Relational and Cognitive Factors in Psychosis-related Posttraumatic Stress Disorder

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Thesis overview

Research suggests that the experience of acute psychosis (symptoms and treatment) may be traumatic and precipitate posttraumatic stress disorder (PTSD), and that outcomes may be worse for people affected.

The first part of this thesis reviewed studies of psychosis-related PTSD (PR-PTSD), with a particular focus on evaluating the methodologies of research, given the complexities of assessment. Three assessment factors were identified as critical to the reliability of prevalence rates (the timepoint of assessment; the assessment method; and the definition of the traumatic stressor). Sample selection biases were also identified as key to the validity of findings. Additional indicators of quality were judged to be the assessment and control of current symptoms of psychosis; measurement of the subjective meaning of trauma; and the control of co-existing variables such as distress in relation to prior trauma, and current symptoms of psychosis.

The second part is an empirical paper which derived hypotheses from a cognitive interpersonal model of psychosis to test the relationship between psychosis-related PTSD and a number of relational and cognitive variables. Thirty participants with a diagnosis of Schizophrenia completed measures of childhood trauma and related PTSD, negative emotional memories, adult attachment, PTSD symptoms in relation to psychosis, fear of recurrence and depression. In addition, current symptoms of psychosis were assessed and Care Coordinators completed a measure of service engagement. Some support was found for the cognitive interpersonal model, particularly with respect to anxious attachment. Anxious attachment and fear of recurrence of psychosis were the strongest predictors of psychosis-related PTSD symptoms, after controlling for the role of current symptomatology. Childhood trauma-related PTSD was associated with PR-PTSD. There was less support for other relational variables and no relationship was found between service engagement, avoidant attachment and PR-PTSD.

Part three is a critical appraisal. It assesses the empirical paper in light of the methodological recommendations made in the literature review. It also concerns participant wellbeing, which has been a priority from initial planning of the study and throughout recruitment.

Contents

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Part 1: Literature Review

Methodological issues in psychosis-related posttraumatic stress disorder: a critical systematic review

Abstract

Background: Posttraumatic stress disorder (PTSD) in response to the experience of psychotic symptoms and psychiatric admission ('psychosis-related PTSD'; PR-PTSD) is the subject of a growing field of research. However, the complexity of PR-PTSD and the range of assessment approaches employed, is reflected in widely varying prevalence rates. This systematic review identifies key methodological factors likely to impact on the quality and reliability of assessment, critically evaluates studies in the light of these, and makes recommendations for future research.

Methods: Current Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and Centre for Reviews and Dissemination (CRD) guidelines were followed and electronic, and manual systematic search methods used, to identify and review studies.

Results: Eighteen studies were identified, with PR-PTSD ranging from 11-69%. Critical factors in determining prevalence were judged to be the time since trauma; PR-PTSD assessment method; and the definition of the traumatic stressor. It was estimated that PR-PTSD prevalence may be around 31% taking these three factors into account. Additional factors identified as improving the quality of research were: consideration of the subjective meaning of psychosis-related trauma; diagnostic assessment of psychosis; assessment of trauma and PTSD unrelated to psychosis; and sample selection. Very few associations were found between psychotic symptoms at baseline or objective events such as hospitalisation, and PR-PTSD, pointing to the critical role of psychological factors such as cognitive appraisals.

Conclusions: Greater consensus in relation to research methodologies and an increased focus on cognitive appraisals will facilitate more valid and robust research findings.

1. Introduction

Trauma and Posttraumatic Stress Disorder (PTSD; Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, DSM-IV; American Psychiatric Association, APA, 1994) are high in people with psychosis (Grubaugh, Zinzow, Paul, Egede, & Frueh, 2011). A recent development in this field has been to look at whether the experience of psychosis *itself* can be traumatic and lead to 'psychosis-related PTSD' (PR-PTSD; Berry, Ford, Jellicoe-Jones, & Haddock, 2013). In PR-PTSD, the central DSM-IV symptoms of PTSD (reexperiencing of the traumatic event through nightmares, intrusive memories or flashbacks; hyperarousal; and avoidance of reminders of the traumatic event) are in relation to psychotic phenomena such as distressing delusions and hallucinations, or to coercive treatments such as involuntary hospitalisation and restraint. PR-PTSD prevalence rates range from 11-69%% (Grubaugh et al., 2011), compared to a general population estimate of 3.5% (Kessler et al., 2005).

It has been questioned whether the experience of psychosis meets the DSM-IV criteria (Appendix 1) for a traumatic stressor (e.g. Berry et al., 2013). However, in spite of the DSM-IV emphasis on the objective severity of the traumatic stressor (Criterion A1[1]), there is a wealth of evidence (Karl, Rabe, Zollner, Maercker, & Stopa, 2009; Kilcommons & Morrison, 2005; Lommen & Restifo, 2009; McCuaig Edge & Ivey, 2012; Sherrer, 2011) and theories (Brewin & Holmes, 2003; Ehlers & Clark, 2000; Foa, Huppert, & Cahill, 2006; Foa & Rothbaum, 1998) to suggest it is the subjective interpretation of events, and not their objective characteristics, that is key in determining posttraumatic reactions. Indeed, certain experiences associated with psychosis may meet DSM-IV criterion A (such as hospitalization) whereas others including symptoms of acute psychosis, such as delusions

[1]'Criterion A1: the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.'

and hallucinations, may be more subjectively traumatic, or involve emotional reactions other than those of fear, helplessness or horror specified in DSM-IV criterion A2. Therefore it seems plausible the experience of psychosis can be traumatic, and precipitate PR-PTSD.

Comorbid PTSD in people with psychosis has been found to lead to worse outcomes in relation to a range of illness and quality of life factors (Grubaugh et al., 2011, Mueser & Rosenberg, 2001, Mueser, Rosenberg, Goodman, & Trumbetta, 2002). Because PR-PTSD is caused by the experience of illness and its treatment, it has the potential to cause specific difficulties in recovery and treatment because it might influence how the individual responds to psychotic phenomena and how s/he engages with services. For example, if PR-PTSD reexperiencing symptoms are due to traumatization in the course of a hospital admission, this could lead to high levels of distress and avoidance in relation to mental health services. On the other hand, if PR-PTSD reexperiencing is of the symptoms of psychosis, this could lead to intense fear of relapse (Gumley & Schwannauer, 2010) and possibly also to the misdiagnosis of relapse (Bendall, McGorry & Krstev, 2006).

Given the above, it is essential to understand and address the causes and consequences of PR-PTSD, including developing effective treatments to reduce distress. However, in pursuit of this aim, the wide PR-PTSD prevalence range is problematic, as it is likely to reflect differences in assessment among different studies (Berry et al., 2013), and as such raise questions about the validity and reliability of the findings.

Therefore, the foundation and starting point of future research is, of necessity, robust methods for the assessment of PR-PTSD. This will ensure the homogeneity of the concept of PR-PTSD, assist in the phenomenological understanding of it, and facilitate future efficacy research. Thus, the central goal of this review is to identify factors which increase the quality of PR-PTSD assessment, and to use these to evaluate existing studies, and develop guidelines for future research. An outline of quality factors in PTSD assessment is described next and this is then related to the more specific area of PR-PTSD assessment. This is

followed by a discussion of other methodological factors likely to improve research in this field.

The quality criteria selected for this review was guided both by methodologies from mainstream PTSD research (Lee & Young, 2001; McDonald & Calhoun, 2010; McDonald & Calhoun, 2010; Richardson, Frueh, & Acierno, 2010; Weathers, Keane, & Davidson, 2001), and by a careful review and comparison of methodologies used in existing PR-PTSD studies.

1.2 Key assessment issues in PTSD research

An issue fundamental to all PTSD research and critical to the prevalence rates obtained, is the timepoint of assessment in relation to the trauma and whether a month has elapsed since the trauma occurred (Lee & Young, 2001). A second key factor is the method of assessment (e.g. Weathers et al., 2001). Furthermore, how the traumatic stressor is defined will be central to rates obtained, for example whether it is based on objective or subjective criteria (e.g. Brewin & Holmes, 2003). Additional factors which may impact less on prevalence, but are nevertheless vital to the quality and interpretation of findings and the development of theoretical understanding, are the measurement and control of comorbid conditions (McDonald & Calhoun, 2010); the assessment of the subjective meaning of trauma (Brewin & Holmes, 2003; Ehlers & Clark, 2000) and the importance of unbiased sample selection (Weisaeth, 1989; Woodward et al., 2007). There are a number of reasons, outlined below, why these issues are likely to be even more important in PR-PTSD research.

1.2a Time since trauma

High rates of PTSD symptoms are common after trauma, typically reducing over subsequent months (Cougle, Resnick, & Kilpatrick, 2013), leading some to propose they are an adaptive means of processing overwhelming experiences (Briere, 1992). Reflecting this fact, DSM-IV . requires PTSD symptoms to have been present for a month prior to diagnosis. Therefore assessment can be no sooner than one month post-trauma, and within

this requirement is the assumption that the trauma has ended. However, psychotic symptoms are often ongoing, rather than discrete, and may reduce but not resolve completely (Bendall, McGorry, & Krstev, 2006). In addition, the experience of psychosis is multifaceted, involving a number of objective (e.g. admission; hospital experiences; coercive treatments) and subjective (e.g. symptoms; impact of diagnosis) elements, all of which have the potential to be traumatic. For these reasons, identifying when a psychosis-related trauma is over in order to assess PR-PTSD is complex.

Therefore, due to the many and overlapping sources of distress and potential trauma in psychosis, studies of higher quality are argued to be those which not only ensure one month since the psychosis-related traumatic stressor identified for PR-PTSD assessment, but also that there are no major ongoing psychosis-related stressors in that month such as hospitalization or acute psychotic symptoms. It would be hypothesised that studies which have not controlled for this by ensuring adequate delay since the last acute episode would report higher prevalence rates.

1.2b Method of assessment

Validated interviews are considered more reliable than self-report measures in PTSD assessment (McDonald & Calhoun, 2010; Richardson et al., 2010; Weathers et al., 2001) and therefore recommended for use by the National Institute for Clinical Excellence (NICE, 2005). Of these, the Clinician-Administered PTSD Scale (Blake et al., 1995) is widely accepted as the gold standard (Kang, Natelson, Mahan, Lee, & Murphy, 2003). Self-report measures are likely to inflate prevalence, partly because they rarely assess the DSM-IV . functional impairment criterion (Richardson et al., 2010). In addition, semi-structured interviews allow the careful differentiation of PTSD symptoms from those due to co-morbid disorders (McDonald & Calhoun, 2010).

This last point is particularly critical in PR-PTSD, where it is central to the validity of findings to demonstrate that PR-PTSD levels are not merely a function of current

symptoms of psychosis. There are at least two sources of difficulty. Firstly, there is phenomenological overlap between positive and negative symptoms of psychosis and the key symptoms of PTSD (Brunet, Birchwood, Upthegrove, Michail, & Ross, 2012; Shaw, McFarlane, & Bookless, 1997; Shaw, McFarlane, Bookless, & Air, 2002). For example, the experience of a hallucination or a delusion and the intrusive memory of one is likely to be phenomenologically similar (Bendall et al., 2006; Brunet et al., 2012). Hypervigilance and irritability may be assessed as PTSD hyper-arousal or symptoms of psychosis (Brunet et al., 2012). In addition, negative symptoms of psychosis such as social withdrawal and emotional blunting may be hard to disentangle from posttraumatic avoidance and numbing (Stampfer, 1990). The use of interview measures is more likely to be able to separate these out. Secondly, there is a risk that participants may complete self-report questionnaires in relation to distress due to *current* symptoms rather than that due to *memories* of psychosis, which can be minimised using an interview assessment method. Therefore it would be expected that studies which use self-report measures will report higher prevalence rates.

1.2c Definition of trauma

PR-PTSD studies have defined the traumatic stressor in a number of ways, from a narrow to a broad focus, for example: involuntary admission (Priebe, Braker, & Gunkel, 1998); hospital treatment (Tarrier, Khan, Cater, & Picken, 2007); the overall experience of the last episode (Jackson, Knott, Skeate, & Birchwood, 2004); and the 'worst moment or memory' of illness from any period (White & Gumley, 2009). Given the many different aspects of the experience of psychosis and the range of potential traumatic events, setting a narrow definition such as the last episode and admission, is likely to underestimate prevalence. For example, when given the choice in one study, 66% of participants identified their first admission as the most distressing (Beattie, Shannon, Kavanagh, & Mulholland, 2009).

Given the above, and the wealth of psychological theories emphasising the importance of the subjective appraisal of trauma in PTSD (e.g. Brewin & Holmes, 2003), allowing participants to select their worst moment from any point in their illness may be the most valid means of identifying the traumatic stressor, and may result in the most reliable prevalence rating. For example, in PTSD research in other illness populations where participants have chosen their worst moment a range of events over the course of illness and treatment were cited as the most traumatic (Mehnert & Koch, 2007). Therefore, it might be hypothesised that a narrow definition would be associated with lower prevalence rates, whereas a broader definition may lead to higher and more accurate prevalence rates.

1.2d Other factors impacting on quality and reliability of assessment of PR-PTSD

In addition to the three key factors likely to influence PR-PTSD prevalence rates outlined above, there are a number of other issues important to the quality of research in this area.

It is vital to the validity of PR-PTSD research that assessment of distress is in relation to traumatic *memories* of psychosis, and not in relation to the *current* experience of psychotic symptoms. Therefore, it is essential that current psychotic symptoms are assessed, in particular positive psychotic symptoms such as hallucinations and delusions, which study participants tend to report as the most distressing (e.g. Meyer, Taiminen, Vuori, Aijala, & Helenius, 1999; Shaw et al., 1997, 2002). Statistical analyses can then be used to provide a check that current symptoms of psychosis are not confounded with PR-PTSD.

Measurement of prior trauma *unrelated* to the experience of psychosis is another factor important to the evaluation of the role of psychosis in PR-PTSD. In a meta-analysis (Brewin, Andrews, & Valentine, 2000), previous trauma in both adulthood and childhood was found to be one of the strongest predictors of PTSD following a subsequent event. As noted above, rates of trauma exposure and PTSD unrelated to illness are very high in people with psychosis (Grubaugh et al., 2011). Therefore, PR-PTSD research is improved by the

measurement and control of trauma and PTSD unrelated to psychosis 1) to demonstrate levels of PR-PTSD are related to the experience of psychosis and not merely a function of prior trauma and 2) to allow the impact on PR-PTSD of pre-existing trauma and PTSD to be assessed.

An additional factor, critical to psychological understanding of PR-PTSD although impacting less on reliability of PR-PTSD assessment and prevalence, is the influence of cognitive appraisals on levels of distress. As in other PTSD research (DePrince, Chu, & Pineda, 2011; Kleim et al., 2013), appraisals are emerging as a key factor in PR-PTSD. Therefore, research quality and theoretical understanding of PR-PTSD is likely to be improved by their assessment.

1.2e Broad methodological issues

As well as evaluating factors specific to PR-PTSD assessment, it is important to review broader methodological issues which may impact on quality. As mentioned above, a key potential confounding factor in all PTSD research is biased sample selection, due to the attempts of traumatised individuals to avoid reminders of their trauma and refuse to participate in research (Weisaeth, 1989; Woodward et al., 2007).

In addition to the above, there may be specific biases that tend to occur in psychiatric populations and in psychosis research in particular. For example, Schubert, Patterson, Miller, & Brocco (1984) reported that participants in two studies on an acute psychiatric ward received more Benzodiazepines and more nonpsychiatric medication than nonparticipants, which they hypothesise may be due to the general compliance of the participating group, or their agreeableness. They also found that patients with Schizophrenia and, in particular, Paranoid Schizophrenia, were more likely to refuse to participate. In a study comparing participants and nonparticipants from ten efficacy trials for medications for Schizophrenia, a range of differences were consistently found between the groups (Woods, Ziedonis, Sernyak, Diaz, & Rosenheck, 2000), for example participants were younger, were less likely to have been married, and used more services.

Where PR-PTSD studies report refusal rates, these are often over 30% (Bendall et al., 2012; Centofanti et al., 2005; Jackson et al., 2004; Meyer et al., 1999; Tarrier et al., 2007). It is possible that those refusing are more traumatised by their psychosis-related experiences, but also that numerous other sources of bias exist associated with research in this population (i.e. Psychosis). Therefore, refusal rates are likely to impact on the reliability of prevalence rates reported. PR-PTSD studies that attempt to ameliorate this selection bias by adopting a systematic approach to recruitment are therefore evaluated as being of better quality.

There are also a range of general methodological issues which are likely to influence the internal validity of PR-PTSD research, such as the method of data collection and the validity of measures, and it is important to take these into account as well when assessing studies.

1.3 Aims

PR-PTSD research suggests that a high proportion of people with psychosis are traumatized by their illness and treatment experiences, pointing to the importance of addressing the causes and symptoms of their distress. However, the reliability of the assessment of PR-PTSD in these studies is undermined by the significant variation in prevalence reported (11-69%), and the diverse PR-PTSD assessment methods employed. Therefore, this review aims:

i. To evaluate PR-PTSD studies with respect to key quality factors in PTSD assessment (i.e. ensuring an adequate interval between the occurrence of the traumatic event and assessment; use of a validated interview to diagnose PTSD; and defining the traumatic event broadly to allow participants to select their own worst moment of psychosis-related trauma).

ii. To assess the impact on PR-PTSD prevalence rates of the above factors

iii. To evaluate additional factors likely to improve quality (assessment of prior trauma unrelated to psychosis; assessment of subjective appraisals of trauma; assessment of psychosis, sample selection and general methodological factors).

2. Methods

2.1 Search criteria and strategy, selection, extraction and synthesis

Current guidelines Current Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Liberati et al., 2009) and Centre for Reviews and Dissemination (CRD; Moher, Liberati, Tetzlaff, & Altman, 2009) guidelines ; were followed in conducting the systematic review.

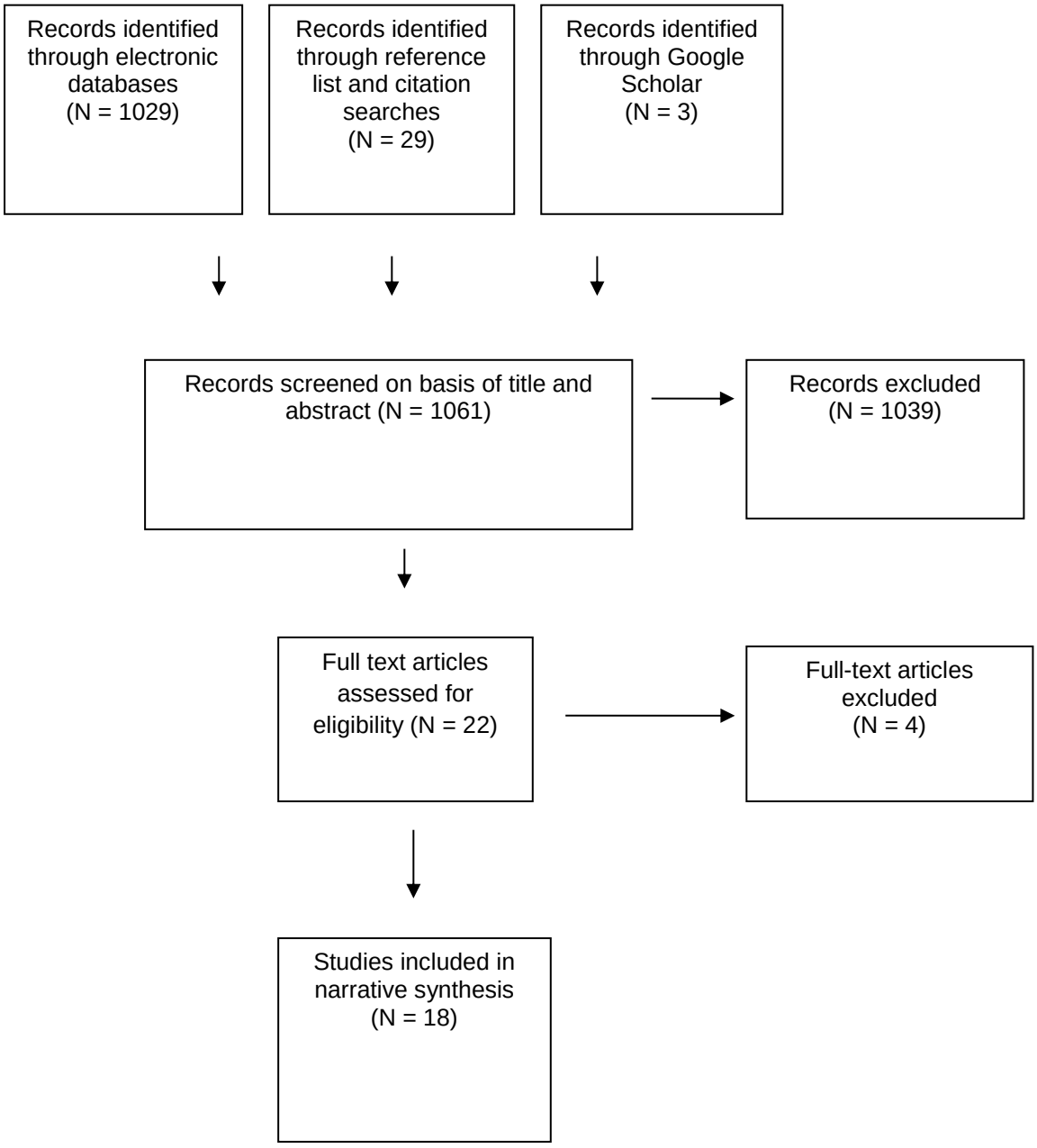
EMBASE, Medline and PsycINFO databases were searched from 1990 to 2012, week 37. A comprehensive list of keywords and MESH terms was generated to identify studies of people with psychosis who had been traumatised by their experiences of symptoms or treatment (see Appendix 2). Reference lists, citations and Google Scholar were also searched. This identified 1061 studies after de-duplication (see flowchart in Figure 1). The title and abstract of each citation were screened against inclusion and exclusion criteria. Studies were included if they were of PR-PTSD; used a standardised measure to assess PR-PTSD; were quantitative (of any design e.g. case controlled, cross sectional, longitudinal); and were published in English, in a peer-reviewed journal. They were excluded if they were qualitative reports, case studies, personal accounts or unpublished dissertations, or assessed PR-PTSD but only as part of a wider study (e.g. of co-morbid PTSD in psychosis, or PTSD in psychiatric inpatients) so that it was not possible to extract relevant information.

Twenty-five citations potentially met inclusion criteria on the basis of title and abstract. On examination of paper copies, eighteen met the criteria. Three (Frame & Morrison, 2001; Picken, Berry, Tarrier, & Barrowclough, 2010; Picken & Tarrier, 2011) were excluded as it was not possible to separate PR-PTSD from PTSD due to other causes, and four were excluded because they did not limit participants to people with psychosis

(Cusack, Frueh, Hiers, Suffoletta-Maierle, & Bennett, 2003; Cusack et al., 2007; Frueh et al., 2005; Morrison, Bowe, Larkin, & Nothard, 1999).

A narrative synthesis of the results is presented rather than a meta-analysis due to the heterogeneity in measurement of PR-PTSD.

Figure 1. Selection of studies



2.2 Quality assessment

2.2.1 Developing a quality assessment tool for studies measuring PR-PTSD

A quality assessment tool was devised for the specific purpose of evaluating the methodological assessment of PR-PTSD. Deciding which quality criteria to include in this tool was achieved in three stages as follows:

1. Mainstream PTSD research, reviews and texts were consulted to identify key quality factors in PTSD assessment (e.g. Brewin & Holmes, 2003; Lee & Young, 2001; MacDonald & Calhoun, 2010; Weathers et al., 2001;)
2. In addition, a careful study and comparison was made of assessment methods used in the PR-PTSD studies included in this review, with particular attention given to factors which may be contributing to the particular prevalence rates reported
3. Quality factors identified from the above two stages were discussed and considered for inclusion in the assessment tool by the author and Dr Fornells-Ambrojo and Dr Hardy.

From this process, the final six factors retained (time since trauma, PR-PTSD assessment, definition of trauma, assessment of psychosis, trauma and PTSD unrelated to psychosis, and cognitive appraisals of trauma) were those judged to be the most likely to improve the quality and reliability of PR-PTSD assessment.

2.2.2 General methodological quality of studies

In addition to the above, a generic quality checklist was sought to evaluate broader methodological factors. There is no consensus regarding critical appraisal tools to assess cross-sectional studies (Sanderson et al., 2007). Having considered a range of assessment tools, it was decided to follow the approach taken by Arcelus et al. (2013), who:

1) used a checklist devised by Gilbert (2009) which assesses internal validity across a number of domains including selection of subjects, data collection, confounding and statistical analysis and then

2) from the results, made an overall assessment of study quality by applying the NICE (NICE, 2007) scoring system for methodological quality of studies (++ = good quality: all or

most of the criteria fulfilled; + = reasonable quality: some of the criteria fulfilled; - = poor quality: few or no criteria fulfilled). The checklist was adapted for the present study by creating a numerical rating system with specific quality criteria for each item (Appendix 3).

2.2.3 Quality rating of studies

Both the specific and general quality ratings of studies were carried out by the author and the results are summarised in Table 1. In line with CRD guidance (CRD, 2008) methodological factors were first assessed individually, although overall ratings were calculated as a broad indicator of quality.

