control of symptoms through use of safety behaviours are key responses, drawing on innate dominant-subordinate relationship signals demonstrated in evolutionary models of depression (Gilbert et al., 2001). Learned helplessness, in response to unrelenting positive symptoms, also driving depression until treatment or “help” finally arrives. This is in keeping with recent advances in our understanding of anxiety and distress in psychosis whereby proneness to shame is driven by social anxiety disorder (Kesting and Lincoln, 2013; Rüscher et al., 2005). However, it is clear that while significant results were found in our study, odds ratios reported were only slightly over 1. Although this is statistically significant, it may indicate that it is the combination of multiple small effects that is ultimately responsible for depression. It is possible that other non-tested variables may influence depression at both stages.

Insight overall was not linked to depression, however in the acute phase awareness of illness was significant, and in the post psychotic phase the need for treatment was greater in the depressed group. It is possible that participant numbers and power may be affecting the near significant results. However it is also possible that the process of recovery may be at play. Previous work demonstrated the significance of recovery style in psychosis. The internalization of medical models of illness, and need for treatment may be linked to a lowering of self-esteem and an assault on an internal locus of control in the face of on-going difficulties. (Drayton et al., 2011; Hastrup et al., 2013). An arrested “flight into health” with acceptance of the need for on-going medical care may convey a risk for PPD.

DUP has been repeatedly shown to be a poor prognostic indicator in terms of symptom recovery and functional outcome (Marshall et al., 2005). The study results presented here indicate that DUP may also confer a risk for PPD. There was an association with PPD and on-going lower level positive symptoms. In univariate analysis, on-going low level positive symptoms were associated with depression. In the regression analysis, once previous depression is controlled for, DUP and Loss made a uniquely significant contribution to the model. We can interpret these findings to mean that whilst negative personal appraisals of psychosis, particularly

loss, confer the most risk for PPD; on-going low level positive symptoms are also active and constitute an additional risk. In the overall picture of PPD, the sense is of a grinding down of hope for recovery, with a longer period of both untreated illness and persistent low level symptoms, in which future goals, forward plans and self-esteem are allowed to wither. It also remains possible that PPD may overlap with the onset of negative symptoms, with a slower insidious onset and illness course more likely to include negative symptoms, rather than be understood as a purely independent symptomatic dimension in psychosis. Indeed studies investigating a dimensional approach to psychosis report multiple overlapping dimensions that include negative and affective clusters (Russo et al., 2014).

Another novel finding presented here is that illness appraisals do not all “recover” in line with symptom resolution. Thus if one experiences the traumatic life event of FEP as a shameful event that alienates from a peer group, these appraisals are likely to continue. This knowledge may again go some way to answering the question regarding direction of causality when looking at results presented; whether it is the depression that is driving the negative appraisals or negative appraisal driving the depression. Negative appraisals remain high and relatively stable throughout, and could not therefore simply be an epiphenomenon of depression. There are two possible explanations for the failure of negative appraisals to reduce in line with symptom reduction: that these are long lasting and relatively enduring factors (trait); however it is also possible that they do change over time, but at a much slower rate and one not captured by the present study.

4.1 Limitations

This study has limitations that should be highlighted and result in caution in interpretation of findings. Participant numbers did not allow for subset analysis which would have revealed additional information, for example with depression arising “de novo” in each phase. It is also possible that participants experienced post psychotic depression not captured at 12 months (ie had recovered before measures were repeated). It is also possible that participants who declined to take part in the study had more severe symptoms, or more distress associated with these symptoms. Data on pharmacological therapy, including use of antidepressants in the follow up period was not recorded and could affect the prevalence of depression. More frequent follow up and repeated testing could potentially have increased numbers in the PPD group. Researchers administering semi-structured interviews were not blinded to baseline results and thus there is also a potential bias here. However, most key measures, including those on insight, appraisals and depression were self-report and this would minimise this potential effect. The inclusion of all FEP participants rather than only those with schizophrenia spectrum disorders could also be challenged. However, it is clear that diagnostic certainty is slim at this phase of illness. Results presented reflect the full FEP range and are thus generalizable to this group. We do report novel findings in an under researched area of FEP with significant clinical considerations and avenues for further research.