3. Results

3.1 Included studies

Eighteen studies met full inclusion criteria and are listed in Table 2. Two of these (Shaw et al., 1997, 2002) report on the same data and henceforth will be referred to as one sample. The total number of participants in the seventeen samples was 741 (average sample size N = 44). Seven samples were of first episode or recent onset psychosis (Bendall et al., 2012; Brunet et al., 2012; Jackson et al., 2004; Mcgorry et al., 1991; Mueser, Lu, Rosenberg, & Wolfe, 2010; Sin et al., 2010; Tarrier et al., 2007) with an average age of 24.0, compared to 36.5 for the remaining ten studies. Most studies were cross-sectional in design. However, McGorry et al. (1999), Meyer et al. (1999) and Brunet et al. (2012) assessed symptoms of psychosis during an acute episode, and PR-PTSD at a later timepoint. Fourteen studies (Table 3) reported prevalence rates of PR-PTSD. A further three studies assessed PR-PTSD symptoms using the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979), but did not report an overall prevalence rates as the measure is not a diagnostic tool. However, they were included in this review as they assess other aspects of PR-PTSD, such as cognitive appraisals, and the impact on PR-PTSD of traumatic events unrelated to psychosis.

Prevalence rates in the majority studies are based on symptom criteria alone i.e. without assessing DSM-IV A1/A2 criteria, although Mueser et al. (2010) and Lu et al.

(2011) did assess the latter as well. PR-PTSD prevalence based on symptom criteria ranged from 11-69%, with a mean of 38.8%, and a median of 39% (Table 3).

3.2 Methodological Quality of PR-PTSD Assessment

a. Key Factors in PR-PTSD Assessment

a.1 Time since trauma

Time since trauma in PR-PTSD research can be complicated by the possible presence of ongoing psychosis-related stressors over and above the one identified for the purposes of PR-PTSD assessment. To take this factor into account, this review has defined adequate time since trauma to occur when 1) at least one month has elapsed after the end of any specific traumatic stressor identified plus 2) participants are neither hospitalized nor experiencing acute psychosis.

Using this definition, five studies were judged to have an inadequate delay between the trauma and PR-PTSD assessment (mean prevalence = 45.7%; median = 52.3%). Three studies were judged to possibly have an inadequate amount of time (Beattie et al., 2009; Harrison & Fowler, 2004; Sin et al., 2010), with only Sin et al. (2010) reporting a prevalence rate (19.7%). Nine studies were assessed to have allowed an adequate delay (Bendall et al., 2012; Brunet et al., 2012; Centofanti, Smith, & Altieri, 2005; Chisholm, Freeman, & Cooke, 2006; Jackson et al., 2004; Mcgorry et al., 1991; Priebe, Brâker, & Gunkel, 1998; White & Gumley, 2009)(The mean prevalence for the eight studies providing rates = 35.5%; median = 36%).

In four out of five of the studies judged to have an inadequate time delay between the traumatic stressor and PR-PTSD assessment, current overall symptoms of psychosis were significantly higher in those assessed to have PR-PTSD (Table 5). In addition, correlations were found between PR-PTSD variables and overall symptoms of psychosis (see also section b.1 for results for current positive symptoms of psychosis specifically).

Table 1: Methodological Quality of Psychosis-related PTSD Studies

Study and country	Key Factors in PR-PTSD Assessment			Evaluating the Role of Psychosis		Improving Quality	Specific PR-PTSD Quality Rating (Averaged)	General Quality Rating[g]
	Time since Trauma[a]	PR-PTSD Assess.[b]	Definition of Trauma[c]	Assess. of Current Symptoms of Psychosis[d]	Trauma and PTSD Unrelated to Psychosis[e]	Appraisals[f]		
Beattie, Shannon, Kavanagh & Mulholland (2009)	1	-	3	3	1	1	1.8	+
White & Gumley (2009)	2	2	3	2	0	1	1.7	+
Chisholm, Freeman & Cooke (2006)	2	-	2	2	1	1	1.6	+
*Bendall, Alvarez-Jimenez, Hulbert, McGorry & Jackson (2012)	2	0	2	3	2	0	1.5	+
Shaw et al. (1997, 2002)	0	2	2	3	2	0	1.5	++
*Jackson, Knott, Skeate & Birchwood (2004)	2	1	2	2	0	1	1.3	+
Centofanti, Smith & Altieri (2005)	2	2	2	0	1	0	1.2	+
Lu, Mueser, Shami, Siglag, Petrides, Schoepp, Putts & Saltz (2011)	0	2	3	1	1	0	1.2	+
Tarrier, Khan, Cater & Picken (2007)	0	2	1	2	1	1	1.2	+

Table 1 (continued)

Study and country	Key Factors in PR-PTSD Assessment			Evaluating the Role of Psychosis		Improving Quality Appraisals[f]	Specific PR-PTSD Quality Rating (Averaged)	General Quality Rating[g]
	Time since Trauma[a]	PR-PTSD Assess.[b]	Definition of Trauma[c]	Assess. of Current Symptoms of Psychosis[d]	Trauma and PTSD Unrelated to Psychosis[e]			
Meyer, Taiminen, Vuori, Aijala & Helenius (1999)	0	2	2	3	0	0	1.2	+
*Sin, Abdin, Lee, Poon, Verma & Chong (2010)	1	2	3	0	0	0	1.0	+
Priebe, Broker & Gunkel (1998)	2	1	1	2	0	0	1.0	++
Harrison & Fowler (2004)	1	-	1	2	0	0	0.8	+
*Brunet, Birchwood, Upthegrove, Michail & Ross (2012)	2	1	-[g]	0	0	1	0.8	++
*Mueser, Lu, Rosenberg & Wolfe (2010)	0	2	1	1	1	0	0.8	+
*McGorry, Chanen, McCarthy, van Riel, McKenzie & Singh (1991)	2	1	0	0	0	0	0.5	+
Kennedy, Dhaliwal, Pedley, Sahner, Greenberg & Manshadi (2002)	2	0	0	0	0	0	0.3	+

Table 1 (continued)

Note: Studies are rated firstly according to three key factors in PR-PTSD assessment which are likely to impact on reliability of prevalence directly (Time since trauma, PR-PTSD assessment, and definition of trauma) and secondly in relation to factors likely to improve the quality of assessment (assessment of psychosis, assessment of trauma and PTSD unrelated to psychosis, and cognitive appraisals of trauma). An averaged quality rating for these factors is provided in the penultimate column. Higher total averaged scores indicate greater quality and reliability of PR-PTSD measurement. Studies with the highest rating are listed first. First episode studies are indicated by an asterisk. In addition, in the last column of the table, studies are rated in relation to their general methodological quality, using the method described by Arcelus et al. (2013) (Full details of general ratings are provided in Appendix 4).

Key to ratings

Items are either rated 0-2 or 0-3. Higher ratings indicate higher quality.

[a]*Time since trauma (i.e. since 1) the specific trauma identified and 2) acute psychosis/hospitalization)* : 0 = PR-PTSD assessment probably less than a month after the traumatic event; 1 = PR-PTSD assessment possibly less than a month after the traumatic event, at least for some participants; 2 = PR-PTSD assessed at least a month after the traumatic event.

[b]*PR-PTSD Assessment*: - = prevalence not reported; 0 = self-report; 1 = validated interview; 2 = Clinician-Administered PTSD Scale (CAPS)

[c]*Definition of traumatic* stressor: 0 = other or not clearly stated; 1 = specific aspect(s) of psychosis (e.g. hospitalization); 2 = specific time period (e.g. combined experience of hospitalization and symptoms during last episode); 3 = worst moment from any time period (either overall, or worst symptom and worst admission)

[d]*Assessment of current symptoms of psychosis*: 0 = not measured or only descriptive statistics reported; 1 = total score on a psychosis measure correlated with PTSD symptoms and/or PTSD diagnosis; 2 = positive symptoms of psychosis correlated with PTSD symptoms and/or PTSD diagnosis; 3 = current symptoms of psychosis controlled for in multivariate analyses with PTSD symptoms as the dependent variable.

[e]*Trauma and PTSD unrelated to psychosis*: 0 = not assessed/unclear; 1 = trauma and PTSD measured, but descriptively OR trauma alone measured and controlled for; 2 = trauma and PTSD in childhood or adulthood measured and controlled for

[f]A*ppraisals (subjective meaning of trauma)*: 0 = no measurement; 1 = measurement

[g]*General quality rating (Arcelus et al., 2013 and NICE, 2007)*: - = few or no criteria fulfilled; + = some criteria fulfilled; ++ = all or most criteria fulfilled (full details of ratings are provided in Appendix 4)

[h]Brunet et al. (2012) asked participants about intrusions/distress in relation to any memories, and therefore did not define psychosis-related trauma specifically .

Table 2: Summary of studies

Study and country	N	Mean Age (SD);	% M	Diagnosis	Length of illness		% involuntary admissions	Aims
					FE[a] and DUP[b]	mean no. of admissions		
Jackson, Knott, Skeate & Birchwood (2004) (UK)	35	25.8 (5.1)	74%	ICD-10[c] Non-affective psychosis (F20, F22, F23, F25) = 100%	FE. 37.1 weeks (43.9)	_[d]	29%[e]	To establish prevalence of psychosis-related PTSD in first episode psychosis, objective stressors, and hypothesised cognitive mediators.
Tarrier, Khan, Cater & Picken (2007) (UK)	35	24.9 (6.3)	71 %	Non-organic psychosis = 100%	FE 15.5 weeks (11.9))	_	71%[b]	To investigate psychosis-related PTSD, suicidal behaviour, and other psychological effects of a first episode of psychosis
Sin, Abdin, Lee, Poon, Verma & Chong (2010) (Singapore)	61	25.8 (6.6)	49.2%	DSM-IV-TR Schizophrenia = 42.6% Schizoaffective = 13.1% Schizophreniform = 18.0% Brief psychotic episode = 16.4% Psychosis NOS = 3.3% Mood disorder with psychosis = 6.6%	FE 12 weeks (median)	_	24.6%[e]	To investigate the prevalence of psychosis-related PTSD and associated factors.
Bendall, Alvarez-Jimenez, Hulbert, McGorry & Jackson (2012) (Australia)	36	21.4 (3.4)	61 %	DSM-IV-TR Schizophrenia = 44% Schizophreniform = 17% Schizoaffective = 3% Psychosis not otherwise specified = 3% Bipolar disorder = 22% Depression with psychotic features = 11%	FE _	_	_	To investigate the relationship between childhood trauma, PTSD symptoms due to the experience of childhood trauma and PTSD due to psychosis.

Table 2 (continued)

Study and country	N	Mean Age (SD);	% M	Diagnosis	Length of illness		% involuntary admissions	Aims
					FE and DUP	mean no. of admissions		
Brunet, Birchwood, Upthegrove, Michail & Ross (UK)(2012)	39	22.4	66%	ICD-10 Schizophrenia = 74% Mania with psychosis = 6% Delusional disorder = 2% Schizoaffective disorder = 4% Psychotic disorder = 10% Other non-organic psychosis = 4%	FE _	_	_	Prospective study investigating levels of perceived threat from persecutors/voices, and perceived threat to identity/status due to psychosis, during an acute episode and the level of psychosis-related PTSD at 18 month follow-up
Mueser, Lu, Rosenberg & Wolfe (2010) (USA)	38	22.5	68%	Psychotic or delusional disorder: 37% Schizophrenia: 21% Schizophreniform disorder: 5% Schizoaffective disorder: 3% Bipolar disorder: 16% Major depression: 10% Other or missing: 8%	FE ≤ 2 years ago. _	1.5	_	To investigate prevalence of 'full' and 'syndrome', psychosis-related PTSD; which illness experiences are associated with psychosis-related PTSD, and whether prior trauma increases its likelihood.
McGorry, Chanen, McCarthy, van Riel, McKenzie & Singh (1991) (Australia)	36	25.0 (4.8)	72.2%	DSM-III Schizophrenia = 63.9% Schizoaffective = 2.85 Affective Psychosis = 33.3%	FE ≤ 3 years ago. _	1.8	75%[e]	To assess prevalence of psychosis-related PTSD and relationships between negative symptoms, PTSD and depression.
Chisholm, Freeman & Cooke (2006) (UK)	36	34.1 (15.0)	58.3%	ICD-10 Schizophrenia or other non-affective psychosis.	n/a	1.8 (2.0)	_	To investigate 6 hypothesised predictors of psychosis-related PTSD.

Table 2 (continued)

Study and country	N	Mean Age (SD);	% M	Diagnosis	Length of illness		% involuntary admissions	Aims
					FE and DUP	mean no. of admissions		
Centofanti, Smith & Altieri (2005) (Australia)	20	33.4 (5.6)	65%	Paranoid schizophrenia = 85% Schizoaffective disorder = 5% Delusional disorder = 5% Bipolar disorder = 5%	n/a	3.4 (1.1)	_	To investigate the relationship between psychosis-related PTSD and hospitalisation experiences.
White & Gumley (2009) (UK)	27	38.9 (10.3)	74%	DSM-IV Schizophrenia = 100%	n/a	3.9 (4.4)	_	To investigate if psychosis-related PTSD is associated with fear of recurrence, negative appraisals of psychotic experiences and intolerance of uncertainty.
Shaw et al. (1997, 2002) (Australia)	45	29.8 (10.9)	64.4%	CIDI (WHO, 1993) [f] Schizophrenia = 38% Schizophreniform = 20% Bipolar = 29% Schizoaffective = 4% Delusional Disorder = 2%	n/a	5.0 (6.7)	71%[g]	To assess prevalence of psychosis-related PTSD and to determine the experiences associated with it.
Harrison & Fowler (2004) (UK)	38	36.5 (11.1)	78.9%	ICD-10 Schizophrenia = 100%	n/a	5.1 (4.5)	_	To explore the relationship between negative symptoms and psychosis-related PTSD, and between traumatic reactions and autobiographical memory.

Table 2 (continued)

Study and country	N	Mean Age (SD);	% M	Diagnosis	Length of illness		% involuntary admissions	Aims
					FE and DUP	mean no. of admissions		
Beattie, Shannon, Kavanagh & Mulholland (2009) (UK)	44	37.5 (11.5)	75 %	Schizophrenia = 55.3% Schizoaffective = 14.9% Unspecified psychoses = 14.9% Delusional disorder = 6.4% Bipolar disorder = 8.5%	n/a	5.1 (5.3)	85%[c]	To investigate 5 hypothesised predictors of psychosis-related PTSD.
Meyer, Taiminen, Vuori, Aijala & Helenius (1999) (Finland)	46	40.8 (12.1)	39%	DSM-IV Schizophrenia = 45.7% Schizophreniform = 4.3% Schizoaffective = 8.7% Delusional disorder = 23.9% Psychosis NOS = 6.5% Brief Psychotic Disorder = 10.9%	n/a	5.1 (7.8)	56.5%[e]	To assess prevalence of psychosis-related PTSD and to identify which experiences were particularly traumatic.
Priebe, Broker & Gunkel (1998) (Germany)	105	38.6 (9.4)	44.8%	DSM-II-R Schizophrenia = 100%	n/a	5.7 (5.3)	57%[f]	To assess prevalence of psychosis-related PTSD in relation to involuntary admission and negative treatment experiences.
Lu, Mueser, Shami, Siglag, Petrides, Schoepp, Putts & Saltz (2011) (USA)	50	36.8 (11.4)	54%	Bipolar disorder = 30% Psychotic or delusional disorder = 8% Schizoaffective = 24% Schizophrenia = 28%	n/a	10.7 (6.86)	_	To investigate prevalence of 'full' and 'syndrome', psychosis-related PTSD; which illness experiences are associated with psychosis-related PTSD, and whether prior trauma increases its likelihood.

Table 2 (continued

Study and country	N	Mean Age (SD);	% M	Diagnosis	Length of illness		% involuntary admissions	Aims
					FE and DUP	mean no. of admissions		
Kennedy, Dhaliwal, Pedley, Sahner, Greenberg & Manshadi (2002) (US)	50	38.8 (9.9)	50.8%	DSM-IV Schizophrenia (N = 30): Catatonic: 3.33% Paranoid: 26.67% Residual: 3.33% Schizoaffective: 50.0% Undifferentiated: 16.67% Bipolar (N = 20): Type I: 90.0% Type II: 10.0%	n/a	_	_	To investigate prevalence and correlates of psychosis-related PTSD

Note. First episode studies are listed first, then studies are ordered according to number of admissions.
[a]First episode

[b]Duration of untreated psychosis
[c]International Statistical Classification of Diseases and Related Health Problems, 10th Revision
[d]Data not provided
[e]Current involuntary admission
[f]Composite International Diagnostic Interview(CIDI; World Health Organization,WHO) .
[g]Past involuntary admission

a.2 PR-PTSD Assessment

Of the fourteen studies which reported PR-PTSD prevalence, eight used the Clinician-Administered Posttraumatic Stress Disorder Scale (CAPS; Blake et al., 1990) to assess PR-PTSD obtaining a mean and median prevalence of 38.8% and 37.5% respectively (range = 11-69%)(Table 3). Three studies used other validated interviews (Brunet et al., 2012; Jackson et al., 2004; Priebe et al., 1999) obtaining a mean prevalence of 33.3% (median = 31%). The remaining three studies used self-report scales (Bendall et al., 2012; Kennedy et al., 2002; McGorry et al., 1991), reporting prevalence rates of 40.7%. As mentioned previously, a further three studies included in the review used the Impact of Events Scale (IES; Howowitz, Wilner & Alvarez, 1979), or the Impact of Events Scale Revised (IES-R, Weiss & Marmar, 1997), and did not report a prevalence rating (Beattie et al., 2009; Chisholm et al., 2006; Harrison & Fowler, 2004).

a.3 Definition of the Traumatic Stressor

One study (Brunet et al., 2012) asked participants whether they experienced intrusive memories of past events and defined the traumatic stressor in relation to the content of these, obtaining a prevalence rating of 17.9% PR-PTSD for those intrusive memories related to psychosis. Two studies did not state how the traumatic stressor had been defined (Kennedy et al., 2002; McGorry et al., 1991)(Mean and median prevalence = 37.5%). Four studies defined the traumatic stressor in relation to specific aspects of the experience of psychosis such as hospitalization or involuntary admission (Harrison & Fowler, 2004; Mueser et al., 2010; Priebe et al., 1999; Tarrier et al., 2007)(mean prevalence for the three reporting rates = 49%; median = 51%). In six studies the stressor was the combined

Table 3: Prevalence of PR-PTSD

Study	Trauma Assessment	Definition of Traumatic Stressor for PR-PTSD Assessment	Trauma Scale	Diagnostic scale	Time of PR-PTSD assessment[a]	Prevalence of PR-PTSD
Jackson, Knott, Skeate & Birchwood (2004)	'the overall experience of the first episode and its treatment'	Combined symptoms/ hospitalisation*	IES	PTSD Scale	18 (approx)	31%
Tarrier, Khan, Cater & Picken (2007)	Participants screened as to 'whether they had experienced a significantly traumatic reaction as a result of their hospitalisation or treatment'	Hospitalisation*	Author's interview	CAPS-S	0	38%
Sin, Abdin, Lee, Poon, Verma & Chong (2010)	(Details not given)	Most distressing (symptoms or hospitalisation)*	_	CAPS	3.9[b]	19.7%
Bendall, Alvarez-Jimenez, Hulbert, McGorry & Jackson (2012)	The 'experience of acute psychosis'	Combined symptoms/ hospitalisation*	IES-R	IES-R	9.8 (7.33) (and < 18)	47%[c]
Brunet, Birchwood, Upthegrove, Michail & Ross (2012)	Participants asked if they 'experienced memories of past events which continued to intrude into their consciousness and distress them' (psychosis-related or other)	Most distressing (symptoms or hospitalisation)*	IES-R	PSS-I	18	17.9%
Mueser, Lu, Rosenberg & Wolfe (2010)	PTSD Assessment Tool for Schizophrenia (PATS) modified to assess reactions to symptoms and treatment separately	Most distressing (symptoms or hospitalisation)*	PDS	PATS; CAPS; PDS	< 1.5[d]	58%[o]
McGorry, Chanen, McCarthy, van Riel, McKenzie & Singh (1991).	PTSD Scale (self-report) modified to assess PTSD in relation to hospitalization and psychosis	Most distressing*	IES	PTSD Scale	4 & 11	46% & 35%[e]

Table 3 (continued)

Study	Trauma Assessment	Definition of Traumatic Stressor for PR-PTSD Assessment	Trauma Scale	Diagnostic scale	Time of PR-PTSD assessment[a]	Prevalence of PR-PTSD
Chisholm, Freeman & Cooke (2006).	The most difficult period of the last psychotic episode (combined symptoms/hospitalisation)	(Not diagnosed)	IES	_	5.0[f]	_
Centofanti, Smith & Altieri (2005).	Combined experience of symptoms and most recent hospitalisation	Combined symptoms/ hospitalisation – most recent episode	HES	CAPS	7.75 (3.4)[g]	25%
White & Gumley (2009).	Participants were asked whether they had any intrusions (definition provided) about times when they were unwell with psychosis and whether an episode particularly stood out in their memory	Worst moment of ANY episode	IES-R	CAPS-S	72.3 (56.3)[h]	37%
Shaw et al. (1997, 2002).	'Reactions to the experience of psychosis and its treatment'	Combined symptoms/ hospitalisation – most recent episode	IES; CIDI; HES; SASRQ	CAPS	0	52.3%
Harrison & Fowler (2004).	IES-R administered twice, once with respect to psychotic symptoms, then in relation to hospitalization	(Not diagnosed)	IES-R	_	48[i]	_
Beattie, Shannon, Kavanagh & Mulholland (2009).	IES-R administered twice, once with respect to participant's most distressing psychotic symptom, then in relation to their most distressing hospitalization	(Not diagnosed)	IES-R	_	1.1 (2.0)	_

Table 3 (continued)

Study	Trauma Assessment	Definition of Traumatic Stressor for PR-PTSD Assess.	Trauma Scale	Diagnostic scale	Time of PR-PTSD Assess.[a]	Prevalence of PR-PTSD
Meyer, Taiminen, Vuori, Aijala & Helenius (1999).	Traumatic symptoms due to psychosis and treatment were recorded separately and then added together.	(difficult to establish how PR-PTSD rates were calculated)	IES-R	CAPS	0[j]	11%[k]
Priebe, Broker & Gunkel (1998).	'Patients were asked in detail about involuntary admissions and negative, as well as positive, treatment experiences'	Involuntary admission (or if none, negative aspects of treatment)	_	PTSD interview[cc]	41.4 (40.7)[l]	51%
Lu, Mueser, Shami, Siglag, Petrides, Schoepp, Putts & Saltz (2011).	PTSD Assessment Tool for Schizophrenia (PATS) modified to assess reactions to symptoms and treatment and identify specific examples	Most distressing (symptoms or hospitalisation) – ANY episode	PDS	PATS; CAPS; PDS	< 1.5	69%
Kennedy, Dhaliwal, Pedley, Sahner, Greenberg & Manshadi (2002).	(Not described)	(difficult to establish traumatic stressor)	IES	Penn	_	40%

Note. Full details of abbreviated measures listed in the table are provided in Appendix 5. First episode/recent onset studies (indicated by * in the traumatic stressor column) are listed first, then studies are ordered according to number of admissions.

[a]Time of assessment expressed either as number of months, or mean number of months and standard deviation (SD), since discharge or since first episode.
[b]Median no. of days from first contact with service to recruitment = 118 (range = 6 to 897). This median has been divided by 30 to give an approx. number of months.
[c]An IES-R cut-off score of 33 was used to estimate PTSD caseness.
[d]Participants were assessed within 6 weeks of presentation for treatment of a psychotic episode, and as soon as possible after symptoms had stabilised.
[e]At 4 and 11 months respectively.
[f]Range = 0.25-12. Participants were interviewed a mean of 207.4 days (SD = 139.17; range = 32-483) after what they considered the height of their difficulties.
[g]Range = 2-12 months. There was a trend towards a correlation between months since discharge and the Clinician-Administered PTSD Scale (CAPS) total, but this was not significant.
[h]Range = 0-108 months
[i]This was a mixed sample and included 3 patients on a rehabilitation ward and one on an acute inpatient ward waiting for discharge.
[j]PR-PTSD was assessed at 8 weeks after admission. Over half were still inpatients at this time.
[k]Taking into account sub-clinical symptoms, 17% met criteria for PR-PTSD.
[l]In this study a timepoint was only given for participants who had had an involuntary admission. The range since admission was 1-159 months.

experience of symptoms and treatment during the last acute episode (Bendall et al., 2012; Centofanti et al., 2005; Chisholm et al., 2006; Jackson et al., 2004; Meyer et al., 1999; Shaw et al., 1997, 2002)(mean prevalence for the five reporting rates = 33.3%; median = 31%). Finally, three studies defined the stressor as the worst moment or memory of psychosis from any episode (Lu et al., 2011; Sin et al., 2010; White & Gumley, 2009)(mean prevalence = 41.9%; median = 37%).

As well as looking at the traumatic stressors above, many studies also looked at a range of objective stressors and their association with PR-PTSD. In general, there was little direct association between events such as number of admissions, involuntary admission and specific hospital experiences, and PR-PTSD (Table 4). Secondly, seven studies (Table 4, final column) compared the number of participants citing symptoms of psychosis as more distressing versus those citing treatment experiences. Five out of the seven studies reported symptoms as more distressing. Of the two that did not, McGorry et al. (1991) reported that the self-report results of participants suggested hospitalisation experiences were more distressing, but did not provide sufficient detail to assess the reliability of this finding. Brunet et al. (2012) also reported hospitalisation-related experiences as more distressing. However, the authors reported that some participants stated their whole psychotic episode was traumatic but chose to define the stressor as treatment-related rather than symptom-related. Secondly, other participants cited an event unrelated to psychosis as traumatic and, as only one event was recorded, this may have masked traumatic stressors related to the psychotic episode.

Table 4: Traumatic stressors

Study	Type of trauma assessed	No. of admissions	Involuntary admission	Hospital experiences	Psychotic symptoms or treatment more distressing?
*Jackson, Knott, Skeate & Birchwood (2004).	Overall experience of first episode	*0 IES Total*	*0 IES Total*	*0 IES*[a]	_
*Tarrier, Khan, Cater & Picken (2007).	Hospitalisation/treatment only	_	**+ CAPS** *+ CAPS Avoid.* *(+) CAPS Intrusions* *0 CAPS Hyper.*	*++ CAPS Total*[b] *++ CAPS Avoid.*[b] *+ CAPS Hyper.*[b] *(+) CAPS Intrusions*[b] **0 CAPS**[c]	_
*Sin, Abdin, Lee, Poon, Verma & Chong (2010).	Psychosis or hospitalisation (most traumatic event)	_	**0 CAPS**	**0/0/0 CAPS**[d]	Main trauma in PR-PTSD group: 75% psychotic symptoms 25% hospitalization[e]
*McGorry, Chanen, McCarthy, van Riel, McKenzie & Singh (1991).	Psychosis and/or hospitalisation	*0 PTSD Scale* **0 PTSD Scale**	*0 PTSD Scale* **0 PTSD Scale**	_	A review of written responses suggested PR-PTSD was linked especially to the experience of hospitalization
Centofanti, Smith & Altieri (2005).	Psychosis/hospitalisation *COMBINED*	*0 CAPS Total*	*0 CAPS Total*	*(+) CAPS Total*[f] *0, 0, + CAPS Total*[g] *0, 0, 0, 0, +, 0 CAPS Total*[h]	_
White & Gumley (2009).	Psychosis/ hospitalisation *COMBINED*	**0 CAPS**	_	_	_
Shaw et al. (1997, 2002).	Psychosis/hospitalisation *COMBINED*	**0 CAPS** *0 CAPS Total*	**0 CAPS**	**0 CAPS** *0 CAPS Total* *0 IES Intrusions* *0 IES avoidance* *0 IES Total*	_

Table 4 (continued)

Study	Type of trauma assessed	No. of admissions	Involuntary admission	Hospital experiences	Psychotic symptoms or treatment more distressing?
Beattie, Shannon, Kavanagh & Mulholland (2009).	Psychosis and hospitalisation assessed separately.	_	*0 IES-R Total*	*0 IES-R Total*	_
Meyer, Taiminen, Vuori, Aijala & Helenius (1999).	Psychosis, hospitalisation and other trauma assessed separately.	**0 CAPS**[k]	**0 CAPS**[k, l]	**0 CAPS**[k]	Main trauma in PR-PTSD group: 62.5% = psychotic symptoms 37.5% = symptoms/treatment combined. Of 152 PTSD symptoms recorded: 105 (69%) = related to psychotic symptoms 37 (24%) = related to treatment
Priebe, Broker & Gunkel (1998).	Involuntary admission, or if none, other negative aspects of treatment.	**0 CAPS**	**0 CAPS**	_	_
Lu, Mueser, Shami, Siglag, Petrides, Schoepp, Putts & Saltz (2011).	Psychosis and hospitalisation assessed separately.	_	_	_	Main trauma cited in whole sample: 66% = psychotic symptoms 26% = treatment experiences 8% = event related to both

Table 4 (continued)

Study	Type of trauma assessed	No. of admissions	Involuntary admission	Hospital experiences	Psychotic symptoms or treatment more distressing?
*Brunet, Birchwood, Upthegrove, Michail & Ross (2012)	Most traumatic event experienced (symptoms, hospitalisation or other).	_	_	_	Main trauma in PR-PTSD group: 28.6% = psychotic symptoms 71.4% = hospitalization related
*Mueser, Lu, Rosenberg & Wolfe (2010).	Psychosis and hospitalisation assessed separately.	_	_	_	Main trauma cited in whole sample: 53% = psychotic symptoms 42% = treatment experiences 5% = event related to both
Harrison & Fowler (2004).	Psychosis and hospitalisation assessed separately.	_	_	_	Significantly higher levels of intrusions and overall trauma symptoms found in relation to psychotic symptoms.

Note. Full details of abbreviated measures listed in the table are provided in Appendix 5. Studies providing data regarding hospital experiences listed first. First episode studies are indicated by a * in the study column. Bendall et al. (2012), Chisolm et al. (2006) and Kennedy et al. (2002) not included. **Bold type** = where the analysis was of the *difference* between PR-PTSD and no PR-PTSD (i.e. PR-PTSD vs No PR-PTSD) with regards to the column variable whereas *italics* indicate a correlation between PR-PTSD levels on the PTSD scale(s) used in the study and the column variable. Symbols: + = P < 0.05; ++ = P < 0.01; +++ = P < 0.001; (+)(-) = non-significant trend; - = relationship was not examined in that study.

[a]Traumatic symptomatology (as measured by IES) was not related to DUP, place of first treatment (home vs. ward), police involvement, MHA, or adm. to a secure ward.
[b]CAPS Total and subscale scores in relation to the experience of physical harassment or violence.
[c]The relationship between PR-PTSD and duration of hospitalisation.
[d]The relationship between PR-PTSD and the following hospital experiences: being brought to hospital by police; being admitted to hospital; being restrained.
[e]25% cited hospitalization as the main traumatic event but none of these was admitted involuntarily or brought by police.
[f]CAPS Total correlated with total number of adverse hospital experiences from the HEQ (Shaw et al., 1997)
[g]CAPS Total did not correlate with transportation to hospital by staff or family/friends but there was a correlation between CAPS Total score and transportation by police.
[h]The authors divided the HEQ in 5 domains (cognitive response; harm to self/others; restriction on behaviour; aspects of treatment and exposure to patients. Of these, only harm to self/others reached significance. None of the HEQ mean distress ratings for each domain correlated significantly with the CAPS Total.
[i]Patients with a history of compulsory admissions had significantly *lower* levels of PTSD symptoms.
[j]*Number* of involuntary admissions
[k]None of the following were significantly associated with PR-PTSD: first admission; first invol. Adm.; closed ward; any coercive measure; curfew; forced medication; seclusion.
[l]There was a trend for *voluntary* patients to have higher levels of IES-R scores at week 1.

b. Other factors impacting on quality and reliability of assessment

b.1 Assessment of current symptoms psychosis

Five studies either did not assess current symptoms of psychosis, or assessed them but did not carry out a check as to whether they correlated with PR-PTSD symptoms (Brunet et al., 2012; Centofanti et al., 2005; Kennedy et al., 2002; McGorry et al., 1991; Sin et al., 2010). Two studies (Lu et al., 2011; Mueser et al., 2010) assessed current symptoms of psychosis, but reported only the total score on the psychosis measure used, which included an assessment of depression and anxiety, therefore making it impossible to assess the potential unique contribution of positive symptoms of psychosis, to the highly significant correlations obtained (Table 5).

Correlations between positive symptoms of psychosis and PTSD symptoms were reported by eight studies (Chisholm et al., 2006; Harrison & Fowler, 2004; Jackson et al., 2004; Meyer et al., 1999; Priebe et al., 1998; Shaw et al., 2002; Tarrier et al., 2007; White & Gumley, 2009)(Table 5). Five of these found no, or few, correlations between positive symptoms and PR-PTSD. White & Gumley (2009) did not find a difference in level of current symptoms between those with and without PR-PTSD, but did find correlations between positive symptoms and the total severity of PR-PTSD and avoidance and hyper-arousal subscales as assessed by the CAPS-S (Gearon et al., 2004). Meyer et al. (1999) and Shaw et al. (2002) found correlations between specific positive symptoms and PR-PTSD (Table 5). However, the latter two studies did not meet the quality criterion for time since trauma (see section a.1 above) as there was likely to be less than a month between the experience of acute psychosis and the assessment of PR-PTSD, and this may explain the correlations found.

Four studies (Beattie et al., 2009; Bendall et al., 2012; Shaw et al., 1997, 2002; Meyer et al., 1999) carried out multivariate analyses which allowed the contribution of

current positive symptoms of psychosis to PR-PTSD to be assessed. Three of these found few or no relationships between the two (Beattie et al. 2009; Bendall et al., 2012; Shaw et al., 1997, 2002) when entered into multiple regressions with a number of variables: demographic details, trauma history, psychiatric symptoms and attachment relationships with service providers (Beattie et al., 2009); childhood trauma and PTSD variables (Bendall et al., 2012); and lastly, overall distress (total score on the IES), severity of psychosis, total number of hospital experiences and past trauma unrelated to psychosis (Shaw et al., 1997, 2002). In contrast, Meyer et al. (1999) reported that a high Positive and Negative Syndrome Scale (PANSS, Kay et al., 1987) total score for current symptoms was the only significant predictor of PR-PTSD, when entered into a multiple regression with the PANSS total score at baseline and a range of coercive measures.

In summary, apart from Meyer et al.'s (1999) findings and the correlations reported by Shaw et al. (1997, 2002) there was little evidence for an association between current positive symptoms of psychosis and PR-PTSD. As mentioned above, these studies did not meet the quality criterion of ensuring at least a month's interval between a psychosis-related trauma such as hospitalisation and PR-PTSD assessment (section a.1 above). It is possible the associations found are due to this i.e. PR-PTSD scores may reflect distress due to current symptoms of psychosis rather than, or in addition to, that due to traumatic memories of it. However, strong evidence from both univariate and multivariate analyses emerged from the assessment of current psychiatric symptoms for an association between affective symptoms and PR-PTSD (Table 5).

b.2 Trauma and PTSD unrelated to psychosis

Six studies tested the relationship between levels of prior traumatic events and PR-PTSD (Table 6). *C*hisholm et al. (2006) found a significant association between stress experienced at the time of a traumatic event unrelated to psychosis (as measured by the 'stress then' component of the Stressful life experiences screening measure; SLES; Stamm et

al., 1996) and IES total scores. The remaining five studies assessed the correlation between number of prior traumatic events and PR-PTSD, with two studies finding a significant association (Bendall et al., 2012; Centofanti et al., 2005) whereas three did not (Lu et al., 2011; Mueser et al., 2010; Tarrier et al., 2007).

Two studies examined the co-occurrence of PR-PTSD and PTSD unrelated to psychosis. In a first episode sample, Bendall et al. (2012) reported 94% of people with PR-PTSD had experienced childhood trauma, 70% of whom had childhood trauma related PTSD, compared to 37% and 11% respectively for people without PR-PTSD. An association was found between PR-PTSD and PTSD unrelated to psychosis, which remained strong in multivariate analyses with potential confounders (DUP, age of onset, psychosis symptom severity). [Using multivariate analyses, Beattie et al. (2009) similarly found relationships between childhood trauma (they did not measure related PTSD) and PR-PTSD]. In contrast, in a multiple episode sample, Shaw et al. (1997, 2002) reported that of the people with PR-PTSD, 100% had experienced prior trauma, 18% of whom had PTSD, compared to 100% and 5% respectively for people without PR-PTSD. They found no association between PR-PTSD and PTSD unrelated to psychosis and the latter did not predict severity of PR-PTSD.

Thus the pattern of results with respect to the relationship between trauma and PTSD unrelated to psychosis and PR-PTSD is mixed.

b.3 Appraisals

Six studies considered the role of appraisals in PR-PTSD (Beattie et al., 2009; Brunet et al., 2012; Chisholm et al., 2006; Jackson et al., 2004; Tarrier et al., 2007; White & Gumley, 2009). Jackson et al. (2004) found PR-PTSD was associated with perceived stressfulness of the admission ward and Beattie et al. (2009) found PR-PTSD symptoms were associated with a reduced sense of availability of mental health providers. Results of the remaining four studies are presented in Tables 7a and 7b.

Table 5: Psychiatric Symptoms and Their Association with PR-PTSD

Study	Total no. of symptoms of psychosis	Positive symptoms of psychosis	Negative Symptoms of psychosis	Depression	Anxiety
Jackson, Knott, Skeate & Birchwood (2004)*.	*0 PTSD Scale* *0 IES*	*0 IES*	_	**0 PTSD Scale**	**+ PTSD Scale**
Tarrier, Khan, Cater & Picken (2007)*.	**0 CAPS-S** *0 CAPS-S Total*	**0 CAPS-S**	**0 CAPS-S** *0 CAP-S Total*	_	_
Bendall, Alvarez-Jimenez, Hulbert, McGorry & Jackson (2012)*.	**(+) IES-R**	_	_	_	_
Mueser, Lu, Rosenberg & Wolfe (2010)*	**++ PDS**	_	_	**+++ PDS**	**++ PDS**
McGorry, Chanen, McCarthy, van Riel, McKenzie & Singh (1991)*.	_	_	0 *PTSD Scale total* *0 IES avoidance* **0 PTSD Scale** **(+) PTSD Scale**[a]	*++ PTSD Scale total* **(+) PTSD Scale**	-
Chisholm, Freeman & Cooke (2006).		*0 IES Total*[b]	_	_	_
White & Gumley (2009).	**+ CAPS-S** *++ CAPS-S Total*[c] *+ CAPS-S Intrusions*[c] *++ CAPS-S Avoid*[c] *0 CAPS-S Hyper.*[c]	**0 CAPS-S** *+ CAPS-S Total*[d] *0 CAPS-S Intrusions*[d] *+ CAPS-S Avoid*[d] *+ CAPS-S Hyper*[ed]	**+ CAPS-S** *++ CAPS-S Total*[e] *+ CAPS-S Intrusions*[e] *++ CAPS-S Avoid*[e] *0 CAPS-S Hyper.*[e]	**+ CAPS-S** *++ CAPS-S Total* *0 CAPS-S Intrusions* *++ CAPS-S Avoid.* *++ CAPS-S Hyper.*	**+ CAPS-S** *++ CAPS-S Total* *+ CAPS-S Intrusions* *++ CAPS-S Avoid.* *++ CAPS-S Hyper.*
Shaw et al. (1997, 2002).	**+ CAPS**[t, g] *0 CAPS Total*[f] *0 IES Intrusions*[f] *+ IES Avoid.*[f] *+ IES Total*[f]	*++ CAPS Total*[h] *+ CAPS Total*[h] *++ CAPS Total*[h] *++ CAPS Total*[h] *+ CAPS Total*[h]	_	-	*++ CAPS total*

Table 5 (continued)

Study	Total no. of symptoms of psychosis	Positive symptoms of psychosis	Negative Symptoms of psychosis	Depression	Anxiety
Harrison & Fowler (2004).		*0 IES-R Intrusion*[i] *0 IES-R Avoidance*[i] *0 IES-R Hyperarousal*[i] *0 IES-R Intrusions*[j] *0 IES-R Avoidance*[j] *+ IES-R Hyperarousal*[j]	*++/+/+ IES-R Avoid.*[k] *0 IES-R Intrusions*[k] *0 IES-R Hyper.*[k] *+ IES-R Avoid.*[l] *+ IES-R Intrusions*[l] *++ IE-RS Hyper.*[l]	*++ IES-R Avoid.*[m] *++ IES-R Intrusions*[m] *++ IES-R Hyper.*[m] *0 IES-R Avoid.*[n] *0 IES-R Intrusions*[n] *0 IES-R Hyper.*[n]	-
Beattie, Shannon, Kavanagh & Mulholland (2009).	_	_	_	*++ IES-R Avoid.* *++ IES-R Intrusions* *++ IES-R Hyper.*	*++ IES-R Avoid.* *++ IES-R Intrusions* *++ IES-R Hyper.*
Meyer, Taiminen, Vuori, Aijala & Helenius (1999).	*+++ CAPS Total*[o] *+++ IES-R Total*[p]	*+++/+++ CAPS Total*[q] *+++/+++ IES-R Total*[q]	_	-	-
Priebe, Broker & Gunkel (1998).	*++ CAPS Total*[r] *0 CAPS Intrusions*[r] *++ CAPS Avoid*[r] *+++ CAPS Arousal*[r]	*0 CAPS Total*[s] *0 CAPS Intrusions*[s] *0 CAPS Avoid*[s] *+ CAPS Arousal*[s]	*0 CAPS Total*[t] *0 CAPS Intrusions*[t] *+ CAPS Avoid*[t] *+ CAPS Arousal*[t]	*+++ CAPS Total*[u] *++ CAPS Intrusions*[u] *+++ CAPS Avoid*[u] *++ CAPS Arousal*[u]	*+++ CAPS Total*[u] *++ CAPS Intrusions*[u] *+++ CAPS Avoid*[u] *++ CAPS Arousal*[u]
Lu, Mueser, Shami, Siglag, Petrides, Schoepp, Putts & Saltz (2011).	**+++ PDS**[v]	_	_	**++ PDS**	**++ PDS**
Kennedy, Dhaliwal, Pedley, Sahner, Greenberg & Manshadi (2002).	_	_	_	*++ Penn Total* *+ IES-R Total*	-

Table 5 (continued)

Note. First episode studies (indicated by * in the study column) are listed first, then studies are ordered according to number of admissions. **Bold type** = where the analysis was of the *difference* between psychosis-related PTSD and no psychosis-related PTSD (i.e. psychosis-related PTSD vs No psychosis-related PTSD) with regards to the column variable whereas *italics* indicate a correlation between psychosis-related PTSD levels on the PTSD scale used in the study and the column variable. Symbols: + = P < 0.05; ++ = P < 0.01; +++ = P < 0.001; (+)(-) = non-significant trend; - = relationship was not examined in that study. Appendix 5 provides a full list of measures abbreviated in the table.

[a]There was a trend for the mean level of negative symptoms to rise from timepoint 1 to timepoint 2 in those with psychosis-related PTSD. This was not seen in those without psychosis-related PTSD.
[b]IES total score correlated with the total BPRS positive symptoms score.
[c]CAPS-S correlated with the Positive and Negative Syndrome Scale (PANSS, Kay et al., 1987).
[d]CAPS-S correlated with the PANSS (Kay et al., 1987) positive subscale
[e]CAPS-S correlated with the PANSS (Kay et al., 1987) negative subscale.
[f]Total number of symptoms measured by summing relevant CIDI (WHO, 1993) items. People with psychosis-related PTSD also rated their psychotic symptoms as more distressing on the IES ($p < .05$) and had significantly more intrusive memories of them ($p < .01$).
[g]In addition to assessing number symptoms of psychosis using CIDI, Shaw et al. (1997, 2002) used the Factor Construct Rating Scale (FCRS; Overall, 1986) to assess symptom *severity*, obtaining the following correlational results with the CAPS and IES: *0 CAPS Total, + IES intrusions, + IES avoidance* and *++ IES Total*.
[h]Correlated with CIDI items. Significant associations were found between CAPS total cores and specific delusions: being controlled, being followed, believing others were hearing one's thoughts, having one's mind read and being spied upon (respectively). A significant association was also found with visual hallucinations.
[i]Correlation between trauma symptoms in relation to the *symptoms of psychosis* and level of overall positive symptoms measured by PANSS subscale
[j]Correlation between trauma symptoms in relation to the experience of *hospitalization* and level of overall positive symptoms measured by PANSS.
[k]Negative symptoms and IES-R subscale scores for *symptoms of psychosis*: IES-R intrusions and IES-R hyperarousal scores showed no correlation; IES-R avoidance showed a strong correlation ($p < .01$), which remained significant ($p < .05$) once depression was controlled. IES-R avoidance linked to trauma related to psychosis predicted negative symptoms when entered in a multiple regression with IES-R Avoidance linked to hospitalization, and a variable regarding specific autobiographical recall.
[l]Negative symptoms and IES-R subscale scores for *hospitalization*
[m]IES-R subscale scores for *symptoms of psychosis* correlated with the Calgary Depression Scale (CDS; Addington et al., 1990)
[n]IES-R subscale scores for *hospitalization* correlated with the Calgary Depression Scale (CDS; Addington et al., 1990)
[o]PANSS scores at Week 8 correlated with CAPS total score.
[p]PANSS scores at Week 8 correlated with IES-R total score.
[q]PANSS item scores for hallucinations and delusions
[r]CAPS scores correlated with BPRS total score.
[s]CAPS scores correlated with PSE delusion and hallucination subscale score.
[t]CAPS scores correlated with BPRS Anergia score.
[u]CAPS scores correlated with BPRS Anxiety/depression combined score.
[v]Total number of symptoms = BPRS total score.

Brunet et al. (2012) and Tarrier et al. (2007) assessed appraisals in, or soon after, the acute phase of illness (Table 7a). Tarrier et al. (2007) assessed participants' perceived consequences of the psychotic episode (loss; reduced hopes; stigma; social exclusion) with PR-PTSD associated with reduced hopes only. Brunet et al. (2012) measured a range of appraisals of illness and diagnosis and positive symptoms at baseline and their association with PR-PTSD at follow-up, in general finding few relationships between them (Table 7a). The PR-PTSD group felt they had a lower control over their illness and there was a correlation between PR-PTSD and social marginalization, and in relation to positive symptoms (voices and persecutory delusions), there was an association between threat in relation to persecutors and reduced perceived ability to cope.

White & Gumley (2009) and Chisholm et al. (2006) assessed the role of appraisals in remission and at the time of PR-PTSD assessment (Table 7b). Chisholm et al. (2006) found correlations between perception of helplessness and lower perception of crisis support and of control in relation to illness and PR-PTSD, and a number of correlations between threat in relation to persecutors (power, awfulness, deservedness, lower personal control and lower ability to cope) and PR-PTSD. White & Gumley (2009) found an association between fear of recurrence of illness and negative beliefs about paranoia and PR-PTSD. They found no association between voices and PR-PTSD but commented that many participants were no longer experiencing voices at the time of assessment.

Generally, appraisals assessed when participants were in remission were much more associated with PR-PTSD than those assessed during the acute phase.

Table 6: Trauma and PTSD Unrelated to Psychosis and its Association with PR-PTSD

Study	Number of traumatic events	PTSD unrelated to psychosis
*Tarrier, Khan, Cater & Picken (2007).	*0 CAPS Total*[a]	_
*Bendall, Alvarez-Jimenez, Hulbert, McGorry & Jackson (2012).	**++IES-R**[b]	**++IES-R**[b]
*Mueser, Lu, Rosenberg & Wolfe (2010).	**0 PDS**[c]	-
Centofanti, Smith & Altieri (2005).	*+++ CAPS Total*[d]	_
Shaw et al. (1997, 2002).	_	**0 CAPS**
Lu, Mueser, Shami, Siglag, Petrides, Schoepp, Putts & Saltz (2011).	**0 PDS**[c]	-

Note. Full details of abbreviated measures listed in the table are provided in Appendix 5. First episode studies (indicated by * in the study column) are listed first, then studies are ordered according to number of admissions. **Bold type** = where the analysis was of the *difference* between PR-PTSD and no PR-PTSD with regards to the column variable whereas *italics* indicate a correlation between PR-PTSD levels on the PTSD scale used in the study and the column variable. Symbols: + = P < 0.05; ++ = P < 0.01; +++ = P < 0.001; (+)(-) = non-significant trend; - = relationship was not examined in that study.

[a]Details of how prior trauma was assessed were not provided
[b]Childhood trauma assessed using the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1997). The association between childhood trauma and PTSD and PR-PTSD, remained strong in multivariate analyses with potential confounders (DUP, age of onset, psychosis symptom severity).
[c]Previous trauma assessed using an abbreviated version of The Traumatic Life Events Questionnaire (Kubany et al., 2000)
[d]Previous trauma assessed using the Trauma History Questionnaire (THQ; Green, 1996).

Table 7a: Appraisals and Psychosis-related PTSD in the acute phase of illness

Study	Appraisals and PR-PTSD symptoms	
	Illness and diagnosis	**Positive symptoms of psychosis**
Brunet, Birchwood, Upthegrove, Michail & Ross (2012)	***Personal Beliefs about Illness*** [a] **0/0/0/0 PR-PTSD** (shame, entrapment, social marginalization, loss of role or status re diagnosis) **+ PR-PTSD** (perceived lower control over illness) + *IES-R Total* (perceived social marginalization)[b]	***Voices*** **0 PR-PTSD** (presence/absence in the acute phase)[c] **0 PR-PTSD** (voice related distress)[d] **0/0/0 PR-PTSD** (malevolence, benevolence or omnipotence)[d] 0/0/0/0 *IES-R Total* (voice related distress, malevolence, benevolence, omnipotence)[b] ***Threat in relation to persecutor*:** **0 PR-PTSD** (presence/absence in the acute phase)[c] **0/0 PR-PTSD** (persecutor-related distress; conviction of belief)[d] **0/0/0 PR-PTSD** (persecutory power, awfulness of threat, imminence of harm)[d] **0 PR-PTSD** (effectiveness of safety behaviours)[d] **+ PR-PTSD** (perceived ability to cope)[d] 0/0/0/0/0/0/0/0 *IES-R Total* (distress; conviction; power; awfulness; perceived control; harm; effectiveness of safety behaviours; ability to cope)[b]
Tarrier, Khan, Cater & Picken (2007)	***Consequences of first episode:*** **+ PR-PTSD** (reduced hopes) **0 PR-PTSD** (loss/change) **0 PR-PTSD** (stigma) **0 PR-PTSD** (social exclusion)	

[a]Analyses of differences between PR-PTSD and non PR-PTSD groups in relation to items on the Personal Beliefs About Illness Questionnaire (PBIQ-R; Birchwood et al., 1993) completed at baseline.
[b]Correlations with IES-R total scores were carried out in relation only to the subsample who identified a traumatic memory at follow-up.
[c]Analyses of presence/absence of symptoms at baseline and PR-PTSD at follow-up was carried out in relation to the whole sample.
[d]Analyses of appraisals of symptoms was carried out in relation only to those who had experienced them at baseline.