4.2 Conclusion

In bringing together the findings from this and previous work, an integrated model of depression in the course of first episode psychosis can be proposed. Initially, prodromal depression, a common occurrence, may be the result of shared environmental or genetic risk factors. Having experienced depression in the prodromal stage, an increased risk of further depression in the acute phase is propagated by appraisals of positive symptoms; malevolent content of voices, ineffective use of safety behaviours. Persecutors dominate, triggering innate dominant–subordinate relationship signals best understood from evolutionary psychology. Insight that is present is related to awareness of illness and accompanying feelings of shame and loss.

Following recovery negative appraisals of the impact of illness with loss, shame and entrapment and are again associated with post psychotic depression. A long duration of untreated illness and persistent lower level positive symptoms add to these by way of reminders of past traumatic experiences and have a continued impact through perpetuation of feelings of loss and shame. Loss, shame and entrapment remain enduring, state-like beliefs from their conception ready to re-awaken depression at periods of future relapse or failed recovery.

It has been repeatedly demonstrated that the acute and early phases of psychosis contain a significant risk of suicide (Dutta et al., 2011; Polusny et al., 2011). Cognitive therapies are of therapeutic benefit (Peters et al., 2010; Turner et al., 2014). Increased theoretical knowledge of the relationship between positive symptom dimensions and personal coping strategies can add to the effective development of such interventions and those aimed at reducing suicide risk. If negative appraisals remain stable, the implication is that they will not change without specific treatment. The post psychotic phase is often a period suggested for more intense psychological therapies, and the propensity to feel shamed by psychosis should be a key target for both therapy and service response models, delivered together with now routine interventions of psychoeducation and relapse prevention.

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Conflict of Interest:

None

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Table 1
Demographic and Baseline Clinical Details of Full Sample (n=92)

Mean Age (years)	22.50 (s.d. 4.89)	
Gender	Male	75% (n=69)
	Female	25% (n=23)
Ethnicity	White British	35 % (n=31)
	Asian (all)	29% (n=28)
	Black- Caribbean	36% (n=33)
Substance Misuse	None/ Infrequent use	76% (n=68)
	Cannabis daily	23% (n=21)
	Other (Crack cocaine/ Heroin)	1% (n=3)
DUP (Days)	Mean: 207 (s.d.389)	Median: 59
PANSS: Mean scores	Positive	18.84 (s.d. 5.07)
	Negative	14.54 (s.d. 5.56)
	General	38.14 (s.d. 9.06)
SCAN Diagnosis ICD-10	Schizophrenia	70% (n=65)
	Delusional Disorder	4.3% (n=4)
	Acute and Transient Psychotic Disorder	8.7 % (n=8)
	Other non-organic psychotic disorder	3.3% (n=3)
	Schizoaffective Disorder	2.2% (n=2)
	Mania Severe with Psychotic Symptoms	7.6% (n=7)
	Depressive Disorder Severe with Psychotic symptoms	3.3% (n=3)

Abbreviations

PBIQ-R: Personal Beliefs about Illness Questionnaire
 DOT: Details of Threat
 SBQ: Safety Behaviours
 BAVQ: Beliefs about voices questionnaire
 VPD: Voice Power Differential
 DUP: Duration of Untreated Psychosis
 PANSS: Positive and Negative Symptoms Scale