Table 7b: Appraisals and Psychosis-related PTSD during remission

Study	Appraisals and PR-PTSD symptoms	
	Illness and diagnosis	**Positive symptoms of psychosis**
Chisholm, Freeman & Cooke (2006)	***Perception of helplessness during last acute episode:*** *++ IES Total; ++ IES Intrusions; + IES Avoidance* ***Perception of control during the last episode:*** *++ IES Total; ++ IES Intrusions; 0 IES Avoidance* ***Perception of crisis support*** *++IES Total; +IES Intrusions; +IES Avoidance*	***Threat in relation to persecutor:*** *+ IES Total* (perceived power) *+ IES Total* (perceived awfulness) *+ IES Total* (deserved) *0 IES Total* (unfair) *+ IES Total* (personal control) *++ IES Total* (ability to cope) *0 IES Total* (potential for rescue)
White & Gumley (2009)	***Fear of recurrence*** **++ PR-PTSD** ***Fear of relapse (from fear of recurrence scale)*** **+ PR-PTSD** Intrusions **+++ PR-PTSD** Avoidance **0 PR-PTSD** Hyperousal	***Paranoia*** **0 PR-PTSD** (beliefs regarding paranoia) **+ PR-PTSD** (negative beliefs regarding paranoia) ***Voices*** **0 PR-PTSD** (interpretation of voices)

KEY: **Bold type** = level of difference found between PR-PTSD and no PR-PTSD with regards to the column variable, while *italics* = correlation found between PR-PTSD levels and the column variable. + = P < 0.05; ++ = P < 0.01; +++ = P < 0.001; (+)(-) = non-significant trend; √ = participant report/rating; - = relationship was not examined in that study.

3.3 Broader methodological issues

As outlined above, a general assessment of quality was made based on Arcelus et al.'s (2013) checklist (Appendix 3 and 4). Studies received higher ratings if they used a sampling strategy to reduce the risk of bias; reported refusal rates of under 30%; compared participants and non-participants; stated inclusion criteria clearly; described the sample well; stated the recruitment period; collected data in a reliable and valid way; minimized participant and observer bias; and used appropriate statistical analyses.

Two studies (Brunet et al., 2012; Priebe et al., 1999) met the first four criteria regarding sample selection and scored highly on the remaining items and were accorded a rating of good quality (++). Three other studies (Centofanti et al., 2005; Meyer et al., 1999; Shaw et al., 1997, 2002) used a systematic sampling strategy, but either had refusal rates of 30% or over (Centofanti et al., 1999; Meyer et al., 1999) or did not compare participants and non-participants (Shaw et al., 1997, 2002). These and the remaining twelve studies, which did not employ a systematic selection strategy, were accorded a rating of reasonable quality (+)(see Table 1 for summary ratings and Appendix 4 for details). The mean prevalence rate for the 'good' quality studies was 34.5% compared to a mean prevalence of 39.5% for the 'reasonable' quality studies.

4. Discussion

This literature review evaluated PR-PTSD studies in relation to both specific and general methodological quality factors. A specially devised assessment tool was used to ratestudies according to six issues critical to the quality of assessment of PR-PTSD, specifically: 1) time since trauma 2) method of PTSD assessment 3) definition of the traumatic stressor 4) assessment of current symptoms of psychosis 5) impact of prior trauma and PTSD and 6) subjective meaning of the traumatic event. In addition, a generic quality checklist (Arcelus et al., 2013) was used to rate broader methodological quality, including sample selection.

Time since trauma

Of studies reporting prevalence rates in relation to time since trauma, five were judged not to have left adequate time delay between the trauma and PR-PTSD assessment (45.7%; Lu et al., 2011; Meyer et al., 1999; Mueser et al., 2010; Shaw et al., 1997, 2002; Tarrier et al., 2007); one was judged possibly to have left adequate time delay (19.7%; Sin et al., 2010) and eight were judged to have left adequate time delay (35.5%; Bendall et al., 2012; Brunet et al., 2012; Centofanti et al., 2005; Jackson et al., 2004; Kennedy et al., 2002; McGorry et al., 1991; Priebe et al., 1999; White & Gumley, 2009). The results suggest there may be a risk of inflating PR-PTSD rates if there is too little delay prior to PR-PTSD assessment.

The finding that hospitalized or recently unwell samples generally have high levels of PR-PTSD (e.g. Lu et al., 2011; Mueser et al., 2010; Shaw et al., 1997, 2002) and that these decrease over time (McGorry et al., 1991) is consistent with general PTSD research (e.g. Sloane, 1988), suggesting psychosis-related trauma processes are similar to those after other events (Bendall et al., 2006). However, the multifaceted nature of psychosis-related trauma and the absence, often, of a discrete, time-limited event, make it difficult to determine when to assess PR-PTSD or to separate out distress due to the candidate trauma from that due to other causes. This increases the chance of assessing PR-PTSD during a traumatic event or during the period of high symptoms in the immediate aftermath of the stressor (e.g. Lu et al., 2011; Meyer et al., 1999; Mueser et al., 2010; Shaw et al., 1997, 2002; Tarrier et al., 2007).

Most studies provided data for the time since discharge. However, the overall acute episode or hospitalization was not always the traumatic stressor, and in a number of studies the time of a more discrete stressor was not stated (Beattie et al., 2009; Sin et al., 2010; White & Gumley, 2009). In making quality ratings, it was often most difficult to assess if enough time had elapsed since the trauma where the stressor was symptoms of psychosis.

However, it could be argued that it is most important in these cases to ensure that PR-PTSD is being assessed in relation to PTSD memories rather than current psychosis.

Therefore, the main recommendations for future studies in relation to time since trauma is 1) to ensure at least a month after specific traumatic stressors and after discharge from hospital, or the acute episode, before assessing PR-PTSD, 2) to record the time since each and 3) to measure current symptoms of psychosis and co-morbid anxiety and depression, and control for these in analyses (details of study findings in relation to symptoms of psychosis, anxiety and depression are in Table 5).

PR-PTSD Assessment

In relation to PR-PTSD assessment, those studies using a validated interview other than the CAPS had the lowest mean prevalence rate (33.3%); those using the CAPS had a mean of 38.8%; and those using self-report measures had a combined rate of 40.7%. Overall, it may be that self-report measures are associated with higher rates. This finding is consistent with the broader PTSD research (Richardson et al., 2010) and may be in part due to similar reasons, for example that functional impairment is rarely assessed by self-report measures (Richardson et al., 2010). It may also be due to reasons specific to psychosis-related PTSD research, for example that use of a self-report measure does not allow the opportunity for careful differentiation between symptoms of psychosis and those of trauma which an interview based assessment allows.

The mean prevalence rate for studies using the CAPS may be higher than expected and may be due to the fact that five out of the eight were of unwell or recently unwell samples (Lu et al., 2011; Meyer et al., 1999; Mueser et al., 2010; Shaw et al., 1997, 2002; Tarrier et al., 2007), four of which reported high prevalence rates. In addition, the group of studies using other validated interviews were all of first episode samples which may have led to a lower mean prevalence rate as there is a small amount of evidence that PR-PTSD symptoms are lower in this population (Chisholm et al., 2006).

The main recommendation for PR-PTSD assessment is the use of validated interviews, preferably the CAPS-S.

Additional recommendations for PR-PTSD assessment

To assist participants in answering questions with respect to memories of psychosis rather than current symptoms, questions can be adapted to 1) include specific mention of the chosen traumatic event and 2) include the date it happened to anchor it in time (Chisholm et al., 2006; Harrison & Fowler, 2004). Secondly, it may assist in the differentiation of symptoms of psychosis from those of trauma if belief conviction items from measures such as The Psychotic Symptom Rating Scales (Haddock, McCarron, Tarrier, & Faragher, 1999) are utilised i.e. it would be expected that people suffering from PTSD intrusions may have lower conviction ratings in relation to symptoms than those experiencing current psychosis. Thirdly, to increase reliability and validity of findings, it may be preferable if PR-PTSD diagnosis is assessed a priori by a different researcher to the one assessing symptoms of psychosis i.e. given the importance of establishing that PR-PTSD is not an artefact of current levels of psychosis. Symptoms of psychosis should then be controlled for when analysing data.

Definition of the Traumatic Stressor

In relation to the definition of the traumatic stressor, the lowest rating was reported by the study which asked participants about intrusive memories in general, and then extracted a rate for psychosis-related stressors (17.9%). Next was the combined experience of symptoms and treatment during the last acute episode (33.3%). Those studies which did not provide details of how the stressor was defined had a prevalence of 37.5%. Those defining the stressor as the worst moment of any episode were next (41.9%) and those looking at specific aspects of psychosis had a combined mean of 49%. However, two out of three of the last group were of hospital based or recently unwell samples. It may be that, as hypothesised, studies asking participants to identify their worst memory of psychosis may

have higher prevalence rates, but as argued above, this may be the most valid means of defining the traumatic stressor.

A wide range of interview methods was used to assess psychosis-related traumatic experiences. Some used a semi-structured interview such as the PTSD Assessment Tool for Schizophrenia (Williams-Keeler, Milliken, & Jones, 1994) which asked about a range of distressing psychosis-related experiences. This has questions such as 'Have the symptoms of your psychiatric illness ever caused you to feel extremely anxious or terrified?' At the end of the interview participants select their currently most distressing memory. It may be that the sorts of questions asked may create a response bias towards increased reporting of distress.

This above is a very different approach to Brunet et al. (2012) in which participants were asked about intrusions in relation to past events, but not without specifying these should be psychosis-related. This is not a typical way of assessing traumatic stressors in PTSD research. It may be that there is a risk of under-reporting of trauma, particularly as only one event was assessed per individual and therefore if individuals cited events unrelated to psychosis initially, then PR-PTSD may not be picked up. In addition, it may be that distress due to memories of psychotic symptoms was underreported, as these may not always have been recognised as 'past events'. Lastly, the focus on intrusions may overlook distress manifested more through avoidance and hyperarousal, which may be more prevalent in PR-PTSD than other forms of PTSD.

However, the strength of Brunet et al.'s (2012) approach is that the traumatic stressor is entirely self-generated, with minimal suggestion by the researcher, to avoid inflation of PR-PTSD rates. One means of combining both approaches would be if the participant provided the researcher with a brief narrative of their illness, from the date of first contact with mental health services.

Most studies defined the traumatic stressor as the last episode. However, for many people an earlier episode or hospitalization may have been more distressing (Beattie et al.,

2009). The above means of identifying the traumatic stressor would also allow participants to select any episode as the traumatic stressor.

Lastly, in reporting results, it is helpful to provide descriptions of the traumatic stressors (Brunet et al., 2012).

Factors Improving Quality: Assessment of current symptoms of psychosis

It is essential to the validity and reliability of findings that distress measured is in relation to traumatic memories and not to current psychotic symptoms. Studies that correlated current positive symptoms of psychosis with PR-PTSD symptoms, or assessed their relative contribution in multivariate analyses, did not in general obtain significant results. This suggests that on the whole, prevalence rates reported are not merely a measure of distress in relation to current symptoms. The two studies that did report significant correlations with positive symptoms of psychosis (Meyer et al. , 1999; Shaw et al., 1997, 2002) and a strong contribution to PR-PTSD variance (Meyer et al., 1999) assessed participants in hospital or when recently discharged, and both used assessment of *current* symptoms of psychosis as a measure of the *past* traumatic experience of psychosis. Both these factors confound measurement of trauma with the measurement of factors associated with PR-PTSD.

It is recommended that future studies assess current symptoms of psychosis using a semi-structured interview and report findings in relation to positive symptoms separately from other symptoms, to ensure that the contribution of these and of affective symptoms can be investigated. Most studies (Table 5) report correlations between both depression and anxiety and PR-PTSD. If only the total score of measures such as the Brief Psychiatric Rating Scale (Overall & Gorham, 1962) are correlated with PR-PTSD symptoms, then significant results may be due to the contribution of depression and anxiety to the total score (e.g. Lu et al., 2011; Mueser et al., 2010). Secondly, because of the necessity for at least a month between a psychosis-related trauma and PR-PTSD assessment (see section 1.2a

above), it does not seem valid to assess current symptoms of psychosis and use these as a measure of the experience of psychosis-related trauma. One possibility (Brunet et al., 2012) is to assess symptoms of psychosis at the baseline of a prospective study and measure PR-PTSD at least one month after either discharge from hospital or the abatement of positive symptoms.

Factors Improving Quality: Trauma and PTSD unrelated to psychosis

Given the high rates of trauma exposure and PTSD in people with psychosis, and the finding that prior trauma is a predictor for subsequent trauma (Brewin et al., 2000), strong associations might be expected between trauma and PTSD unrelated to psychosis and PR-PTSD. However, results were mixed. Looking first at prior traumatic events and their relationship with PR-PTSD, there are a number of reasons why this may be the case. Firstly, Chisholm et al. (2006) measured the perceived impact of events, which may be a better reflection of prior trauma than the objective number of events experienced (Jackson et al., 2004). Secondly, in relation to the studies which looked at the number of prior traumatic events, the two studies (Bendall et al., 2012; Centofanti et al., 2005) which found a correlation between these and PR-PTSD used more detailed measures of trauma, with ratings which are likely to be more sensitive to the severity of impact of the stressor, than the three studies which did not find a correlation (Lu et al., 2011; Mueser et al., 2010; Tarrier et al., 2007)(Table 6).

Only two studies (Bendall et al., 2012; Shaw et al., 2002) have looked at PTSD due to prior trauma and its relationship with PR-PTSD. Both studies reported high rates of *trauma* exposure in their samples (94% and 100% respectively). However, only Bendall et al. (2012) found a relationships between PR-PTSD and PTSD unrelated to psychosis. They assessed PTSD symptoms in relation to both PR-PTSD and PTSD unrelated to psychosis using the IES-R. It may be that use of the same self-report measure for both assessments has a confounding effect, in addition to the possible inflation of rates due to use of a self-report

measure. Shaw et al. (2002) used the CAPS to assess PR-PTSD and PTSD in relation to event(s) unrelated to psychosis and did not find a relationship between the two. Conclusions are limited by the small number of studies, but findings may be related to the different PTSD assessment methods.

It is recommended that trauma unrelated to psychosis is assessed in studies of PR-PTSD, using validated measures of adult and childhood trauma. In addition it is recommended that PTSD unrelated to psychosis is measured using a validated interview, preferably the CAPS-S, and that rates of both trauma and PTSD unrelated to psychosis are controlled for in PR-PTSD assessment.

Factors Improving Quality: Cognitive Appraisals

A striking finding is the lack of direct relationship between specific symptom- or treatment-related stressors, and PR-PTSD (Table 4), even though participants almost invariably reported their experiences were distressing. Jackson et al. (2004) argue this points to the role of cognitive appraisals as mediators between experiences and PR-PTSD as hypothesised in cognitive models (Ehlers & Clark, 2000). In spite of the lack of evidence for direct relationships between candidate stressors and PR-PTSD, appraisals have been relatively neglected in PR-PTSD research, with only four out of the seventeen studies considering these in detail. Appraisals measured some time after the trauma (Chisholm et al., 2006; White & Gumley, 2009), and at the same time as PR-PTSD assessment, were much more strongly associated with PR-PTSD than those assessed in or just after the acute episode (Brunet et al., 2012; Tarrier et al., 2007). Brunet et al. (2012) suggest two key possibilities: either that retrospective assessment overestimates the relationship between appraisals and PR-PTSD, as has been found in PTSD in relation to other events (King et al., 2000; Roemer, Litz, Orsillo, Ehlich, & Friedman, 1998) or, alternatively, that their own study assessed appraisals too early i.e. during the event, and *prior* to psychological processing (Brunet et al.,

2012). They argue that a staged prospective design would be best to capture all elements of the development of PR-PTSD.

Therefore recommendations are for a prospective, staged, design to capture adaptation to illness as it develops e.g. measure traumatic stressors at baseline, appraisals some time later, and PR-PTSD at a third timepoint. Assess appraisals in relation to i) broad category of illness (e.g. PBIQ) ii) appraisals of threat/danger (e.g. fear of recurrence); specific symptoms (e.g. hallucinations, delusions); more general trauma related cognitions (e.g. PTCI) and ii) other influences on recovery e.g. Relationships with mental health staff and attachment relationships. White & Gumley (2009) note that it is difficult to assess appraisals of positive psychotic symptoms if symptoms are in remission.

Broader methodological issues: selection bias

Studies were rated based on a checklist of generic methodological quality, with particular attention given to sample selection and refusal rates (Appendix 3) as these have been highlighted as sources of bias in both mainstream PTSD studies (e.g. Weisaeth et al., 1989), and research in psychiatric settings (Schubert et al., 1984; Woods et al., 2000). Potential selection bias due to high refusal rates was an issue in most of the PR-PTSD studies reviewed, with only two studies (Brunet et al., 2012; Priebe et al., 1999) meeting most of the quality criteria and receiving a 'good' quality rating. These two studies had a mean prevalence rate of 34.5% compared to a mean prevalence of 39.5% for the 'reasonable' quality studies.

However, when assessing prevalence rates, it is difficult to separate the impact of sampling biases from that of the specific PR-PTSD quality factors. Brunet et al. (2012) assessed psychosis-related trauma memories in a way which may have underestimated prevalence (see discussion of the definition of the traumatic stressor above). Priebe et al. (1999) may also have underestimated prevalence by restricting the definition of trauma to involuntary admission, but on the other hand may have overestimated it by not measuring or

controlling for prior or co-existing trauma. Therefore, it is difficult to isolate the impact of potential sampling biases on PR-PTSD prevalence rates.

Combined with the small sample sizes of most PR-PTSD studies, potential sampling biases create significant limitations to the reliability and generalizability of the research. Therefore, it is recommended that future studies use a systematic approach to sample selection, for example by asking all clients within a service to participate (Priebe et al., 1999) or by recruiting consecutive referrals; ensure that refusal rates are reported; if possible, report reasons for refusal e.g. by asking non-participants to select a reason from a checklist (Condon, 1986); compare participants and non-participants; make every effort to recruit all potential participants identified; and increase sample sizes.

Estimating a revised prevalence of PR-PTSD based on quality ratings in columns 1-3 of Table 1

The quality ratings in the first three columns of Table 1 provide a basis for estimating prevalence based on more reliable assessment. As can be seen, for individual studies, ratings vary across the factors, with few studies scoring highly in all three. Only two studies score two or above for each factor (Centofanti et al., 2005; White & Gumley, 2009), with prevalence ratings of 37% and 25% respectively. However, there are potential selection biases in both these samples: White & Gumley (2009) aimed to select participants for their study who were experiencing ongoing distress in relation to psychosis, which may have inflated their prevalence rate, while Centofanti et al (2005) had a 50% refusal rate and a small sample. The average prevalence rate of these two studies is 31%.

4.3 Clinical implications

Given the high levels of distress in relation to psychosis-related experiences, routine assessment of PR-PTSD is essential. In addition, clients should be assessed for prior trauma unrelated to psychosis as this may need to be addressed in conjunction with it. Clients suffering from PR-PTSD should be offered trauma-informed psychological therapies such as cognitive interpersonal psychotherapy (Gumley & Schwannauer, 2006). In addition, care

should be taken not to over-prescribe neuroleptics by mistaking trauma-related intrusions for current symptoms of psychosis.

4.4 Limitation of Current Evidence and Future Directions

There are a number of limitations to the review. Firstly, the specific PR-PTSD quality assessment tool was devised for the current study and may be limited in scope, with potentially biased quality criteria. The review would have been improved by asking a range of PTSD experts to develop a consensus as to important criteria to include. On the other hand, it is one of the strengths of the review that attempts were made to identify key factors specific to PR-PTSD research, rather than relying on a generic quality checklist alone. In addition, specific and general quality ratings were made by the author only and the review would have been improved by evaluating the reliability of such ratings by asking a second assessor to score studies blind to the author's ratings.

In rating the studies, it was difficult to make comparisons between them due to the different methodologies used to assess PR-PTSD. In addition, not all studies reported prevalence rates, or measured all of the variables of interest. It was often difficult to assign quality ratings, particularly in relation to time since trauma, as studies did not always report the necessary information. Samples were often heterogeneous, and it was not possible to isolate the role of illness chronicity. Prevalence rates are likely to be affected by comorbid symptoms, which were rarely controlled for. In addition, there were only a small number of studies, with mixed findings, and a significant risk of selection bias. Therefore there is a need to replicate findings with larger and more representative samples.

Peri-traumatic dissociation is the single largest predictor of PTSD (Ozer, Best, Lipsey, & Weiss, 2003). However, no PR-PTSD studies have been carried out so far in relation to it. Secondly, an important predictor of trauma is the degree of peri- and post-trauma support (Brewin et al., 2000), but one which has only been addressed in two PR-PTSD studies. In addition, Beattie et al. (2009) and Chisholm et al. (2006) identify availability of social support as a factor in PR-PTSD. This suggests that interpersonal

relationships may be an important factor, and that attachment status may impact on levels of PR-PTSD.

5. Conclusion

High rates of distress in relation to psychosis appear to be present in a significant minority of people with psychosis and therefore further research is important. However, due to the extent of possible confounding variables, a rigorous research methodology is critical.

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Part 2: Empirical Paper

Relational and Cognitive Factors in Psychosis-related Posttraumatic Stress Disorder

Abstract

Aims: Recent research suggests that the experience of acute psychosis (symptoms and treatment) can be traumatic and precipitate posttraumatic stress disorder (PTSD). This study used a cognitive interpersonal model of psychosis to test the relationship between psychosis-related posttraumatic stress disorder (PR-PTSD) and a number of relational (early adverse experiences, insecure attachment, self-compassion, service engagement) and cognitive (fear of recurrence) variables.

Methods: Thirty participants with a diagnosis of Schizophrenia, recruited from a community psychosis service, completed measures of childhood trauma and related PTSD, negative emotional memories, adult attachment, PTSD symptoms in relation to psychosis, fear of recurrence and depression. In addition, current symptoms of psychosis were assessed and Care Coordinators completed a measure of service engagement.

Results: Anxious attachment and fear of recurrence of psychosis were the strongest predictors of psychosis-related PTSD symptoms, after controlling for the role of current symptomatology. Childhood trauma-related PTSD was correlated with PR-PTSD. The high PR-PTSD group reported significantly higher negative emotional memories of submissiveness in childhood and lower self-compassion than the low PR-PTSD group, but these group differences were not replicated in correlational analyses looking at associations with PR-PTSD across the sample. Service engagement and avoidant attachment were not associated with PR-PTSD.

Conclusion: This study found some support for cognitive interpersonal models of psychosis and psychosis-related PTSD, particularly with respect to anxious attachment and fear of recurrence. Given the high levels of distress in relation to memories of psychosis, it will be important to assess and treat these.

Introduction

Both trauma exposure and levels of posttraumatic stress disorder (PTSD) in people with psychosis are high (Mueser et al., 2004; Neria, Bromet, Sievers, Lavelle, & Fochtmann, 2002; Resnick, Bond, & Mueser, 2003). For example, Mueser et al. (2004) found the rate of PTSD in a sample of 363 people with schizophrenia to be 28.9%, which compares to an estimate of 1.2-2.7% of current PTSD in a community sample (Stein, Walker, Hazen & Forde, 1997).

An increasing number of studies have investigated whether acute psychosis *itself* (symptoms of psychosis and treatment experiences) can be traumatizing and give rise to PTSD. In a recent review, (Berry, Ford, Jellicoe-Jones, & Haddock, 2013) reported prevalence rates of 'psychosis-related posttraumatic stress disorder' (PR-PTSD) of 11-69%. Studies have in general used a broad definition of a traumatic event, for example that it is 'the experience of an uncontrollable event which is perceived to threaten a person's sense of integrity or (Mueser, Rosenberg, Goodman, & Trumbetta, 2002), therefore not requiring the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, APA, 1994) A1 and A2 criteria (Appendix 1) for a traumatic stressor to be met.

PR-PTSD has been associated with worse outcomes in psychosis including increased levels of anxiety, depression and overall psychiatric symptoms, worse daily functioning, higher levels of unemployment, and increased use of psychiatric and medical services (Berry et al., 2013; Lu et al., 2011; Mueser, Lu, Rosenberg, & Wolfe, 2010). Therefore, developing more effective approaches to understanding and treating this client group is of key importance.

While participants almost universally report their experience of psychotic symptoms and hospitalisation as highly distressing (Centofanti, Smith, & Altieri, 2005; Shaw, McFarlane, & Bookless, 1997; Shaw, McFarlane, Bookless, & Air, 2002), only a proportion

go on to develop PR-PTSD. This, and the lack of an association between PR-PTSD and objective stressors such as involuntary hospitalisation and coercive treatments (Centofanti et al., 2005; Jackson, Knott, Skeate, & Birchwood, 2004; Meyer, Taiminen, Vuori, Aijala, & Helenius, 1999; Priebe, BrÂker, & Gunkel, 1998; Shaw et al., 1997; Shaw et al., 2002), has led researchers to look at possible mediating factors.

Cognitive appraisals, in particular, have been found to be associated with levels of distress, for example perceived stressfulness of the ward environment (Jackson et al. 2002), perception of helplessness or lack of control (Brunet, Birchwood, Upthegrove, Michail, & Ross, 2012; Chisholm, Freeman, & Cooke, 2006), negative beliefs and perception of threat in relation to psychotic symptoms (White & Gumley, 2009) and fear of recurrence of illness (White & Gumley, 2009). (Sherrer, 2011) (2011) reviewed the role of appraisal in adaptation to trauma in nine studies of individuals with serious mental illness, including studies of PR-PTSD, and argued the findings suggested that negative trauma-related cognitions, including of the self and the world, may account for the higher rates of PTSD in this group.

Models of PTSD and Psychosis

Cognitive models can inform our understanding of psychosis and of PTSD and can provide testable hypotheses for research. (Ehlers & Clark, 2000) proposed that, in individuals who develop PTSD, distress associated with a trauma persists because the trauma is processed in such a way that a sense of current threat is generated. They argued this was due to extreme negative appraisals made of the event, and to poor elaboration and contextualisation of memories of it. They argued PTSD was maintained by maladaptive behavioural and cognitive coping strategies, particularly avoidance, which prevented cognitive change (Ehlers & Clark, 2000).

(Morrison, Frame, & Larkin, 2003)(2003) proposed that both PTSD and psychosis were characterised by intrusions of material into awareness and the interpretation of these,

and that symptoms such as hallucinations and delusions could be viewed as intrusions or their culturally unacceptable interpretation. They suggested that these appraisals were informed by maladaptive self and social knowledge (for example extreme negative beliefs about the self, others and the world) that was likely to have developed through adverse early experiences including trauma.

Understanding Relational and Cognitive Processes in PR-PTSD

Whilst the above cognitive models focus on PTSD arising from any type of trauma, Gumley and Macbeth's (2006) model focuses on the role of cognitive appraisals of intrusive memories of psychosis itself in giving rise to a sense of current threat, and can therefore be useful in thinking about the development and maintenance of PR-PTSD. They propose that the experience of low-level psychotic symptoms and cognitive-perceptual changes can remind the individual of previous episodes of psychosis triggering a sense of traumatic reliving. This in turn may activate catastrophic negative appraisals both of mental processes and of possible recurrence of psychosis and its sequelae. Therefore, in addition to being distressing in and of themselves, traumatic memories of psychosis can generate a high degree of ongoing threat as they hold the 'concurrent sense of *danger* that the traumatic event may recur' (Gumley & Macbeth, 2006). It is hypothesised that attempts to control these experiences such as cognitive, emotional and behavioural avoidance, social withdrawal and delayed help seeking maintain and exacerbate traumatic reactions.

Gumley and colleagues' cognitive interpersonal model of psychosis (Gumley, Braehler, Laithwaite, MacBeth, & Gilbert, 2010) places the above model within a broader developmental framework. They argue that disordered attachment, often arising out of early adversity and trauma, has a highly detrimental impact on affect regulation systems, particularly the system responsible for a sense of safeness and affiliation (Gumley et al., 2010). The consequence is a high vigilance and sensitivity to threat, negatively influencing cognitive, affective and interpersonal processes. This creates a vulnerability to psychological and emotional difficulty in adapting to adverse life events, including the experience of

psychosis (Gumley et al., 2010; Gumley & Macbeth, 2006). The next sections review evidence for the cognitive interpersonal model of psychosis and its relevance to PR-PTSD.

Childhood Trauma, Insecure Attachment and PR-PTSD

Bowlby (1969, 1973, 1980) proposed we are born with an innate drive to maintain proximity to caregivers, for protection, to regulate distress, and to use as a 'secure base' from which to explore. In optimal circumstances, 'internal working models' (Bowlby, 1969) develop of others as protective and nurturing in relation to positive representations of the self as competent and lovable. The child is helped to regulate affect until s/he develops this capacity (Mikulincer, Shaver, & Pereg, 2003; Schore, 1994).

In contrast, in the absence of supportive and attuned others, insecure attachment develops. In adult research, attachment is measured on two dimensions: avoidance and anxiety (Brennan, Clark, & Shaver, 1998). Mikulincer et al. (2003) argue avoidant attachment emerges in the context of rejecting and punitive care, where proximity seeking is not seen as viable, and is characterised by strategies which 'deactivate' the attachment system (denial of needs, minimization of affect and cognitive and emotional distance from others). In contrast, anxious attachment is characterised by strategies which 'hyperactivate' the attachment system to elicit care from inconsistent and neglectful caregivers (e.g. hypervigilance for threat; intensification of negative emotional responses; rumination on threat-related concerns) (Mikulincer et al., 2003). (Mikulincer, Shaver, & Horesh, 2006)(2006) found higher rates of PTSD in insecurely attached people of both types, with anxious attachment linked to increased intrusions, while avoidant attachment was linked to avoidance.

In people with psychosis, there is extensive evidence for high rates of childhood trauma and insecure (and disorganised) attachment (Read & Gumley, 2010). There is also some evidence for an association between these factors and PTSD and PR-PTSD. (Picken, Berry, Tarrier, & Barrowclough, 2010) found high levels of anxious attachment in people

with psychosis who had co-morbid PTSD and (Bendall, Alvarez-Jimenez, Hulbert, McGorry, & Jackson, 2012) found that childhood trauma and childhood trauma-related PTSD were risk factors for PR-PTSD. They argue that PTSD symptoms in response to the experience of psychosis do not extinguish in this group due to maladaptive strategies such as avoidance developed in the context of childhood adversity (Bendall et al., 2012).

Self-Compassion

Internal working models developed in the context of attachment relationships guide the capacity for warmth and concern for the self as well as others (Gilbert, 2005). For example, Irons, Gilbert, Baldwin, Baccus and Palmer (2006) found that high self-criticism and difficulties in self-soothing were linked to recall of low parental care and higher levels of depression. On the other hand they found that high parental warmth was linked to the capacity to reassure the self.

As would be hypothesised from Gumley and colleague's models (Gumley et al., 2010; Gumley & Macbeth, 2006), studies have found that self-compassion has enabled people to cope better with adverse events (Leary, Tate, Adams, Batts Allen, & Hancock, 2007), including trauma (Thompson & Waltz, 2008) and that people with PTSD have higher levels of self-criticism and shame and lower levels of self-reassurance (Harman & Lee, 2010). Also congruent with Gumley and Macbeth's model, Thompson and Waltz (2008) hypothesised that people who are high in self-compassion may use avoidance strategies less and therefore allow for natural exposure to, and processing of, traumatic experiences.

Fear of Relapse

Research in support of Gumley and Macbeth's (2006) trauma-based model has found that a fear of recurrence of psychosis (as measured by The Fear of Recurrence Scale, Gumley & Schwannauer, 2006) is significantly correlated with more negative personal beliefs about the impact of psychosis on the individual's life (Gumley & Schwannauer, 2006) and is predictive of PR-PTSD (White & Gumley, 2009). The Fear of Recurrence Scale

has three subscales: intrusiveness of thoughts, awareness of thoughts and fear of relapse. White and Gumley (2009) found that merely being aware of cognitive processes was not significantly associated with PR-PTSD, but fear of relapse was. They concluded that it may be the catastrophic appraisals of cognitive experiences, rather than awareness of them per se, that is key in driving distress.

Depression

There is strong evidence that depression is linked to early adverse experiences (Nanni, Uher, & Danese, 2012) and insecure attachment (Morley & Moran, 2011). In addition, Irons et al. (2006) report an association between negative memories of parenting and low self-compassion. Depression has also been associated with negative appraisals of the consequences of psychosis (Birchwood, Iqbal, Chadwick, & Trower, 2000; Iqbal, Birchwood, Chadwick, & Trower, 2000) and difficulties in adapting to psychosis (Drayton, Birchwood, & Trower, 1998) and strong evidence links it to PR-PTSD (Berry et al., 2013).

Engagement

Metaanalyses (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003) have identified lack of social support as a predictor of PTSD symptoms. Two studies of PR-PTSD have investigated aspects of this, one finding that a reduced sense of crisis support predicted PR-PTSD (Chisholm et al., 2006), while the other found that PR-PTSD was predicted by a reduced sense of having been attended to by mental health professionals (Beattie, Shannon, Kavanagh, & Mulholland, 2009). However, as avoidance of reminders of trauma is a strong component of PTSD, it might be expected that people with PR-PTSD may avoid treatment settings and mental health practitioners associated with traumatic memories, leading to lower levels of engagement. As yet there are no studies investigating engagement with services in people with PR-PTSD.

Summary and Hypotheses

In summary, it was proposed that in some people with psychosis, early negative emotional experiences of care and attachment, childhood trauma, and consequent adult insecure attachment, may create cognitive and emotional vulnerabilities in the face of adversity. In particular, these experiences may lead to a difficulty in reassuring the self when things go wrong, and to the development of catastrophic beliefs about the consequences of psychosis, leading to an extreme fear of its recurrence and a high degree of ongoing distress in relation to psychosis-related traumatic memories. Understanding these processes will assist in identifying key targets for interventions that aim to support people in helpful adaptation to their experience of psychosis. Specifically, it was hypothesised that higher levels of PR-PTSD symptoms would be associated with:

1. negative emotional memories of growing up
2. childhood trauma
3. adult insecure attachment
4. lower levels of self-compassion
5. fear of psychosis returning
6. higher rates of depression and
7. lower levels of engagement with services.

Method

Participants

Participants with a diagnosis made by their psychiatrist of schizophrenia or related non-affective functional psychosis conforming to ICD-10 (World Health Organization, 1992) criteria (F20-29) were recruited from a community psychosis service in Greater London. Exclusion criteria were: patients in the acute stages of illness (evidenced by acute

inpatient admission or involvement of the home treatment team); diagnosis of affective psychosis, a learning disability, or organic disorder; lack of capacity to consent; and insufficient command of English.

Measures

Semi-structured interview about experiences of psychosis and mental health services

Participants were first interviewed about their experiences of psychosis and mental health services in order to elicit their currently most distressing memory of psychotic illness or treatment (Figure 1). The protocol for this interview was developed from existing studies of PR-PTSD (e.g. White & Gumley, 2009). There were four steps to the protocol.

Firstly, in order to contextualise the experience of psychosis, participants were asked to describe the period when they initially became unwell and were first referred to mental health services, and also to describe briefly the course of their illness and treatment up to the present. After providing this timeline, they were asked to identify from it their worst moment of illness, which it was stated could relate to the symptoms of illness, or to a treatment experience, or to an event due to illness. It was explained to participants that the memory should be the one which affected them most now, in the present, so that for example they avoided thinking about it, or avoided reminders of it, or remembered it when they didn't want to. They were then asked to provide a phrase which encapsulated the memory for them, to be used as an aide-memoire when completing the Impact of Events Scale (IES-R, Weiss & Marmar, 1997), described below. Finally, checks were made that 1) the memory chosen was psychosis-related 2) participants had chosen a memory, and not a current experience and 3) that the memory was *currently* the most distressing to them, and not, for example, an event which objectively seemed the most severe or distressing, or which was very distressing to them in the past (a list of questions is included in Appendix 6.1). PR-PTSD symptoms in relation to the identified memory were assessed using the IES-R (Weiss & Marmar, 1997).

Figure 1. Semi-structured interview about experiences of psychosis and mental health services used to elicit participant's worst moment of illness

Step 1: Contextualising the experience of psychosis: Participants were asked to provide a narrative of their experience of psychosis and treatment, from initial symptoms to the present.
Step 2: Identification of the worst moment of psychosis: Participants identified the memory of illness that was *currently* most distressing to them.
Step 3: Generating a phrase to encapsulate the memory: Participants provided a descriptive phrase of their chosen memory, to be used as an aide-memoire when assessing PR-PTSD.
Step 4: Checks regarding the memory: checks were made that participants had identified a psychosis-related event, a memory and not a current experience, and that their memory was currently the most distressing to them, and not, for example, a very stressful or traumatic event from the past which no longer troubled them.

The Childhood Trauma Questionnaire – Short Form (CTQ-SF) (Bernstein et al., 2003)

The presence of childhood trauma was measured using the CTQ-SF (Appendix 6). This is a 25-item measure assessing physical, sexual and emotional abuse, and physical and emotional neglect in childhood. It has 5 subscales, each with 5 items rated on a 5-point Likert scale (from 'never true' to 'very often true'). The questionnaire has shown measurement invariance across samples and good criterion-related validity.

Childhood trauma was classified as present if participants scored in the moderate or severe range in any of the subscales as follows: emotional abuse ≥13; physical abuse ≥10; sexual abuse ≥8; emotional neglect ≥15; and physical neglect ≥10 (Bernstein & Fink, 1998). If a particular category of childhood trauma was present, participants were asked to think back to their childhood and identify their worst memory related to that category, and to

provide a phrase encapsulating this. The procedure followed was the same as that described above for identifying participants' worst psychosis-related memory, which also relates to standard PTSD assessment and identification of trauma events. However, participants were not asked to provide a narrative of their childhood. 'Childhood' was defined as the period up to the age of 16 and checks were made that the memory chosen occurred in that time, as some participants continued to live in their childhood home. If participants met the criteria for more than one category of trauma, the category with the highest score was used. PTSD symptoms in relation to participants' worst memory were assessed using the Impact of Event Scale Revised (IES-R; Weiss & Marmar, 1997) (see below).

The Impact of Events Scale-Revised (IES-R)(Weiss & Marmar, 1997)

The IES-R (Appendix 6) is a 22-item measure, using a five-point Likert response scale (from 0 'not at all' to 4 'extremely'). It assesses the level of current PTSD symptoms over the seven days prior to assessment in relation to a specific traumatic stressor. It has 3 subscales. The intrusions subscale (8 items) measures the re-experiencing symptoms of trauma such as dreams, intrusive memories 'Pictures about it popped into my mind' and flashbacks 'I found myself acting or feeling like I was back at that time'. The avoidance subscale (8 items) measures cognitive and behavioural avoidance e.g. 'I tried not to think about it' and 'I stayed away from reminders of it'. The hyper-arousal subscale, added when the Scale was revised, contains 6 items which assess sleep, irritability, concentration, hypervigilance, startle response and physiological arousal. The IES-R has strong internal consistency and test-retest reliability (Creamer et al., 2003; Weiss & Marmar, 1997). Rather than computing a sum of subscale item scores, the mean of the subscales and of the total is used in analyses (Creamer et al., 2003). The scale is not intended as a diagnostic tool and its use in this way has had mixed results (Creamer et al., 2003; Asukai et al., 2002). However, Asukai et al. (2002) found a score of 25 or greater reliably to indicate PTSD symptoms of *clinical concern*.

The IES-R was used as a semi-structured interview to measure trauma symptoms in relation to participants' worst moment of their psychotic illness or treatment. Each question was adapted to incorporate the traumatic stressor (e.g. 'Any reminder brought back feelings about the time in 2000 when you believed people were against you') in order to ensure responses were about a specific memory and not related to current psychotic experiences.

Participants who had experienced childhood trauma as identified by the CTQ also completed the IES-R for their currently most distressing childhood trauma.

The Early Life Experiences Scale (ELES) (Gilbert, Cheung, Grandfield, Campey, & Irons, 2003)

The ELES (Appendix 6) is a 15-item scale, with five-point Likert scales (ranging from 1 'completely untrue', to 5 'very true') measuring emotional memories of one's family (in contrast to scales such as The Parental Bonding Instrument (Parker, Tupling, & Brown, 1979) and the EMBU (a Swedish acronym for 'my memories of upbringing') (Arrindell et al., 1999) which measure memories of parental behaviour). It was chosen for use in the study to provide an indicator of childhood care and attachment experiences. It has three subscales: recall of feelings of threat (e.g. 'I felt on edge because I was unsure if my parents might get angry with me'); feeling (un)valued (e.g. 'I felt able to assert myself in my family') and submissiveness (e.g. 'I often felt subordinate in my family'). Gilbert et al. (2003) found the Scale to correlate highly with the EMBU and to have Cronbach's alphas of .89 for threat, .85 for submissiveness, .71 for (un)valued and .92 for the total score.

The Psychosis Attachment Measure (PAM) (Berry, Wearden, Barrowclough, & Liversidge, 2006)

The PAM (Appendix 6) is a simple 16 item self-report measure of adult attachment, using a four-point Likert scale (from 0 'not at all' to 3 'very much'), with 8 items measuring avoidant attachment (e.g. 'I try to cope with stressful situations on my own') and 8 measuring anxious attachment (e.g. 'I worry that if people get to know me better, they won't like me'). The PAM has been demonstrated to have good reliability and concurrent validity

in nonclinical and clinical samples (Berry et al., 2006; Berry, Band, Corcoran, Barrowclough, & Wearden, 2007; Berry, Barrowclough, & Wearden, 2008).

The Self-Compassion Scale-Short Form (SCS-SF)(Raes, Pommier, Neff, & Van Gucht, 2011)

This 12-item scale (Appendix 6) is a short form of the widely used Self-Compassion Scale (Neff, 2003). As in the original scale, it assesses the three components that Neff (2003) defined as being central to self-compassion: self-kindness (the ability to treat oneself with care rather than self-judgment), common humanity (viewing negative experiences as a normal part of the human condition rather than feeling isolated by them) and mindfulness (the capacity to hold painful thoughts and feelings in mindful awareness rather than becoming over-identified with them). It has the same factor structure as the original scale, good internal consistency and an almost perfect correlation with the longer scale.

The Fear of Recurrence Scale (FoRSe)(Gumley & Schwannauer, 2006)

This 29 item scale (Appendix 6), with four-point Likert scales (from 1 'do not agree' to 4 'agree very much'), measures early signs of psychosis and has 3 factors: intrusiveness (e.g. 'I have experienced thoughts intruding into my mind', awareness (e.g. 'I have been more aware of my thoughts', and fear of relapse (e.g. 'I have been worrying about relapse'). The scale has strong positive correlations with the Early Signs Scale (Birchwood, Mason, MacMillan & Healy, 1989) and has been demonstrated to have good internal consistency and test-retest reliability (Gumley & Schwannauer, 2006).

Beck's Depression Inventory II (BDI-II)(Beck, Steer & Brown, 1996)

This widely used 21-item self-report measure assesses cognitive/affective and somatic symptoms of depression. Each item consists of a statement with which the respondent rates their agreement (from 0-3), according to the intensity of the symptom during the past 2 weeks. According to the manual, scores 14–19 indicate mild depression; 20–28, moderate depression; and 29–63, severe depression. It has been demonstrated to have high internal consistency and good convergent and disciminant validity.

The Positive and Negative Syndrome Scale (PANSS)(Kay, Fiszbein, & Opler, 1987)

This 30-item observer rated scale assesses the presence and severity of positive and negative symptoms of psychosis and general psychopathology. There are 7 items for positive symptoms (e.g. hallucinations and delusions), 7 items for negative symptoms (e.g. blunted affect, emotional withdrawal) and 16 items for 'global psychopathology' (e.g. somatic concerns, attention, lack of judgment and insight, poor impulse control). Psychometric studies have reported good inter-rater reliability (e.g. correlation coefficients around 0.80) and satisfactory internal consistency, construct validity and concurrent validity (Kay, Opler, & Lindenmayer, 1988; Kay, Opler, & Lindenmayer, 1989).

The PANSS anxiety and tension items from the global psychopathology subscale were used to form a separate variable measuring anxiety, as a separate scale had not been included (in order to reduce burden on participants). Secondly, these items, plus the depression item were removed from the global psychopathology subscale variable, to reduce overlap of measurement.

Service Engagement Scale (SES)(Tait, Birchwood, & Trower, 2002)

The SES (Appendix 6) is a 14-item measure is completed by case managers. It consists of statements rated on a 4-point Likert scale (from 'not at all or rarely' to 'most of the time') which assess client engagement with services. These form 4 sub-scales measuring availability, collaboration, help-seeking and treatment adherence. Scores are totalled and range from 0 to 42, with higher scores indicating lower engagement. The scale has high internal consistency and retest reliability, including discrimination between criterion groups (Tait et al, 2002).

Ethical considerations

Ethical approval was granted by a local NHS research ethics committee (Appendix 7). Care Coordinators informed clients about the study and referred those who were interested. A researcher met with potential participants to go through an information sheet and explain that during the study meeting they would be required to bring to mind their worst moment of illness, in order to answer a questionnaire. Potential participants were informed that, though they would not have to talk about this memory, bringing it to mind may be distressing for some people. They were told that should they become upset the researcher would help them to manage these feelings and offer a simple relaxation intervention in the meeting, liaise with their Care Coordinator, and if necessary seek further support for them through services. Potential participants were given twenty-four hours to decide whether to take part.

After completion of the questionnaires and clinical interview, participants provided feedback about their experience of taking part. Only one participant reported that bringing memories to mind during the clinical interview was distressing. However, a number found the interval between going through the information sheet and the meeting to complete the questionnaires anxiety provoking, reporting that they were apprehensive about the meeting and found themselves going over distressing memories in preparation for it.

Procedure

Participants were given the option of completing measures in one session or two. All completed them in a single clinical interview of 1-2 hours duration (Figure 1). They were first interviewed to identify their worst moment of psychosis and then completed the IES-R in relation to this. They then completed the CTQ and the IES-R in relation to childhood trauma if identified. Following this they completed the remaining measures in the order listed above. On a separate occasion, Care Coordinators completed the SES for any of their

clients who participated. Within the service, Care Coordinators typically work with clients for an extended period, often years.

Figure 2. Assessment Procedure

Participant assessment

Participants could choose between completing the measures in one session or two. All were able to complete them in one session, with a total duration of 1-2 hours.

Stage 1

1. Semi-structured interview about experiences of psychosis and mental health services.
2. Identification of currently most distressing memory of illness or treatment
3. Completion of IES-R in relation to most distressing memory

Stage 2

1. Completion of the Childhood Trauma Questionnaire
2. Childhood trauma present?
3. Yes → Completion of the IES-R in relation to currently most distressing childhood trauma
   No → Continue to next stage

Stage 3

1. Completion of the remaining self-report measures (ELES, PAM, SCS, FoRSe and BDI-II)
2. Semi-structured interview (PANSS) to assess current levels of symptoms.

Care Coordinator's Assessment of Clients' engagement with services

On a separate occasion Care Coordinators completed a measure of the client's engagement with services (SES)

Analysis

The sample was divided into two groups, one of high, and one of low, levels of PR-PTSD symptoms (high levels = a cut-off of ≥ 25 on the IES-R, Asukai et al., 2002) and compared on hypothesised variables. Following this, the relative contribution of the hypothesised predictors was examined across PR-PTSD scores. Data was analysed using the Statistical Package for Social Sciences (IBM SPSS Inc., 2012) for Windows (Version 21.0). All variables were examined for outliers (z scores of greater or less than +/- 3), and normality of distribution using the Kolmogorov-Smirnov test of normality at a significance level of $p < .01$.

Of the variables used in between groups analyses, months since discharge, total scores for PR-PTSD symptoms and total number of childhood traumas were not normally distributed in at least one of the groups. In addition in the high PTSD group, months since discharge had one outlier, and the PANSS negative subscale had one case with a z score of 3.11. For results included in tables, nonparametric tests obtained the same pattern of results, as did removal of outliers, and therefore t tests are reported for consistency. The assumption of homogeneity of variances was met for all t tests reported (Levene's test for equality of variances > .01).

Of the variables used in correlational analyses, the PANSS positive subscale ($p = .005$) and the PANSS anxiety and tension variable ($p = .005$) were not normally distributed. The same pattern of results were found using parametric and nonparametric tests and therefore Pearson's correlations are reported for all analyses.

A hierarchical multiple regression analysis was conducted to evaluate the contribution of various predictors to PR-PTSD levels. IES-R total score for psychosis-related trauma was the dependent variable (DV) (with the full sample it was normally distributed). The independent variables (IVs) were anxiety, depression and general psychopathology (block 1) and adult attachment anxiety and fear of recurrence (block 2). Checks of the assumptions of multivariate analysis found no multivariate outliers, multicollinearity or singularity, nonnormality of residuals or non-zero variances.

Power analysis

Power analysis was calculated for FoRSe using White and Gumley's (2009) total scores for PTSD and non-PTSD groups. An effect size of 1.7 was calculated. It was decided to reduce this to 1, to allow for the large number of analyses carried out in the study. This was converted into an r value using tables taken from Freedman (1982), giving an estimate of r as 0.45. Power calculation was carried out specifying alpha = 5% and desired power = 80%, yielding an estimated sample size of 26.

Results

Participants

Fifty-one people were referred to the study. Thirty were recruited and completed the measures. Seventeen (36%) declined to take part when contacted. A range of reasons was given, but a prominent one was the wish to avoid remembering distressing experiences. A further three people referred did not have a primary diagnosis of non-affective psychosis and a fourth was too unwell to provide informed consent. Participants were aged between 31 and 72 years (mean age: 42.27 years, SD = 11.42). Eleven (37%) were female, nineteen (63%) male. Eighteen (60%) were white European, six (20%) were Asian, one (3%) was Black African and five (17%) were of mixed race.