Table 2
Comparison of Depressed / not Depressed in the Acute Phase of FEP

		Mean (s.d)		ANOVA F (df)	sig p=
		Depressed* n=54(59%)	Not Depressed N=38(41%)		
PANSS Positive		17.9	20.4	4.48	0.06
PANSS Negative		14.3	14.9	0.26	0.61
Insight (IS) (n=92)	Total Score	10.01 (4.30)	9.15 (3.97)	0.95 (1,90)	0.33
	Awareness of Symptoms	2.68 (1.42)	2.87 (1.37)	0.12 (1,90)	0.72
	Awareness of Illness	3.87 (1.92)	3.59 (1.88)	4.64 (1,90)	0.03
	Need for Treatment	2.74(1.26)	2.43(1.43)	0.50 (1,90)	0.47
Illness Appraisal(PBIQ-R) (n=92)	Loss	18.96 (4.00)	14.95 (3.84)	23.19 (1,90)	0.001
	Shame	15.37 (2.83)	13.24 (3.56)	10.22 (1,90)	0.002
	Entrapment	16.00 (2.96)	12.71 (3.07)	26.62 (1,90)	0.001
	Group Fit	12.57 (2.45)	10.05 (2.88)	20.35 (1,90)	0.001
	Control	13.54 (3.13)	10.42 (3.15)	21.88 (1,90)	0.001
Voices (BAVQ-R) (n=70**)	Malevolence	9.08 (5.29)	5.17 (4.07)	11.30(1,68)	0.001
	Benevolence	3.89 (3.85)	7.40 (4.97)	11.64 (1,68)	0.001
	Omnipotence	8.30 (4.05)	6.93 (3.87)	2.02 (1,68)	0.16
	Resistance	14.53 (6.74)	10.87 (6.97)	4.89 (1,68)	0.03
	Engagement	8.33 (5.56)	4.83 (4.20)	8.64 (1,68)	0.004
	Voice Power	23.58 (5.18)	21.10 (6.00)	3.19(1,64)	0.07
Persecutors (DOT and SBQ) (n=76**)	Power	6.88 (2.45)	5.39 (3.29)	4.34 (1,64)	0.04
	Distress of belief	7.95 (1.97)	4.54 (3.97)	28.16 (1,65)	0.001
	Strength of belief	80.98 (23.21)	64.35 (39.55)	4.51 (1,64)	0.03
	Ability to Cope	4.10 (2.58)	5.70 (3.21)	4.79 (1,65)	0.03
	Use of Safety Behaviours	21.73 (12.16)	11.77 (13.33)	9.56 (1,72)	0.003
DUP (days)***		Median 63	Median 124	S.E.126.04	0.47

*Depressive episode as defined by \geq CDSS 7

** Please see text. N differs as not all participants with FEP reported voices and persecutors

*** Mann Whitney U

Table 3
Comparison of participants who did and did not have Post Psychotic depression

Variable		PPD* n=29 (37%) (mean_s.d)	NO PPD n=49 (63%) (mean_s.d)	ANOVA F* (df)	sig p=
PANSS POSITIVE		11.72 (3.34)	9.48(2.56)	3.9 (1,79)	0.05
PANSS NEGATIVE		12.13(5.11)	11.12(3.79)	1.0 (1,79)	0.27
INSIGHT (IS)	Total	11.00 (3.24)	9.36 (4.17)	3.4 (1,81)	0.07
	Awareness of Symptoms	3.16(1.09)	2.63(1.42)	3.11(1,81)	0.08
	Awareness of Illness	2.74(1.20)	2.44(1.39)	1.00(1,81)	0.32
	Need for Treatment	4.41 (1.41)	3.88(1.84)	4.33(1,81)	0.04
ILLNESS APPRAISALS (PBIQ-R) n78	Loss	18.07(3.94)	15.36(3.96)	9.78 (1,75)	0.005
	Shame	15.32(3.78)	12.97(3.67)	11.96 (1,75)	0.005
	Entrapment	13.42(3.67)	12.61(3.94)	2.6 (1,75)	0.15
	Control	12.49(4.09)	10.48(3.26)	6.64 (1,81)	0.04
	Group Fit	10.75(2.70)	10.36(4.09)	0.79 (1,75)	0.43
DUP**		Median:100	Median 54	S.E. 106.1	0.02

*Post Psychotic Depression= a depressive episode as defined by \geq CDSS 7 at 12 months follow up, in absence of significant positive symptoms (see text).

** Mann- Whitney U

Table 4
Logistical Regression Models

Depression in Acute FEP	B	S.E.	Wald	Sig	O.R.	95% C.I. for O.R.	
Depressed N= 54 Not Depressed N=38							
Prodromal Depression	1.61	0.76	4.35	0.03	1.19	1.13	1.90
Voice Malevolence (BAVQ-R)	0.31	0.09	11.61	0.001	1.36	1.14	1.63
Safety Behaviours (SBQ)	0.12	0.36	8,12	0.004	1.11	1.03	1.20
Entrapment (PBIQ-R)	0.31	0.18	2.87	0.05	1.36	1.23	1.96
Post Psychotic Depression							
Depressed N=29 Not depressed N=49							
DUP	0.006	0.002	5.74	0.01	1.1	1.00	1.24
Loss (PBIQ-R)	0.32	0.16	8.08	0.004	1.38	1.11	1.74

Figure 1

Appraisal of Psychosis in Acute First Episode