Twenty-three participants (77%) had a diagnosis of Paranoid Schizophrenia, four (13%) a diagnosis of Schizoaffective Disorder and three (10%) a diagnosis of Simple or Undifferentiated Schizophrenia. The average time since first contact with services was 18.5 years (SD = 8.59; median = 18; range = 4-35 years). The mean number of admissions was 5.43 (SD = 2.97; median = 5). There was a large variation in the time since last discharge from inpatient or home treatment care (mean = 52.07 months; SD = 71.67; range = 2-342 months). The time since participants' most distressing experience of illness also varied widely (mean = 11.43 years; SD = 9.05; range = 0.25-31 years).

The mean total score on the PANSS was 52.90 (SD = 13.44; Median = 54.00; Range = 30.00-78.00). As a guide to clinical presentation, symptomatically stable outpatients with Schizophrenia generally score 65-70 on the PANSS (Jancin, 2011).

Descriptive Data Regarding Psychosis-related Traumatic Stressors

Participants provided a descriptive phrase to summarise their worst memory of psychosis. Its purpose was to be an aide-memoire when completing the IES-R (Weiss & Marmar, 1997). However, these phrases also provide some indication of the types of psychosis-related traumatic stressors experienced. Events reported related to hospitalisation

(e.g. ‘being put in seclusion for 8 days’), medication (e.g. ‘adverse reaction to haloperidol’), symptoms of psychosis (e.g. ‘when I thought I was going to collapse and die due to the black magic’); and experiences due to illness (e.g. ‘feeling very upset about losing my flat when I was unwell’). (See Appendix 8 for the full list of names given to psychosis-related trauma events by participants).

PR-PTSD Symptoms and psychotic symptomatology

Participants reported high levels of PTSD symptoms in relation to psychosis or treatment. Nineteen participants (63%) had total scores of 25 or over, indicating full or partial PTSD symptoms at a level of clinical concern (Asukai et al., 2002). No pattern of differences in type of traumatic stressor was observed between the groups. There were no significant differences between high and low PR-PTSD groups on ratings of positive and negative symptoms of psychosis, anxiety, depression or general psychopathology (Table 1). In addition, the correlations between PANSS positive and negative scores and the total IES-R score for psychosis-related PTSD symptoms (Table 3) were non-significant. This suggests that PR-PTSD symptom levels were not merely a function of current positive psychotic symptoms.

There were no significant differences between high and low PR-PRSD symptom groups in terms of age, gender, months since discharge, number of admissions, involuntary admissions, date of first contact or time since the traumatic stressor.

Table 1. PTSD And Psychiatric Ratings For Groups With High and Low Levels Of Psychosis-related PTSD Symptoms

	PR-PTSD symptom levels				
Variable	**High (n = 19) Mean (SD)**	**Low (n = 11) Mean (SD)**	**t**	**df**	***p***
Psychosis-related PTSD[a] (N = 30)					
Intrusions	1.61 (0.87)	0.30 (0.36)	4.73	28	< .001***
Avoidance	1.96 (0.63)	0.56 (0.71)	5.61	28	< .001***
Hyper-arousal	1.77 (0.89)	0.61 (0.73)	3.67	28	.001**
Total	1.78 (0.60)	0.48 (0.29)	6.71	28	< .001***
Psychopathology[b] (N = 30)					
Positive symptoms of psychosis	12.47 (5.42)	11.73 (5.78)	.36	28	.725
Negative symptoms of psychosis	12.00 (5.14)	13.00 (6.75)	-.46	28	.651
General[c]	21.53 (5.06)	18.45 (4.11)	1.71	28	.098
Anxiety and tension items	5.53 (2.76)	4.00 (2.49)	1.51	28	.142
Total score	54.79 (13.78)	49.64 (12.80)	1.01	28	.320
Depression[d] (N = 30)	16.68 (10.95)	12.27 (10.20)	1.09	28	.285

*p < .05; **p < .01; ***p < .001

Note: A total score of ≥ 25 on the IES-R was used to define the high PR-PTSD symptom group, whereas the low symptom group had total scores of < 25. [a]IES-R; [b]PANSS; [c]PANSS General Psychopathology subscale with the anxiety, tension and depression items removed - as a separate variable has been created for anxiety, and the BDI-II was used to assess depression; [d]BDI-II.

Negative Emotional Memories of Childhood

The first hypothesis was that high PR-PTSD symptoms would be associated with negative emotional memories of growing up (and thus poorer experiences of attachment and care). The high PR-PTSD group had significantly more memories of being submissive, and a tendency to increased memories of feeling threatened, although the latter did not reach significance ($p = .052$)(Table 2), although the groups did not differ in memories of feeling (un)valued. However, none of the subscales were correlated with PR-PTSD symptoms (Table 3), and therefore the support for hypothesis 1 was modest.

Childhood Trauma

The second hypothesis was that high PR-PTSD symptoms would be associated with higher levels of childhood trauma. Sixteen participants (53.3%) met criteria on the CTQ for childhood trauma. Eleven of these were in the high PR-PTSD group, and five were in the low PR-PTSD group. The small sample size of those who had experienced childhood trauma did not warrant statistical analyses of these findings.

Childhood trauma-related PTSD

Of the 16 participants who had experienced childhood trauma, 4 (25%) completed the IES-R in relation to emotional abuse; 3 (19%) in relation to physical abuse; 8 (50%) in relation to sexual abuse; and 1 (6%) in relation to neglect. Eight participants reported childhood trauma-related PTSD symptoms at a level of clinical concern (IES-R total score $\geq$ 25), seven of whom were in the high PR-PTSD group, while one was in the low PR-PTSD group.

A significant correlation was found between the total IES-R scores for childhood trauma-related, and psychosis-related, PTSD. Childhood trauma-related PTSD avoidance and hyper-arousal symptoms were significantly correlated with the total IES-R score for PR-PTSD, but childhood trauma-related intrusions were not significantly correlated (Table 3).

Adult Attachment Insecurity

The third hypothesis was that higher levels of PR-PTSD would be associated with adult attachment insecurity. Table 2 contains results of *t* tests assessing differences on the main study variables between groups with high and low levels of PR-PTSD symptoms. As can be seen from the table, the high PR-PTSD group had much higher levels of insecure anxious attachment than the low symptoms group. In addition, anxious attachment was highly correlated with the total IES-R score for PR-PTSD (Table 3).

However, avoidant attachment did not differ between symptom groups and was not significantly correlated with PR-PTSD. Therefore there was very strong support for associations between attachment anxiety and PR-PTSD, but no support for an association between avoidance attachment and PR-PTSD.

Other Hypotheses

Self-compassion was significantly lower in the high PR-PTSD group (Table 2). However, it was not correlated with total PR-PTSD symptoms (Table 3). Therefore, support for the fourth hypothesis was modest.

Hypothesis 5, that high PR-PTSD symptoms would be associated with fear of psychosis returning, was strongly supported. The high PR-PTSD group showing significantly greater scores on all subscales of the Fear of Recurrence Scale, compared to the low PR-PTSD group (Table 2). In addition, very strong associations were found between Fear of Recurrence subscales and total PR-PTSD symptoms (Table 3).

As mentioned above, high and low PR-PTSD groups did not differ significantly in levels of depression (Table 1). However, depression was significantly associated with the IES-R total symptom score for PR-PTSD (Table 3), providing some support for Hypothesis 6.

Table 2. Differences Between Groups With High and Low Levels Of Psychosis-related PTSD Symptoms On The Main Study Variables

Variable	PR-PTSD symptom levels				
	High (n = 19) Mean (SD)	Low (n = 11) Mean (SD)	t	df	*p*
Adult attachment[a] (N = 30)					
Anxious	1.65 (.51)	.68 (.56)		28	<.001***
Avoidant	1.39 (.41)	1.35 (.68)		28	.858
Emotional memories of childhood[b] (N = 30)					
Unvalued	7.89 (3.33)	7.27 (3.04)	.51	28	.615
Submissive	17.94 (5.80)	11.81 (3.95)	3.10	28	.004**
Threatened	15.79 (7.84)	10.55 (4.39)	2.03	28	.052
Self-compassion[c] (N = 30)	2.78 (.87)	3.42 (.71)	-2.07	28	.048*
Fear of recurrence[d] (N = 30)					
Fear of relapse	18.58 (5.84)	11.64 (6.19)	3.07	28	.005**
Awareness	22.74 (5.49)	16.55 (5.34)	3.01	28	.006**
Intrusiveness	18.95 (6.50)	12.09 (5.94)	2.87	28	.008**
Total	60.26 (14.41)	40.27 (15.18)	3.60	28	.001**
Service Engagement[e] (N = 26)	10.79 (8.82)	11.29 (4.79)	-.14	24	.890

*p < .05; **p < .01; ***p < .001

Note: A total score of ≥ 25 on the IES-R was used to define the high PR-PTSD symptom group, whereas the low symptom group had total scores of < 25. [a]PAM; [b]ELES; [c]SCS; [d]FoRSe; [e]SES.

Table 3. Pearson correlations Between IES-R For Psychosis-related Trauma And Other Variables

	IES-R total Psychosis-related
Childhood trauma-related PTSD[a] (N = 16)	
Intrusions	.50
Avoidance	.52*
Hyper-arousal	.60*
Total	.62**
Adult attachment[b](N = 30)	
Anxious	.70**
Avoidant	-.03
Emotional memories of childhood[c] (N = 30)	
Unvalued	-.04
Submissive	.29
Threatened	.11
Self-compassion[d] (N = 30)	-.33
Fear of recurrence[e] (N = 30)	
Fear of relapse	.67**
Awareness	.48**
Intrusiveness	.72**
Total	.72**
Service Engagement[f](N = 26)	-.07
Psychopathology[g] (N = 30)	
Positive symptoms	.35
Negative symptoms	-.15
General[h]	.47**
Anxiety and tension items	.54**
Total	.42*
Depression[i] N = 30)	.45*

*p < 0.05; **p < 0.01

[a]IES-R ; [b]PAM; [c]ELES; [d]SCS; [e]FoRSe; [f]SES; [g]PANSS; [h]The anxiety, tension and depression items have been removed from this subscale as a separate variable has been created for anxiety, and the BDI-II was used to assess depression; [i]BDI-II.

There were no differences in levels of service engagement between high and low PR-PTSD groups, nor any significant association between service engagement and the PR-PTSD total score (Table 3). Therefore this hypothesis (Hypothesis 7) was not supported.

Evaluating the Contribution of Predictors to Severity of PR-PTSD

A hierarchical multiple regression was carried out to identify predictors of PR-PTSD symptoms, once psychiatric symptoms (anxiety, depression and general) had been controlled for. Those variables which were significantly correlated with PR-PTSD total scores (Table 3) were selected as predictors. The total fear of recurrence score was used instead of individual subscales, as all of the latter were highly correlated with PR-PTSD total scores. Childhood trauma-related PTSD was not included, although correlated with PR-PTSD, due to lack of statistical power, as only a subsample (N = 16) had experienced childhood trauma and completed the measure. Anxiety, depression and general psychopathology were controlled for by entering these first as block 1 of the model, following which, anxious attachment and fear of recurrence were entered as Block 2.

Table 4 displays the correlations between the variables, unstandardized regression coefficients (B), standardized regression coefficients (β), semipartial correlations sr^2 (representing the unique contribution of a particular IV to variance in the DV), R^2 (variance due to the overall model) and the F statistic for the change in R^2 for each model. Anxious attachment and fear of recurrence were each significant predictors of PR-PTSD scores, with the former contributing 12% and the latter 7% unique variance. Combined the variables accounted for 28% of the variance. Overall, 66% of the variance was accounted for.

Table 4. Hierarchical Multiple Regression Analysis Predicting PR-PTSD Total Scores (N = 30)

Variables	Correlations					Model 1			Model 2		
	IES-R Total (DV)	Anxiety	Depression	General	Attach. Anxiety	*B*	*β*	Sr^2	*B*	*β*	Sr^2
Anxiety [a]	.54***					.10	.33	.06	-.01	-.03	.00
Depression[b]	.45**	.62***				.01	.15	.01	.00	.03	.00
General psychopathology[c]	.47**	.41*	.35*			.05	.28	.06	.03	.15	.02
Adult Attachment Anxiety[d]	.70***	.49**	.43**	.26					.06	.44	.12**
Fear of Recurrence[e]	.72***	.68***	.50**	.51**	.56***				.02	.40	.07*
Intercept						-.31			-.84		
R^2						.38			.66		
F for change in R^2						5.22**			10.12***		

***p < .05 **p ≤ .01 *** p ≤ .001**

[a]PANSS Anxiety and Tension items; [b]BDI-II; [c]PANSS General Psychopathology subscale with the anxiety, tension and depression items removed (a separate variable has been created for anxiety, and the BDI-II was used to assess depression); PAM Anxious subscale; FoRSe.

Discussion

Gumley and colleagues' (Gumley et al., 2010; Gumley & MacBeth, 2006) cognitive interpersonal model of psychosis highlights the role of early developmental experiences in shaping attachment, affect regulation and interpersonal relationships, and the importance of these factors in managing the threat of psychosis. Deriving hypotheses from their model, this study investigated whether relational factors (negative emotional memories of childhood, childhood trauma, adult insecure attachment, low self-compassion) and cognitive appraisals (fear of recurrence) would be associated with PR-PTSD symptoms.

Regarding developmental and relational experiences, there was little support for the role of negative emotional memories of early relationships. Memories of submitting to parents were higher in the high PR-PTSD group and there was a trend for memories of feeling threatened to be higher in relation to the low PR-PTSD group , but there was no correlation between early emotional memories and PR-PTSD symptoms. Childhood trauma was not significantly higher in the high PR-PTSD group versus the low PR-PTSD group. However, childhood trauma-related PTSD symptoms (hyper-arousal and avoidance) were correlated with PR-PTSD. In terms of attachment, there was strong support for a relationship between adult anxious attachment and PR-PTSD: anxious attachment was significantly higher in the high PR-PTSD group, was highly correlated with PR-PTSD symptoms, and was the strongest predictor of PR-PTSD. However, there was no support for a relationship between adult avoidant attachment and PR-PTSD. Self-compassion, believed to develop out of nurturing parental care, was lower in the high PR-PTSD group, but was not correlated with PR-PTSD. In terms of cognitive factors, there was support for the hypothesis that fear of recurrence would be linked to PR-PTSD: fear of recurrence was significantly higher in the high PR-PTSD group, all of its subscales were highly correlated with PR-PTSD and it was a significant predictor of PR-PTSD. Therefore, some aspects of the model were supported, while others only received partial support.The evidence for a link between anxious

attachment and PR-PTSD was particularly strong. Mikulincer et al. (2006) argue that, in response to trauma, the attachment-system is intensely activated, mobilising representations of the self in relation to key attachment figures. In secure attachment these provide reassurance and a sense of safety, in turn facilitating a working through of trauma symptoms. However, in anxious attachment, negative representations of caregivers are activated. These intensify distress and trigger 'hyperactivating' strategies, which facilitate reactivation of the traumatic experience in the form of intrusions. Fear of recurrence was highly correlated with anxious attachment and was highly associated with PR-PTSD. The metacognitive processes of worry and hypervigilance for threat captured in the Fear of Recurrence Scale seem particularly to capture the hyperactivating style, fuelled by anxiety, apprehension, lack of confidence and rumination.

While there was strongest evidence for a link between high PR-PTSD symptoms and anxious attachment, with its preoccupation with thought processes and intrusions, the finding that childhood trauma-related PTSD avoidance symptoms were correlated with PR-PTSD also provides some support for the role of cognitive avoidance. Bendall et al. (2012) argue that strategies such as avoidance developed to survive childhood trauma may be used to manage distress in relation to psychosis, thereby inhibiting the processing of intrusions and hyper-arousal related to PR-PTSD. This is consistent with the finding that previous trauma is one of the strongest predictors of PTSD (Ozer et al., 2003; Brewin et al., 2000).

Mikulincer et al. (2006) propose that avoidant attachment and associated deactivating strategies are related to PTSD avoidance. Therefore, it would be expected that avoidant attachment would be correlated with PR-PTSD. However, avoidant attachment was not associated with PR-PTSD in the current study. Using the same measure, (Picken et al., 2010)(2010) also found a strong correlation with anxious attachment, but no correlation with avoidant attachment.

Linked to the above discussion, it was hypothesised that PR-PTSD would be associated with lower engagement with services, due to attempts to avoid reminders of trauma, but no relationship was found. One explanation might be that PR-PTSD is predominately associated with anxious attachment, and therefore a hyperactivating rather than avoidant approach to relationships with mental health professionals. Consistent with this, earlier studies of PR-PTSD have found it is associated with a wish for increased, rather than decreased, contact with sources of support (Beattie et al., 2009; Chisholm et al., 2006). On a separate point, trauma memories, and related PTSD avoidance symptoms, may be more specific to hospitals and experiences of acute illness (Tarrier, Khan, Cater, & Picken, 2007), rather than community settings, and therefore lower levels of engagement with outpatient services may not be expected.

However, the mean avoidant attachment ratings in the sample were low, and comparable with a nonclinical student sample (Berry et al., 2007), whereas high rates of avoidant attachment tend to be found in people with Schizophrenia (Berry et al., 2008; MacBeth, Gumley, Schwannauer, & Fisher, 2011). Therefore, an alternative possibility is that the pattern of findings is in part due to sampling bias. In addition, the sample had relatively low levels of childhood trauma compared to other studies (e.g. Bendall et al., 2012).

There are a number of reasons for potential sampling bias. Participants were recruited from a fairly affluent, suburban area of greater London, where the community is relatively stable, and this may have impacted on the representativeness of those recruited. Secondly, care coordinators may have selected clients on the basis of those most likely to participate, and may not have referred clients with higher levels of avoidant attachment. Thirdly, a high number of people refused to participate, often providing the reason that they did not wish to remember the past, and these people may also have had higher levels of avoidant attachment (as well as higher levels of PTSD avoidance symptoms). Finally, clients

may have participated on the basis of more secure attachment and feelings of goodwill towards their care coordinator, or in the case of anxious attachment, through a wish not let them down or risk being rejected, thus again influencing levels of participants with avoidant attachment recruited.

In relation to the above discussion, the Service Engagement Scale (SES; Tait et al., 2002), used in the present study, has been utilised previously in studies of recovery style. These studies have found that lower engagement with services tends to be associated with clients who have a 'sealing-over' recovery style, characterised by avoidance, poorer recovery and higher levels of depression, and associated with poorer attachment and care experiences in childhood (Tait, Birchwood, & Trower, 2004). Jackson et al. (2004) found that sealing-over was linked to high psychosis-related IES avoidance, while an integrating style was linked to high intrusions. Therefore, it seems plausible that a group of clients with poorer care experiences (and therefore more negative early emotional memories), avoidant attachment, higher levels of depression, and also PR-PTSD characterised more by avoidance and numbing symptoms, could have been under-represented in the present study. It is also possible this group would have lower self-compassion as the latter is associated with poorer attachment and care experiences (Tanaka, Wekerle, Schmuck, & Paglia-Boak, 2011; Vettese, Dyer, Li, & Wekerle, 2011) and higher levels of depression (Irons et al., 2006; Tanaka et al., 2011).

Limitations

This is a cross-sectional study and therefore the direction of causation cannot be established.

A number of methodological issues may have impacted on the reliability of the findings. In particular, as detailed above, the results may be affected by selection bias. It will be important to replicate the findings endeavouring to ensure a representative sample, by using a random sampling strategy (Fife-schaw, 2000), or by approaching/ inviting to

participate all participants in a service. At the same time, however, it is possible that people with avoidant attachment would under-report symptoms on self-report measures due to the tendency to minimise distress (Mikulincer et al., 2003), and therefore, an experimental design may be preferable to investigate PR-PTSD such as employed by Mikulincer et al. (2006).

Secondly, there are weaknesses in relation to the semi-structured interview procedures for identifying psychosis-related and childhood trauma-related trauma memories: the procedures had not been validated; a checklist of potentially traumatic psychosis-related events was not used; participants were permitted to identify single events, such as being taken to hospital by police, or whole periods of time, such as an episode of psychosis; and the events and the descriptions of them were self-generated by participants and there were no attempts made to corroborate the information by asking for detailed descriptions of events (as the protocol stated that participants would not have to talk about their traumatic memory). All of these factors reduce the reliability and validity of the procedures. In addition there was no quality control of the assessment process. Future studies would be improved by the use of a validated checklist of psychosis-related traumatic events, to ensure the replicability of the procedure, as well as the use of methods such as the audiotaping of interviews and ratings by a second researcher to evaluate inter-rater reliability.

The IES-R is not a diagnostic tool and the use of self-report measures to assess PTSD may lead to inflation of results (Richardson et al., 2010). In addition, the division of the sample into high and low PR-PTSD groups, was less robust than assigning groups following a formal diagnosis of PR-PTSD. Therefore, future studies would be improved by using a validated PTSD interview such as the Clinician-Administered Posttraumatic Stress Disorder Scale (CAPS; Blake et al., 1990) . In addition, the complexity of assessment, particularly in differentiating PR-PTSD symptoms from those of current psychosis, depressive rumination, or other co-existing psychiatric disorders (Bendall et al., 2006;

Brunet et al., 2012; Shaw et al., 2002), is such that a validated PTSD interview may be necessary. In addition, using a self-report measure it is more difficult to identify if participants' responses are in relation to current symptoms of psychosis rather than to memories of past experiences of psychosis.

Due to the small subsample of participants with childhood trauma, it was not possible to control for childhood trauma-related PTSD in the hierarchical regression analysis. In future studies, it may be preferable to select participants on the basis of childhood trauma, in order to replicate findings and control for childhood trauma-related PTSD adequately. In addition, future studies could select participants in order to have enough with and without childhood trauma in order to compare groups. For example, people with childhood trauma who develop PR-PTSD may do so due to trauma and related developmental experiences, whereas it is possible a group without childhood trauma may develop PR-PTSD due to the role of current appraisals or more severe or intractable symptoms. Prospective studies will be important in establishing causal pathways between developmental, illness and PR-PTSD variables.

The study is likely to have been underpowered with respect to measures of self-compassion and early memories. The Self-Compassion Scale has not been used in this population before. Its language and grammatical structure is complex. This made it difficult for participants to comprehend and also to work out how to respond on the scale, particularly if they were suffering from mild thought disorder. It would benefit from simplification for this population, or in the absence of a simpler scale, an alternative such as The Forms of Self-criticizing/attacking and Self-reassurance Scale (Gilbert, Clarke, Hempel, Miles, & Irons, 2004) would be preferable. In an attempt to reduce participant burden in the present study, a full measure of anxiety was not used. However, given the association between anxiety and many of the other variables, it would be recommended to include a specific

measure in future related studies. Trauma and PTSD in adulthood was not measured, and it will be important to measure these in future studies to assess their contribution to PR-PTSD.

A strength of the study is that it controlled for the contribution of current symptoms to trauma levels, to ensure PR-PTSD was not an artefact of these. In addition, the study investigated cognitive appraisals, which are emerging as a critical factor in PR-PTSD research (Berry et al., 2013).

Clinical recommendations

Given the high levels of distress in relation to PR-PTSD, it will be important to assess this in clinical settings. The Fear of Recurrence Scale, used in the present study, has been recommended for use in detecting distress in relation to psychosis (Gumley & Schwannauer, 2006; White & Gumley, 2009), takes only a few minutes to complete, and does not require clients to identify a specific stressful life event. In addition, it will be important to assess childhood trauma and childhood trauma-related PTSD, given their association with PR-PTSD.

Mikulincer et al. (2006) measured both global (dispositional) attachment and daily fluctuations in attachment security in a study of responses to the threat of war. They found that people who were anxiously attached were particularly responsive to caring and empathic treatment, which reduced the severity of PTSD symptoms. This suggests the importance of creating a therapeutic alliance based on compassion and trust (Gumley et al., 2010; Gumley & Schwannauer, 2006) in treating clients with high levels of distress in relation to psychosis.

People with anxious attachment are likely to have difficulty regulating affect, be threat-focused, underestimate their capacity to cope, and fear abandonment or rejection due to early failures in support (Mikulincer et al., 2003). A key task for therapy would be to reduce the negative interpersonal and emotional consequences of these factors and their impact on adaptation to psychosis. In relation to PR-PTSD specifically, it would be important to formulate the role of anxious attachment in increasing intrusions and distress

(Mikulincer et al., 2006). In addition, an important target would be the reduction of catastrophic appraisals of low-level psychotic symptoms, and the building of affect regulation strategies (MacBeth & Gumley, 2006; Gumley et al., 2010). In addition, Bendall et al. (2012) suggests it may be appropriate to treat PTSD symptoms from previous traumas in childhood and adulthood at the same time as treating PR-PTSD, as these may be influencing each other.

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Part 3: Critical Appraisal

Introduction

This critical appraisal has two sections. The first assesses the empirical paper in light of the methodological recommendations made in the literature review, and also discusses sampling bias, which was a particular methodological issue in the study. The second concerns participant wellbeing, and was chosen as it has been a priority from initial planning of the study and throughout recruitment.

1: Methodological quality of the study

Five key methodological issues in psychosis-related posttraumatic stress disorder (PR-PTSD) research were identified by the literature review. These were: time since trauma, PR-PTSD assessment, the definition of the traumatic stressor, trauma and posttraumatic stress disorder (PTSD) unrelated to psychosis, and the subjective meaning of trauma. Each of these will be considered in turn in relation to the empirical paper, followed by a summary of additional methodological issues encountered.

Time since trauma

Key recommendations arising from the literature review were that there should be at least a month's delay between the traumatic stressor, and any other major psychosis-related stressor, such as hospitalisation or acute symptoms, prior to participation. Exclusion criteria included that participants were acutely unwell as evidenced by hospital admission or home treatment care; or that they were too unwell to consent to take part.

All participants met the criteria for time since trauma and for inclusion in the study. However, some had medication resistant moderate to severe psychotic symptoms, which may have contributed to a sense of current threat (Gumley & MacBeth, 2006) and constituted an ongoing trauma (Bendall, McGorry, & Krstev, 2006)(Bendall, Alvarez-Jimenez, Hulbert, McGorry, & Jackson, 2012). This is just one of a number of complexities of PR-PTSD research. On one hand it may be preferable to restrict participants to those who

score less than a particular cut-off on a rating scale of psychotic symptoms such as the PANSS. On the other hand, if people are living with positive symptoms for long periods of time, it seems important to acknowledge that this could be a source of PR-PTSD, and to adapt research methodologies accordingly to account for this. In addition, researchers have suggested that psychosis and PTSD processes may interact (Mueser, Rosenberg, Goodman, & Trumbetta, 2002), and be involved in the maintenance of symptoms of psychosis, and therefore it seems warranted to attempt to understand PR-PTSD to reduce this effect. Therefore, in this study it was decided to include participants with current symptoms of psychosis, but to measure these and control for them in the analyses of the data.

Related to the issue of time since trauma, a number of PR-PTSD studies chose to recruit participants within a certain period of their last acute episode or admission. The reasons for this were firstly, where the last acute episode had been identified as the traumatic stressor to allow a delay prior to assessment, but also to measure PR-PTSD within a certain timeframe since the stressor (Brunet, Birchwood, Upthegrove, Michail, & Ross, 2012; Chisholm, Freeman, & Cooke, 2006) and secondly to achieve some homogeneity in the sample (Centofanti, Smith, & Altieri, 2005). The present study did not anchor participation to the last acute episode in this way. A result was that it was very heterogeneous with respect to the time since the last acute episode. However, given that the traumatic stressor was defined as participant's worst memory of psychosis from any timepoint, and results indicated a wide range in the time since traumatic stressors identified, there may not be a clear rationale for specifying a time since the last episode.

PR-PTSD Assessment

The literature review recommended the use of interview based measurements of PR-PTSD, in the light of evidence from general PTSD research and from PR-PTSD studies. The present study used a self-report measure (IES-R; Weiss & Marmar, 1997). Choosing the measure for PR-PTSD assessment was a key dilemma in developing the protocol for the

study. The wish to test a number of hypotheses had to be balanced against reliable measurement of PR-PTSD and the burden on participants. As testing hypotheses from a cognitive interpersonal model was the aim of the study, and establishing prevalence of PR-PTSD was not a priority, it was decided that it would be acceptable to use the IES-R to assess PR-PTSD symptoms. However, in carrying out assessments, the advantages of a semi-structured interview became apparent. This was particularly in relation to differentiating between current symptoms of psychosis, other psychiatric symptoms, and PR-PTSD.

For example, a man had suffered facial disfigurement due to a physical illness many years ago, but attributed it to antipsychotic medication he had been taking at the time. He was distressed by his appearance and the psychiatric treatment he had received every time he looked in the mirror. Therefore, it was an event with a delusional interpretation, which had clearly occurred at a fixed point in the past, but which continued to cause current distress due to its perceived impact on the participant's life. In this case, an appraisal of the consequences[2] of the traumatic event may be in part driving distress and this may not be dissimilar from traumatic events unrelated to psychosis (Ehlers & Clark, 2000), for example in the case of physical injury due to accidents (Blanchard et al., 1995).

The assessment of the symptoms associated with the memory is complex. Reminders of the event may be triggering intrusive reliving of it (PR-PTSD), or delusional preoccupation with current concerns (current symptoms of psychosis), or depressive rumination. This is clearly a complex conceptual issue which has been described in the literature (Berry, Ford, Jellicoe-Jones, & Haddock, 2013; Brunet et al., 2012; Shaw, McFarlane, Bookless, & Air, 2002). Perhaps an issue is the degree to which current threat related to past events can be separated from that due to current concerns, and measured

[2] Traumatic event: participant's delusional belief he was forced to take antipsychotic medication which cause his disfigurement → Trigger of memories: seeing his face in the mirror → Content of traumatic memory: images of psychiatric treatment.

accordingly. It is unclear the extent to which the IES-R, used in the study, was able to differentiate between different types of symptoms. To increase its reliability, it was administered by the trainee rather than completed independently by participants. In addition, care was taken to anchor the traumatic event to a particular point in time, and to adapt questions to incorporate the traumatic stressor into them. However, this is an example of why the interview assessment of PR-PTSD is preferable, even though at times differentiating between PTSD symptoms and current symptoms of psychosis will still be difficult.

Additional issues and recommendations related to the traumatic stressor

PTSD research and theories emphasise the importance of subjective meanings of trauma (Brewin & Holmes, 2003; Ehlers & Clark, 2000; Lommen & Restifo, 2009). Taking this into account, the literature review recommended that the traumatic stressor for PR-PTSD should be the participant's worst moment or memory of illness from any episode. This was the definition used in the study. The validity of this approach seems supported by participants' identified stressors which were from a wide range of timepoints. The last episode of illness was only identified as the worst moment in five cases.

Only events which were dependent on psychosis (e.g. hospitalisation, treatment experiences) or illness-related (e.g. the direct experience of symptoms), according to (Tarrier, 2005) classification system were used as traumatic stressors for PR-PTSD assessment. Occasionally it was difficult to decide if an event was illness-related. For example, one participant chose as his traumatic stressor 'people victimizing me', which initially seemed based on persecutory delusions (and therefore illness-related), but in fact had a clear basis in reality, verifiable in his notes. Even so, the victimisation was judged to be *dependent* on psychosis in that the participant's illness had impacted on his appearance and behaviour, to the extent that he may have been vulnerable to victimization.

It is helpful to bear in mind that people with psychosis have markedly elevated rates of trauma and PTSD unrelated to psychosis (Grubaugh, Zinzow, Paul, Egede, & Frueh,

2011) and therefore may have experienced real interpersonal trauma, even when they also experience persecutory delusions. Gaining a broad overview of significant events in a participant's life by reading their notes prior to assessment, was invaluable. Secondly, when asked to select their 'worst moment of illness', a number of participants interpreted this as the event which was *objectively* most severe or traumatic, and initially selected events such as being placed in seclusion for a week, but added that these were no longer distressing to them. An adaptation was made to the interview to emphasise that the 'worst moment' of illness was the one which was *currently most distressing*, and which the participant thoughts about when s/he did not want to, or avoided thinking about it or avoided reminders of it.

Selection bias

Selection bias is a particular challenge in PTSD research because the wish to avoid of reminders of trauma is likely to influence participation in research (Richardson, Frueh, & Acierno, 2010). Indeed, studies which have investigated non-participation in PTSD research have found that those who refuse to take part often have significantly more severe symptoms than those who do (Woodward et al., 2007; Weisaeth, 1989). Participants in PR-PTSD research are not only facing possible distress in relation to PTSD, but are also facing all the adversities associated with psychosis.

Consistent with the above, the refusal rate for participation in the study was high (33%), although comparable to other PR-PTSD studies (Bendall et al., 2012; Brunet et al., 2012; Jackson, Knott, Skeate, & Birchwood, 2004; Tarrier, Khan, Cater, & Picken, 2007). Due to the ongoing nature of the trauma (Bendall et al., 2006), it may be expected that refusal rates in PR-PTSD research would be higher even than in PTSD research unrelated to psychosis.

Another possible source of bias is in referrals to the study. At the time of recruitment care coordinators were facing an increase in workload and targets, changes in working practices, and an increase in the proportion of clients with risk issues. They had seen

longstanding clients transferred to a new service line in a service restructuring and had taken on new clients. They may have referred clients they were more familiar with, or with whom they have a positive alliance, or that they thought most likely to participate, or most stable. This tendency may have been increased by the focus on PR-PTSD, and the potential for distress to clients, especially where clients were fairly new to their caseload and less known to them.

Likewise, potential participants had been facing a long period of uncertainty with respect to services and staff, and many had experienced changes in care coordinator as well as psychiatrist. As a consequence they may have felt angry with services (over and above anger in relation to treatment), unattached to their care coordinator, and without the goodwill necessary to take part in a research study.

All these factors may have introduced bias into the sample. As discussed in the empirical paper, the sample had a high proportion of participants with an anxious attachment style and a lower than expected number of participants with an avoidant attachment style. This may have impacted on the generalizability of the findings. A possible way to reduce bias would be to use a random sampling strategy, for example by using random numbers to generate a list of clients to invite to participate. Alternatively, it could be aimed to recruit each new referral to the service.

Overall evaluation of the methodological quality of the study

The study took into account many of the quality factors identified in the literature review. Strengths were ensuring adequate time since the traumatic stressor prior to assessment, as well as using the participant's 'worst moment of illness' as the stressor; measuring at least some aspects of trauma and PTSD unrelated to psychosis; and assessing some psychosis-related appraisals. Weaknesses of the study were the use of a self-report measure, instead of an interview, to assess PR-PTSD; and possible selection bias.

2: Participant wellbeing

As in previous studies of PR-PTSD (Berry et al., 2013), study participants experienced high levels of trauma both in childhood and in relation to psychosis, and had high levels of PTSD related to this. In addition, they were often distressed by ongoing symptoms of psychosis, anxiety, depression and social anxiety. Although this was the first study measuring attachment in PR-PTSD, levels of insecure attachment were expected to be high. Therefore, ensuring participant wellbeing was a central focus from the development of the study and throughout recruitment. This part of the critical appraisal outlines some issues in relation to this and concludes with some recommendations for future studies.

Developing the protocol

It was anticipated that, given the emotional content of trauma memories and symptoms experienced by people with psychosis, understandably participants may experience some distress when being asked to recall trauma memories and report their symptoms. Therefore, in developing the protocol, there was an emphasis on the acknowledgement and management of distress should it arise. It was expected that the most likely adverse emotional response was anxiety, but that it may possibly be of sadness, anger, guilt or shame (Grey, Holmes, & Brewin, 2001; Harman & Lee, 2010); and that a minority of participants may experience symptoms of dissociation (Morrison, Frame, & Larkin, 2003).

It was planned therefore, that the researcher would monitor for signs of distress and participants would be asked to feedback about their experience of completing questionnaires to allow the researcher to assess any negative reactions. Participants would be helped to manage any distress through validating and normalising their responses. If distress persisted then, they would be offered a simple breathing relaxation exercise to reduce anxiety (short inhalation and long exhalation with a soothing statement) (Mueser, Rosenberg, & Rosenberg, 2009). In the event that the participant did not find this effective, they would be

offered an exercise based on visualisation of a peaceful scene or progressive muscle relaxation (Mueser et al., 2009). Handouts of the technique(s) used would be made available for participants to take away. Furthermore, it was planned that if a participant was observed to be dissociating, a grounding exercise would be used to reorient them to an awareness of the present moment (Mueser et al., 2009). Participants would also be encouraged to schedule an enjoyable activity and social support in the rest of the day, to help manage any lowering of mood, and would be helped to identify this. It would also be ensured that participants had the contact details of their Care Coordinator, the researcher and the emergency contact number for the service. The trainee would also communicate with the clinical team should any difficulties arise (having obtained permission to do this when the participant consented to take part).

Recruitment and assessment

Contrary to expectations, the assessment was very rarely distressing to participants. However, it emerged during recruitment that the interval between meeting with the trainee to go through the information sheet and the assessment appointment was anxiety provoking and distressing for some participants, especially those with high levels of PR-PTSD symptoms.

An impression formed of a group which was anxious, fearful and ambivalent. They worried about whether they would be destabilised by participating, and yet the study seemed relevant to them and they were keen to take part. They wished to communicate their experience, and yet feared feeling intruded upon. In preparation for the assessment meeting, they ruminated about past memories, provoking negative affect, anxiety and apprehension. They thought about dropping out, but were concerned that they would let the trainee down. In hindsight, the finding that the sample contained a large proportion of anxiously attached participants who were also distressed by their psychosis, made sense of this presentation (Mikulincer, Shaver, & Pereg, 2003; Mikulincer, Shaver, & Horesh, 2006). However, during

recruitment, it was necessary to adapt the protocol according to clinical impression as to how best to support these participants, as described next.

Facilitating recruitment

Developing an open and trusting relationship (Gumley & Schwannauer, 2006), in which containment (Adshead, 1998; Bion, 1962) was provided through empathic listening, support and reassurance was key (Mikulincer et al., 2006). Actively anticipating aspects of the recruitment and assessment process which may cause anxieties and working to reduce these was also important. For example, in relation to apprehension about participation, it was found that text reminders of appointments created an opportunity for people to communicate their doubts and when these were addressed proactively by phone, anxiety was often reduced and the participant was able to take part. This might be addressing a practical issue, for example providing transport to the hospital for someone with social anxiety; or an emotional one, for example providing reassurance that a delusional belief could be shared.

Given participants' reports of apparent rumination and worry prior to appointments, it was explained to them after completing the questionnaires that, having brought to mind many distressing memories from childhood and illness, it would be understandable if they found themselves thinking about these in the day or so following participation.

Some dilemmas and difficulties in recruitment and assessment

A dilemma in recruitment was that participants were given the choice whether to meet to go through the information sheet at the psychosis service, at a café, or at their home (dependent on risk). It had been planned they would also be able to choose where to complete the questionnaires and assessment, particularly as some people may wish to avoid mental health settings. However, in a meeting with a potential participant at their home to go through the information sheet early on in recruitment, it became clear that for some people the level of avoidance in relation to distressing psychosis-related memories may be such that

the requirement to focus on these in order to identify a worst memory may be destabilising. It was therefore felt that it may be more containing to meet at the service rather than at a participant's home to complete the assessment, so that any distressing memories activated during it could be managed there. The risk otherwise may be that the participant's sense of security and safety in their own home may be compromised.

In relation to avoidance, a different participant found it difficult to identify or talk about any memory in the assessment and there was a change in rapport from the first meeting to the second. This may have been in part due to the change in setting (from a café to the psychosis service), or to a high level of avoidance of illness and its consequences, which was managed through alcohol and drugs, so that the requirement to identify a memory may have been experienced as confrontational and shaming.

Therefore, in light of what is known about PR-PTSD, and the possibility that it may be difficult and distressing for particiapants to attend mental health settings, it was important to be flexible, and to balance participants' preferences as to the place of assessment against other issues such as participant wellbeing and risk. Secondly, it is important to ensure participants select a memory they are happy to share (to the extent of providing a phrase or brief sentence describing it), and to allow opportunities for them to feedback about their experience of taking part, as well as reminding them that they may withdraw from the study at any time.

Positive aspects of the assessment for participants

Participants reported positive aspects of taking part and reported that they were glad they had done so, in spite of their anxieties. In fact, the opportunity to approach feared memories safely appeared to be beneficial in itself. They appreciated an opportunity to talk about experiences not often discussed in meetings with mental health professionals. They also felt listened to with respect to the negative impact of the restructuring of the service mentioned above, the disruption and uncertainty of which as well as the loss of longterm

relationships with care coordinators who moved to another service, had had a particularly negative affect (Adshead, 1998). They were glad that this would be fedback to the team with the results of the study. They had an opportunity to experience a psychological intervention, and to receive feedback on their individual questionnaire results and to identify and learn about symptoms of distress. In addition, it was possible to feedback to their care coordinator about significant distress and, if necessary, to refer participants to the team psychology service. Overall, one of the strengths of the study was that participation appeared to be non-threatening for those who took part, and was even beneficial in some respects as well.

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Appendices

Appendix 1: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) Criterion A1 and A2

Appendix 1

Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)
Criterion A: The definition of the traumatic stressor necessary for a diagnosis of posttraumatic stress disorder

For Criterion A to be met, an individual must have been exposed to a traumatic event in which both of the following were present:

Criterion A1: the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others

And

Criterion A2: the individual's response to the trauma involved intense fear, helplessness, or horror.

Appendix 2: Literature Review Search Terms

Appendix 2, Table 1: Lists of textwords used in each database search (textwords copied direct from OVID)

Group 1	Group 2	Group 3			
Psychosis	**PTSD**	**Psychiatric treatment**	**PP-PTSD**	**Aetiology**	**Recovery style**
(psychosis or psychoses or psychotic or shizophreni* or "positive symptom*" or "negative symptom*" or "first-episode" or "first episode" or delusion* or hallucination*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	("posttraumatic stress disorder" or "post-traumatic stress disorder" or PTSD or posttraumatic or post-traumatic or "post traumatic" or "post-traumatic ADJ2 reaction*" or "stress disorder" or "traumatic reaction*" or "psychological impact" or "trauma" or "traumatic event*").mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	(hospitalization or hospitalisation or "treatment ADJ3 experience*" or "psychiatric admission*" or involuntary or "coercive treatment").mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	(postpsychotic or post-psychotic or "post psychotic" or "post-psychosis").mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	(predictors or aetiolog* or etiolog* or "risk factors").mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	(appraisal* or "recovery style" or "coping style").mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]

Appendix 2, Table 2: MESH terms for each database

Group 1	Group 2	Group 3			
Psychosis	**PTSD**	**Psychiatric treatment**	**PP-PTSD**	**Aetiology**	**Recovery style**
EMBASE psychosis/ schizophrenia/ delusion/ hallucination/ positive syndrome/ negative syndrome/ PsycINFO exp Schizophrenia/ exp Delusions/ hallucinations/ exp "Positive and Negative Symptoms"/ MEDLINE Schizophrenia/ Psychotic Disorders/ Hallucinations/ Delusions/	EMBASE posttraumatic stress disorder/ PsycINFO exp Posttraumatic Stress Disorder/ MEDLINE Stress Disorders, Post-Traumatic/ Stress, Psychological/	EMBASE involuntary treatment/ psychiatric treatment/ PsycINFO exp Psychiatric Hospitalization/ exp Involuntary Treatment/ or exp "Commitment (Psychiatric)"/ MEDLINE Not used	(No MESH terms for PP-PTSD)	EMBASE etiology/ PsycINFO Not used MEDLINE Not used	EMBASE n/a PsycINFO exp Cognitive Appraisal/ MEDLINE Not used

Appendix 3: Checklist for rating general methodological quality

Appendix 3: Checklist for rating general methodological quality in cross sectional studies, adapted for the present study from Arcelus et al. (2013)

Section 1: Internal validity		**Numerical ratings and rating criteria below added for this review**	
In a well conducted cross-sectional or before-after design:			
1.1	The study addresses an appropriate and clearly focused question.	2	Appropriate research aim, stated clearly
		1	Research aim not clearly stated
		0	Research aim is not appropriate
Selection of subjects			
1.2	Recruitment is appropriate to the aims of the research.	2	Robust attempt made to avoid biased sampling
		1	Some attempt made to avoid biased sampling
		0	Convenience sample or no systematic attempt to avoid biased sampling
1.3	Representative cases from relevant population.	2	Inclusion criteria and recruitment method appropriate and < 20% refusal
		1	Inclusion criteria and recruitment method satisfactory and < 30% refusal
		0	Inclusion criteria and/or recruitment unsatisfactory and ≥ 30% refusal, or refusal rate not reported
1.4	The study indicates how many of the people asked to take part did so.	2	Stated clearly
		1	Unclear
		0	Not reported
1.5	Comparison is made between participants and non-participants to establish their similarities or differences.	2	Comparison made on a range of variables
		1	Comparison made regarding some variables
		0	No comparisons made
1.6	Inclusion criteria made explicit and sample characteristics sufficiently described.	2	Inclusion criteria explicit and sample comprehensively described
		1	Inclusion criteria and sample partially described
		0	Inclusion criteria and/or sample poorly described
1.7	Were subjects recruited over the same period of time?	2	Sample recruited within 6 months
		1	Sample recruited within 1 year
		0	Recruitment took longer than a year
Data collection			
1.8	Confidence in the quality of individual responses (e.g. telephone questionnaires might produce better quality answers than postal).	2	All interview
		1	Mix of interview and self-report
		0	Mostly/all self-report

Appendix 3: Checklist for rating general methodological quality in cross sectional studies contd.

1.9	Outcome is measured in an objective, standard, valid and reliable way.	2	Validated measures used
		1	Mix of validated and not validated measures
		0	Mostly not validated measures used
1.10	Reliance on current information rather than recall/hypothetical scenarios.	2	All current information
		1	Mostly current information
		0	Mostly recall

Confounding

1.11	The main potential confounders are identified and taken into account in the design and analysis.		(This item is not rated as it is rated separately by the PR-PTSD specific quality assessment tool, please see Table 1)
1.12	Minimization of bias – participant bias, observer bias, halo effects.	2	Attempts to reduce participant or observer bias reported (for example separate interviewers for PR-PTSD diagnosis and completion of other measures)
		1	No attempts made to reduce bias, but no clear indication that bias might exist
		0	Clear possibility of bias without attempts to reduce this

Statistical analysis

1.13	Appropriate use of statistical analysis?	2	Statistics used appropriate
		1	Statistics used mostly appropriate
		0	Inappropriate use of statistics, including large number of analyses without adjusting for the risk of Type I errors
1.14	Actual p values reported (e.g. 0.037 rather than <0.05) for the main outcome except when p value is <0.001.	2	Actual p values always reported
		1	Actual p values mostly reported
		0	Actual p values mostly not reported

Section 2: overall assessment of the study

2.1	How well does the study minimize the risk of bias or confounding, and meet its aims? (see NICE rating system below)	++
		+
		–
2.2	Taking into account clinical considerations, your evaluation of the methodology used and the statistical power of the study are you certain that the findings could be replicated?	Yes
		No

Appendix 3: Checklist for rating general methodological quality in cross sectional studies contd.

NICE rating system for methodological quality of studies using methodological checklists (NICE, 2007)

++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions of the study or review are thought *very* unlikely to alter.
+	Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought *unlikely* to alter the conclusions.
−	Few or no criteria fulfilled. The conclusions of the study are thought *likely* or *very likely* to alter.

Appendix 4: Details of General Methodological Quality Ratings

Appendix 4: Details of general methodological study ratings using the checklist contained in Appendix 3

Study and country	Research Q. (Max. 2)	Selection of subjects (Max. 12)						Data collection (Max. 6)			Minimization of bias[a] (Max. 2)	Statistical Analysis (Score out of 4)		Overall score (Max. 26)	Overall assess. (++, +, -)
	Q1.1 Q.[a]	Q1.2 Aims[b]	Q1.3 Representative[c]	Q1.4 n[d]	Q1.5 Compare[e]	Q1.6 Inclusion[f]	Q1.7 Time[g]	Q1.8 Quality[h]	Q1.9 Reliable[i]	Q1.10 Current[j]	Q1.12 Reduce bias[k]	Q1.13 Stats[l]	Q1.14 p[m]		
Priebe, Broker & Gunkel (1998).	2	2	1	2	2	2	1	2	2	2	1	2	0	21	++
*Brunet, Birchwood, Upthegrove, Michail & Ross (2012)	2	1	1	2	2	1	0	2	2	2	1	2	2	20	++
Centofanti, Smith & Altieri (2005).	2	2	0	2	0	2	1	2	1	2	1	2	2	19	+
*Bendall, Alvarez-Jimenez, Hulbert, McGorry & Jackson (2012).	2	0	0	2	0	2	1	2	2	2	1	2	2	18	+
*Jackson, Knott, Skeate & Birchwood (2004).	2	0	0	2	2	1	0	2	1	2	1	2	2	17	+
Shaw et al. (1997, 2002).	2	2	1	2	0	2	1	2	1	2	1	1	0	17	+
*Tarrier, Khan, Cater & Picken (2007).	2	0	0	2	0	1	2	2	1	2	1	2	2	17	+
Meyer, Taiminen, Vuori, Aijala & Helenius (1999).	2	2	0	2	2	1	1	2	2	2	1	0	0	17	+
Chisholm, Freeman & Cooke (2006).	2	0	1	2	0	2	0	2	2	2	1	2	0	16	+

Appendix 4: Details of general methodological study ratings using the checklist contained in Appendix 3 Contd.

Study and country	Research Q. (Max. 2)	Selection of subjects (Max. 12)						Data collection (Max. 6)			Minimization of bias[a] (Max. 2)	Statistical Analysis (Score out of 4)		Overall score (Max. 26)	Overall assess. (++, +, -)
	Q1.1 Q.[a]	Q1.2 Aims[b]	Q1.3 Representative[c]	Q1.4 n[d]	Q1.5 Compare[e]	Q1.6 Inclusion[f]	Q1.7 Time[g]	Q1.8 Quality[h]	Q1.9 Reliable[i]	Q1.10 Current[j]	Q1.12 Reduce bias[k]	Q1.13 Stats[l]	Q1.14 p[m]		
Lu, Mueser, Shami, Siglag, Petrides, Schoepp, Putts & Saltz (2011).	2	0	0	0	0	2	0	2	1	2	1	2	2	14	+
Beattie, Shannon, Kavanagh & Mulholland (2009).	2	0	0	0	0	2	1	2	2	2	1	0	1	13	+
*Sin, Abdin, Lee, Poon, Verma & Chong (2010).	2	0	0	0	0	1	0	1	2	2	1	2	2	13	+
*Mueser, Lu, Rosenberg & Wolfe (2010).	2	0	0	0	0	1	0	2	1	2	1	2	2	13	+
Harrison & Fowler (2004).	2	0	0	0	0	2	0	2	2	2	1	2	0	13	+
White & Gumley (2009).	2	0	0	0	0	2	2	1	2	2	1	0	0	12	+
*McGorry, Chanen, McCarthy, van Riel, McKenzie & Singh (1991).	2	0	0	0	0	2	0	1	2	2	1	2	0	12	+
Kennedy, Dhaliwal, Pedley, Sahner, Greenberg & Manshadi (2002)	2	0	0	0	0	1	0	0	2	2	1	2	1	11	+

Appendix 4: Details of general methodological study ratings using the checklist contained in Appendix 3 Contd.

Note: Please refer to Appendix 3 for checklist questions and rating system.Studies with the highest scores are listed first.

Key to ratings

Items are either rated 0-2. Higher ratings indicate higher quality.

[a]Research question: 0 = not appropriate; 1 = not clearly stated; 2 = clearly stated

[b]Recruitment: 0 = sampling not systematic; 1 = attempt made to avoid bias; 2 = robust attempt to avoid bias

[c]Sample representative: 0 = inclusion criteria and/or recruitment not satisfactory and/or refusal ≥ 30 or not reported; 1 = satisfactory and < 30% refusal; 2 = appropriate and < 20% refusal

[d]Details of participation and non-participation: 0 = not reported; 1 = unclear; 2 = stated clearly

[e]Comparison between participants and non-participants: 0 = no comparisons made; 1 = some comparisons made; 2 = comparison on a range of variables

[f]Description of inclusion criteria and sample: 0 = inclusion criteria and/or sample poorly described; 1 = partially described; 2 = comprehensively described

[g]Period of recruitment: 0 = recruitment took longer than a year; 1 = within a year; 2 = within 6 months

[h]Confidence in participant responses: 0 = mostly/all self-report; 1 = mix of self-report and interview; 2 = all interview

[i]Measurement: 0 = measures mostly not validated; 1 = mix of validated and not; 2 = measures all validated

[j]Reliance on current information or recall: 0 = mostly recall; 1 = mostly current; 2 = all current

[k]Minimization of bias: 0 = clear possibility of bias without attempts to reduce it; 1 = no attempt to reduce bias, but no indication it exists; attempts to reduce bias reported.

[l]Statistics: 0 = not appropriate; 1 = mostly appropriate; 2 = appropriate

[m]p values: 0 = actual p values mostly not reported; 1 = mostly reported; 2 = always reported.

Appendix 5: List of measures cited in abbreviated form in Tables 3, 4 and 5

List of measures cited in abbreviated form in Tables 3, 4 and 5

Measure	Full Title	Type of measure	Description	Authors
CAPS	Clinician-Administered PTSD Scale	Semi-structured interview	Used to diagnostically assess PTSD.	Blake, Weathers, Nagy, Kaloupek, Charney & Keane, 1995
CAPS-S	Clinician-Administered PTSD Scale for use with patients with Schizophrenia	Structured interview	Based on the above scale and used to diagnostically assess PTSD in people with Schizophrenia.	Gearon, Kaltman, Brown & Bellack, 2003.
CIDI	Composite International Diagnostic Instrument	Semi-structured interview	Used to diagnostically assess mental disorders based on ICD-10 and DSM-IV criteria.	World Health Organization, 1993
HES	The Hospital Experiences Scale	Semi-structured interview	Used to quantify distress related to a range of psychiatric hospital experiences.	Shaw, McFarlane & Bookless, 1997
IES	Impact of Events Scale	Self-report scale	15 item scale measuring PTSD re-experiencing and avoidance symptoms.	Horowitz, Wilner, & Alvarez, 1979
IES-R	Impact of Events Scale - Revised	Self-report scale	22 item scale measuring PTSD re-experiencing, avoidance and hyper-arousal symptoms.	Weiss & Marmar, 1997
PATS	PTSD Assessment Tool for Schizophrenia	Semi-structured interview	Designed to elicit posttraumatic reactions to psychotic symptoms and treatment experiences.	Williams-Keeler, 1999
PDS	Posttraumatic Diagnostic Scale	Self-report	Used to diagnose PTSD according to DSM-IV criteria.	Foa, Cashman, Jaycox & Perry, 1997
Penn	Penn Inventory for PTSD	Self-report	26 item scale measuring DSM-IV symptoms of PTSD and providing a score indicating severity of symptoms.	Hammarberg, 1992
PSS-I	The PTSD Scale - Interview	Structured interview	Provides categorical data indicating DSM-IV PTSD 'caseness'.	Foa, Riggs, Dancu & Rothbaum, 1993
PTSD Interview	PTSD Interview	Semi-structured interview	Measures the severity and frequency of PTSD symptoms, according to DSM-	Watson, Juba, Manifold, Kucala & Anderson, 1991

			III-R criteria.	
PTSD Scale	PTSD Scale	Self-report scale	15 item measure linked directly to DSM-IV criteria for PTSD which can be used to establish 'caseness'. (Need for fulfilment of Criteria A can be omitted).	Friedman, Schneiderman, West and Corson, 1986
SASRQ	Stanford Acute Stress Reaction Questionnaire	Self-report scale	30 item scale measuring symptoms of anxiety and dissociation in the aftermath of traumatic events, according to DSM-IV criteria for acute stress disorder.	Koopman, Classen & Spiegel, 1994

Appendix 6: Study Measures

Appendix 6.1

Prompts For Identifying The Worst Moment Of Illness In Order To Complete The IES-R

In order to complete the first questionnaire, I wonder if you could tell me when you first came into contact with mental health services?

What was happening at that time that meant that you came into contact with mental health services? What sort of experiences or symptoms were you having?

Would you be able to tell me very briefly about the course of your contact with mental health services and your symptoms since that time?

Looking back over this time since your first contact with mental health services, what is your worst moment or memory in relation to your symptoms or to the treatment you have received?

We are looking for your most distressing memory *currently*. That is, you may have experienced events in the past which were very distressing but no longer trouble you so much. For this questionnaire, we are looking for a memory which affects you *now*, so that for example you avoid thinking about it, or avoid reminders of it, or you remember it when you don't want to.

Appendix 6.2

Impact of Event Scale – Revised

INSTRUCTIONS: Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you **DURING THE PAST SEVEN DAYS** with respect to the following event: _____, which occurred on _____.

How much were you distressed or bothered by these difficulties?

Responses: 0 = Not at all; 1 = A little bit; 2 = Moderately; 3 = Quite a bit; 4 = Extremely.

		Not at all	A little bit	Moderately	Quite a bit	Extremely
1	Any reminder brought back feelings about it.	0	1	2	3	4
2	I had trouble staying asleep.	0	1	2	3	4
3	Other things kept making me think about it.	0	1	2	3	4
4	I felt irritable and angry.	0	1	2	3	4
5	I avoided letting myself get upset when I thought about it or was reminded of it.	0	1	2	3	4
6	I thought about it when I didn't mean to.	0	1	2	3	4
7	I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
8	I stayed away from reminders of it.	0	1	2	3	4
9	Pictures about it popped into my mind.	0	1	2	3	4

Appendix 6.2 continued

		Not at all	A little bit	Moderately	Quite a bit	Extremely
10	I was jumpy and easily startled.	0	1	2	3	4
11	I tried not to think about it.	0	1	2	3	4
12	I was aware that I still had a lot of feelings about it, but I didn't deal with them.	0	1	2	3	4
13	My feelings about it were kind of numb.	0	1	2	3	4
14	I found myself acting or feeling like I was back at that time.	0	1	2	3	4
15	I had trouble falling asleep.	0	1	2	3	4
16	I had waves of strong feelings about it.	0	1	2	3	4
17	I tried to remove it from my memory.	0	1	2	3	4
18	I had trouble concentrating.	0	1	2	3	4
19	Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.	0	1	2	3	4
20	I had dreams about it.	0	1	2	3	4
21	I felt watchful and on-guard.	0	1	2	3	4
22	I tried not to talk about it.	0	1	2	3	4

Total IES-R score:_____

Appendix 6.3

EARLY LIFE EXPERIENCES SCALE

This scale is designed to explore your memories of your childhood. Research suggests that early experiences play a role in later psychological difficulties. Below are a set of questions that tap various aspects of early life. Read each question carefully and rate how true each statement is for you. To do this, circle a number under each statement.

Completely untrue	Very occasionally true	Sometimes true	Fairly true	Very true
1	2	3	4	5

1. I often had to give in to others at home

1 2 3 4 5

2 I felt on edge because I was unsure if my parents might get angry with me

1 2 3 4 5

3 I rarely felt my opinions mattered much

1 2 3 4 5

4 There was little I could do to control my parents' anger once they became angry

1 2 3 4 5

5 If I didn't do what others wanted I felt I would be rejected

1 2 3 4 5

6 I felt able to assert myself in my family

1 2 3 4 5

Appendix 6.3 contd.

7 I felt very comfortable and relaxed around my parents

1 2 3 4 5

8 My parents could hurt me if I did not behave in the way they wanted

12 3 4 5

9 I felt an equal member of my family

1 2 3 4 5

10 I often felt subordinate in my family

1 2 3 4 5

11 My parents exerted control by threats and punishments

1 2 3 4 5

12 I often had to go along with others even when I did not want to

1 2 3 4 5.

13 In order to avoid getting hurt I used to try to avoid my parents

1 2 3 4 5

14 The atmosphere at home could suddenly become threatening for no obvious reason

1 2 3 4 5

15 I experienced my parents as powerful and overwhelming

1 2 3 4 5

Appendix 6.4

The Psychosis Attachment Measure

We all differ in how we relate to other people. This questionnaire lists different thoughts, feelings and ways of behaving in relationships with others.

PART A

Thinking generally about how you relate to other key people in your life, please use a tick to show how much each statement is like you. Key people could include family members, friends, partner or mental health workers.

There are no right or wrong answers

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

Appendix 6.4 contd.

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

PART B

In answering the previous questions, what relationships were you thinking about?

_____

(E.g. relationship with mother, father, sister, brother, husband, wife, friend, romantic partner, mental health workers etc)

Appendix 6.5

Self-compassion scale: short form

please read each statement carefully before answering; using the scale given below indicate, to the right of each item, how often you behave in the stated manner:

How I typically act towards myself in difficult times …

		Almost never				Almost always
1	When I fail at something important to me I become consumed by feelings of inadequacy	1	2	3	4	5
2	I try to be understanding and patient towards those aspects of my personality I don't like	1	2	3	4	5
3	When something painful happens I try to take a balanced view of the situation	1	2	3	4	5
4	When I'm feeling down, I tend to feel like most other people are probably happier than I am	1	2	3	4	5
5	I try to see my failings as part of the human condition	1	2	3	4	5
6	When I'm going through a very hard time, I give myself the caring and tenderness I need	1	2	3	4	5
7	When something upsets me I try to keep my emotions in balance	1	2	3	4	5
8	When I fail at something that's important to me, I tend to feel alone in my failure	1	2	3	4	5
9	When I'm feeling down I tend to obsess and fixate on everything that's wrong	1	2	3	4	5
10	When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people	1	2	3	4	5
11	I'm disapproving and judgmental about my own flaws and inadequacies	1	2	3	4	5
12	I'm intolerant and impatient towards those aspects of my personality I don't like	1	2	3	4	5

Appendix 6.6

Fear of Recurrence Scale

1. I have been worrying about relapse.

2. I have been remembering previous episodes of being unwell.

3. I have been more aware of my thoughts.

4. I have experienced thoughts intruding into my mind.

5. I have been worrying about my thoughts.

6. I have felt unable to control my illness.

7. I have been worrying about being in hospital.

8. I have lacked confidence in my ability to cope

9. My thoughts have been uncontrollable.

10. My thoughts have been going too fast.

11. I have been worrying about losing control.

12. My thoughts have been distressing.

13. I have felt more in touch with my thoughts.

14. I have been constantly aware of my thoughts.

15. I have been unable to switch off my thinking.

16. I have paid close attention to how my mind is working.

17. The world has seemed more vivid and colourful.

18. My thoughts have been more interesting.

19. I have had new insights and ideas.

20. Unpleasant thoughts have entered my head against my will.

21. My thinking has been clearer than usual.

22. I have been checking my thoughts.

23. The thought of becoming unwell has frightened me.

Fear of Relapse: 1, 2, 6, 7, 8, 11, 23

Awareness: 3, 13, 14, 16, 17, 18, 19, 21, 22

Intrusiveness: 4, 5, 9, 10, 12, 15, 20

Appendix 6.7

Service Engagement Scale

Availability					
		Not at all or rarely	Sometimes	Often	Most of the time
1	The client seems to make it difficult to arrange appointments.	0	1	2	3
2	When a visit is arranged, the client is available.	0	1	2	3
3	The client seems to avoid making appointments.	0	1	2	3

Collaboration					
		Not at all or rarely	Sometimes	Often	Most of the time
4	If you offer advice, does the client usually resist it?	0	1	2	3
5	The client takes an active part in the setting of goals or treatment plans.	0	1	2	3
6	The client actively participates in managing his/her illness.	0	1	2	3

Help seeking					
		Not at all or rarely	Sometimes	Often	Most of the time
7	The client seeks help when assistance is needed.	0	1	2	3
8	The client finds it difficult to ask for help.	0	1	2	3
9	The client seeks help to prevent a crisis.	0	1	2	3
10	The client does not actively seek help.	0	1	2	3

Treatment adherence					
		Not at all or rarely	Sometimes	Often	Most of the time
11	The client agrees to take prescribed medication.	0	1	2	3
12	The client is clear about what medications he/she is taking and why.	0	1	2	3
13	The client refuses to co-operate with treatment.	0	1	2	3
14	The client has difficulty in adhering to the prescribed medication.	0	1	2	3

Appendix 7: Ethical Approval

NRES Committee London - City Road & Hampstead
Bristol Research Ethics Committee Centre
Level 3, Block B
Whitefriars
Lewins Mead
Bristol
BS1 2NT

Telephone: 0117 342 1339
Facsimile: 0117 342 0445

16 August 2012

Miss Alison Gracie
Trainee Clinical Psychologist
Research Department of Clinical, Educational and Health Psychology
University College London
1-19 Torrington Place, London
WC1E 7HB

Dear Miss Gracie

Study title:	**Relational and Cognitive Factors in Postpsychotic Posttraumatic Stress Disorder**
REC reference:	**12/LO/0929**
Protocol number:	**12/0108**

Thank you for your letter of 23 July 2012, responding to the Committee's request for further information on the above research and submitting revised documentation.

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

Confirmation of ethical opinion

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

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

Conditions of the favourable opinion

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

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*	
Covering Letter		21 July 2012	
Evidence of insurance or indemnity		15 August 2011	
Investigator CV		17 May 2012	
Other: Supervisor Miriam Fornells-Ambrojo's CV	1.3	07 May 2012	
Other: FAST -R review from			
Participant Consent Form: Relational and Cognitive Factors in Postpsychotic PTSD	1.3	17 May 2012	
Participant Information Sheet	3	11 July 2012	
Participant Information Sheet: Brief Information Sheet for potential patients	3	11 July 2012	
Protocol	1.3	07 May 2012	
Questionnaire: Validated - The Impact of Events Scale-Revised (IES-R)			
Questionnaire: Validated - The Childhood Trauma Questionnaire - Short Form			
Questionnaire: Validated - The Fear of Recurrence Scale			
Questionnaire: Validated - The Early Life Experiences Scale			
Questionnaire: Validated - The Psychosis Attachment Measure (PAM)			
Questionnaire: Validated - The Self-Compassion Scale-Short Form			
Questionnaire: Validated - The Positive and Negative Syndrome Scale			
Questionnaire: Validated - Beck's Depression Inventory II (BDI-II)			
Questionnaire: Validated - Service Engagement Scale (SES)			

REC application		17 May 2012	
Referees or other scientific critique report		17 May 2012	
Response to Request for Further Information		23 July 2012	
Summary/Synopsis	1.3	17 May 2012	

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

Further information is available at National Research Ethics Service website > After Review

12/LO/0929	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project

Yours sincerely

Dr David Slovick
Chair

Email: christinehobson@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Mr Dave Wilson*
Ms Adriana Fanigliulo, South London and Maudsley NHS Foundation Trust

Appendix 8: Traumatic Stressors

Appendix 8: Psychosis-related Traumatic Stressors

my first admission to hospital when I was handcuffed and brought to hospital by police and then restrained by a large number of nurses and sedated

being put in seclusion for 8 days

the first time I was in hospital

the time I was admitted to hospital after taking some pills

being tied to the bed in hospital

being hospitalized

my first admission

the time my medication was increased to the maximum dose during admission

when I was given the treatment

adverse reaction to Haloperidol

side-effects of medication

the radio making me sleep in my car

voices said to go out in the night and I almost got run over

people victimizing me

Islamic voice at the intercom

in South London thinking that everyone hated me

delusions when pregnant

last time I was in hospital I thought I was going to go to hell

when I thought I was going to collapse and die due to the black magic

becoming worried about the country, the environment and the people (after 9/11)

the nightmares at the start of my illness

last episode 9-10 years ago

last relapse

stress and hospitalisation following mother's death

the time I was given Haloperidol and allowed to go home from hospital (and damaged myself)

when I was left alone when ill for 6 months and lost my son

last admission (when I thought I was the antichrist)

car accident when unwell and unable to concentrate

after the fire (hiding as a fugitive)

feeling very upset about losing my flat when I was unwell

Appendix 9: Study Information Sheets and Consent Form

Appendix 9.1: Brief Information Sheet

What makes it hard to recover from experiences that bring people into contact with mental health services?

BRIEF INFORMATION SHEET FOR POTENTIAL PARTICIPANTS

Why is the project being done?

Research suggests it is common for people to have ongoing distress due to experiences that bring them into contact with mental health services. This may take the form of upsetting and intrusive thoughts and feelings, being on edge and alert, and feeling numb and detached from life.

We want to understand how and why people are affected, so that we can learn what contributes to their ongoing distress and problems in daily life. We hope that a greater understanding may contribute to improving the care provided to people experiencing difficulties, so that they are less likely to have upsetting reactions

Who can take part?

EVERYONE who has a care co-ordinator (CPN or social worker) can take part.

What will I have to do?

If you are interested in the project, one of our researchers, Alison Gracie, will meet you to provide further information about what taking part would involve. If you agree to participate, you will meet Alison on two occasions for 1-2 hours in total. She will help you complete some questionnaires. You will not have to answer any questions you do not want to, and all your answers will be anonymous and confidential. Meetings will be arranged at a time and place convenient for you.

I am interested in taking part. What do I do now?

Let your care co-ordinator know and then Alison will contact you. Or you can contact Alison direct on the contact details below.

Are there any benefits to taking part?

You will be given £10 to cover the cost of travel and refreshments.

We really appreciate you taking part. We hope the project will contribute to improving the care people receive, by understanding more about how they are affected by the experience of difficulties that bring them into contact with mental health services.

Contact Details

Alison Gracie, Project Researcher
Tel: Email: a.gracie@ucl.ac.uk

Appendix 9.2: Participant Information Sheet

Barnet, Enfield and Haringey NHS
Mental Health NHS Trust

What makes it hard to recover from experiences that bring people into contact with mental health services?

Participant Information Sheet
Version 3, 11 July 2012 for project ref: 12/LO/0929

We would like to invite you to take part in our research project. Before you decide we would like you to understand why the research is being done and what it would involve for you. ***One of our team will go through the information sheet with you and answer any questions you have.*** *We'd suggest this should take about 5-10 minutes. Talk to others about the project if you wish. Ask us if there is anything that is not clear.* **THANK YOU FOR READING THIS**

Why is the project being done?
Research suggests it is common for people to have ongoing distress due to experiences that bring them into contact with mental health services. This may take the form of upsetting and intrusive thoughts and feelings, being on edge and alert, and feeling numb and detached from life.

We want to understand how and why people are affected, so that we can learn what contributes to their ongoing distress and problems in daily life. We hope that a greater understanding may contribute to improving the care provided to people experiencing difficulties, so that they are less likely to have upsetting reactions.

Why have I been invited?
EVERYONE who receives services from psychosis clinical services is being invited to participate. We are inviting you to take part because your care co-ordinator (CPN or social worker) has informed us that you are interested in knowing more about the project.

Do I have to take part?
It is up to you to decide to join the project. You are free to withdraw at any time, without giving a reason. This would not affect the standard of care you receive.

What will happen to me if I take part?
If you are interested in taking part, a researcher will meet with you to describe the project and go through this information sheet with you. You will get the chance to ask questions, and then have at least 48 hours to think it over, before making your decision. Length of meeting: about 15-20 minutes.

If you decide to participate, we will arrange to meet at a time and place convenient to you (including at your home, if you wish). We will ask you to sign a consent form and, following this, to complete some questionnaires. Length of this meeting: about one hour.

We will arrange a final meeting when you will be asked questions about any current symptoms. Length of the meeting: about 30 minutes.

Expenses and Payments
You will be given £10 to cover travel and refreshment expenses.

What will I have to do?
You will meet with a researcher on two occasions. In the first meeting, which will last for about one hour, you will be supported in completing some questionnaires. The first questionnaire will ask you to think about the experiences you have had which mean you have contact with mental health services and also to think about the treatment you have had from services and to identify your worst moment or memory. You will be asked to give the researcher a very short (1 sentence) description of it, but apart from this **you won't have to talk about the memory**. You will be asked to keep the memory in mind while completing a questionnaire about any current distress you feel in relation to it (for example nightmares, or remembering the event when you didn't want to). You will also be asked to complete some questionnaires assessing the impact of past stressful experiences, memories of growing up, your ways of relating to yourself and others, what you think about the possibility of your difficulties returning, and your current mood.

In the second meeting, which will last for about 30 minutes, you will be asked some questions about any current symptoms or problems.

We will also ask your care co-ordinator to complete a short questionnaire about your use of services and we will access your health records to assess the level of health services you have recently been receiving.

What are the disadvantages and risks of taking part?
As outlined above, you will be required to identify a worst moment of the experiences which brought you into contact with mental health services. Although you will NOT have to talk about this event beyond identifying it, bringing it to mind may be distressing for some people. You will be free to withdraw from the project at any time. In the event that you do become upset by thinking about past events, we will help you to manage these feelings by using a simple relaxation strategy commonly used to reduce anxiety (involving breathing slowly, visualizing a calming scene, or muscle relaxation), at the end of the first meeting. If necessary the researcher will seek further support for you through your services and you will be provided with contact details for the researcher and mental health professionals involved in your care.

What are the possible benefits of taking part?
Some people find that talking about experiences that are not often discussed in normal appointments can be an opportunity to feel listened to and understood. Also, the information we get from this project may help us to treat patients with similar problems better.

What if there is a problem?
Any complaint about the way you have been dealt with during the project will be addressed.

Will my taking part in the project be confidential?
Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. After you have completed the questionnaires and interview, your name will be removed from all the information collected so that it is anonymous and you cannot be recognized from it.

One exception to this is if you give information that suggests you or someone else is at risk of harm. If this occurs, we will need to share the information with your health care team.

What will happen to the results of the project?

The results will be included in Alison Gracie's doctoral thesis as part of her training at UCL to become a Clinical Psychologist. We also aim to publish the results in a scientific journal. We will make the results available to all participants in a non scientific format. You will not be identifiable from any of these reports. If you would like to receive a summary of the results, you will be asked to indicate this in the consent form.

Who has reviewed this project?
The City Road and Hampstead Research Ethics Committee reviewed the project and gave permission for it to be carried out.

This information sheet has also been reviewed by the FAST-R Service. Run by trained people who have experiences of mental health difficulties, FAST-R advises on recruitment of participants.

Who is organising the research?
This project is organised by the Barnet, Enfield and Haringey NHS Trust and University College London.

Contact for further information
If you require further information about the project you may contact one of the following people:

Name and title	Role in the project	Contact number
Alison Gracie Trainee Clinical Psychologist	Chief Investigator	Tel: 07845786148 Email: a.gracie@ucl.ac.uk
Dr Miriam Fornells-Ambrojo Clinical Psychologist	Academic Supervisor	Tel: 020 7679 5699 Email: m.fornells-ambrojo@ucl.ac.uk
Dr Amy Hardy Clinical Psychologist	External Supervisor	Tel: 020 3228 6157 Email: amy.hardy@slam.nhs.uk
Dr Goran Petronic Clinical Psychologist	External Supervisor	Tel: 020 8216 5392 Email: goran.petronic@beh-mht.nhs.uk

Thank you for for taking time to read this and for agreeing to take part in the project.
You will be given a copy of this information sheet and a copy of the signed consent form to keep.

Appendix 9.3: Consent Form

Barnet, Enfield and Haringey NHS
Mental Health NHS Trust

CONSENT FORM

(Version 1.3, 17 May 2012)

STUDY: Relational and Cognitive Factors in Postpsychotic PTSD

Please put your initials in the box to indicate agreement.

1. I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and I am free to withdraw at any time, without giving any reason, and without my medical care or legal rights being affected. ☐

3. I understand that by completing and returning this form, I am giving consent for the information I provide to be used only for the purposes of this project and that it will not transferred to an organisation outside of UCL. I understand that the information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998. ☐

4. I agree to take part in this study. ☐

Name of participant:_____

Date:_____

Signature:_____

Name of researcher:_____

Date:_____

Signature:_____

Would you like to be contacted after the study to receive a summary of its findings?

Yes ☐ No ☐

If you would like to receive a summary please give your contact details below (e.g. email or postal address):

Name:

Postal or Email Address: