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A cross-sectional examination of candidate
psychological factors associated with Post-Psychotic
PTSD

& Research Portfolio

PART ONE

(Part Two bound separately)

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Section of Psychological Medicine
Division of Community Based Sciences
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*Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical
Psychology (D.Clin.Psy)*

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^Ψ Full proposal bound in separate volume (see: Part Two)

Chapter 1: Small Scale Service Related Project (SSRP)

An audit of advice clinics provided by South East
Glasgow Psycho-Social Services (STEPS)

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*Small Scale Service Related Project submitted in partial fulfilment of the requirements
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Health (See Appendix 1.1)*

Abstract

Background: A primary care psychology service in Glasgow has been providing individuals with one-off 25-minute consultations with CBT therapists. These *advice clinics* are designed to facilitate rapid assessment of individuals' problems, and provide an opportunity to recommend the best course of action for resolving them.

Aims: This audit investigated the number of people seen at the advice clinics, the types of problems presented and the nature of advice given by therapists.

Method: A retrospective design was used to assess data gathered for 140 individuals consecutively attending advice clinics held between November 2004 and May 2005.

Results: Of those booked to attend, 115 kept their appointment. Analysis indicated that 32% of individuals came from Scotland's most deprived areas. The most commonly presented problems were stress (47%) and depression (45%). Therapists utilised a variety of different strategies to assist attendees to resolve their difficulties. Some 57% of individuals attending the advice clinics were given self-help materials, and 42% were booked on to a 6-session psycho-education course called *Stress Control*. Some 13% were asked to commence a course of cognitive behavioural therapy with a STEPS therapist. A further 13% were referred on to other mental health services.

Conclusions: Advice clinics appear to represent an important form of psychological triage enabling judgements to be made about the severity of individuals' problems and, if necessary, facilitating link-up with other primary care services or other agencies. Further evaluation is required, particularly with regard to determining the clinical effectiveness of advice clinics.

Key words: Advice clinics, primary care, clinical psychology

Introduction

Approximately one-quarter to one-third of all general practitioner (GP) consultations are for mental health problems (Sharp & Morell, 1989; Shah, 1992), and as many as 90% of people with a mental health problem are managed solely in primary care (Goldberg & Huxley, 1992). Traditional modes of service delivery can not keep up with demand (Frude, 2004). GPs are increasingly looking for non-pharmacological, rapid interventions - particularly for the most common mental health problems of anxiety and mood disorders (White, 2000). This has led to a greater emphasis being placed on psychological therapy. However, there are currently not enough suitably trained professionals to provide the therapy being demanded in primary care (Lovell & Richards, 2000; Marks et al, 2003). Various solutions for improving waiting lists have been proposed. It has been suggested that patients could be offered one or two appointments soon after referral prior to being placed on a secondary waiting list (Geekie, 1995). Some advocate predicting therapeutic need from referral letter (Westbrook, 1991). Others propose using self-help packages for patients on the waiting list (White, 1995; 1998). Another alternative is to refer on more readily and restrict access to the service (Startup, 1994). Many of these 'solutions', however, only serve to address the problem in the short-term because the emphasis is simply on 'dealing with the waiting list' (McPherson, 1998). Endeavours must also be made to help the large number of people currently deprived of *any* contact with a mental health professional.

Lovell and Richards (2000) highlight compelling evidence to suggest that for many patients 'full blown' therapy is not required. A 'stepped care' approach is proposed as a workable alternative. This involves patients being offered basic interventions which are stepped to more complex interventions as and when necessary (National Institute for Clinical Excellence, 2004). *Advice clinics* are an initiative that could potentially form an important component of the 'stepped-care' approach. They offer quick access to a therapist for a short one-off session typically consisting of directive advice and provision of self-help materials. There is growing evidence for the acceptability and effectiveness of the service (Brownscombe-Heller, 1994).

In 1996, in an attempt to provide rapid access to a psychologist for adult clients who would not normally have been referred to existing services, an advice clinic was set-up in Clydebank Health Centre. Based on the 'walk-in' clinics described by Brownscombe-Heller (1994), the advice clinics aimed to provide a preventative service designed to help clients at an early stage in their problems. The clinics also give clients who are ambivalent about psychological therapy the chance to come and find out more about what therapy entails. Finally, they provide an opportunity for psychological screening if GPs are unsure whether psychological factors are involved. Although designed to target those with milder problems, these clinics actually attracted mainly severe and chronic sufferers. Despite this, the results at six months follow-up from one-off consultations were encouraging (White, 1998).

In November 2004, a primary care psychology team operating in the south-east of Glasgow (South East Psychosocial Services: STEPS) launched advice clinics to provide quick and effective assistance to patients encountering mild-to-moderate difficulties. The clinics consist of one-off sessions of about 25 minutes. GPs give patients, with problems deemed to be appropriate for the *rapid access services* offered by STEPS, a booklet outlining the different services. The rapid access options include:

- Classes held to educate people about the nature/ treatment of stress (*Stress Control*).
- A support group for individuals experiencing stress/anxiety/depression (*First Steps*).
- The provision of self-help books through participating libraries (*Book Prescription*).
- The distribution of booklets written by the STEPS team relating to problems commonly presenting in primary care psychology (*STEPS out of Stress*).
- A self-help guide compiled by the STEPS team to facilitate individuals in working through stress (*Stress Master*).
- A helpline that individuals can call to discuss problems (*Advice Line*).
- One-off sessions with a therapist to discuss problems (*Advice Clinics*).

If patients wish to attend an advice clinic, places can be booked by phoning the STEPS secretary. The therapist hosting the advice clinic attempts to assist patients by: giving them information, providing them with self-help booklets if appropriate, suggesting/arranging the use of other *rapid access services* offered by STEPS, and/or putting them in touch with other agencies that may be of assistance. Prior to attending an advice clinic individuals are required to complete two outcome measures the *Clinical Outcomes in Routine Evaluation – Outcome Measure* (CORE-OM; Barkham, Evans, Margisan, et al 1998) and a *Work and Social Adjustment Scale* (WSAS; Marks, 1986).

Six months after their attendance at an advice clinic, the STEPS team send the CORE and WSAS (with a pre-paid postage envelope) to the individuals' home address to facilitate analysis of how scores may have changed.

The aim of this paper is to gain a greater understanding of the type of patients using the STEPS advice clinics and the problems that they present with. The advice clinics have only recently commenced and have as yet not been evaluated. Specific objectives include an examination of:

1. The number of patients attending the advice clinics.
2. The rate of uptake of patients to the advice clinics.
3. The demographic characteristics of patients attending the advice clinics (e.g. gender, age, deprivation score).
4. Information relating to the problem presented by the patient.
5. The outcome of the appointment:
 - a. Was further action required?
 - b. Were any self-help materials provided?
 - c. Was the patient referred on to any other agencies?

Methodology

Design

A retrospective design was used to gather information on each of the 140 patients consecutively booked to attend the STEPS advice clinics from the launch of the initiative on the 11th November 2004 until the cut-off date of 4th May 2005.

Procedure

The advice clinics were held at a health centre in south-east Glasgow on Wednesdays between 1pm and 4.30pm, and consisted of one-off sessions lasting no-longer than 25 minutes. A total of 6 different therapists hosted clinics during the period of investigation: 2 psychologists, 2 CBT-therapists, 2 assistant psychologists (under supervision). Each advice clinic session was staffed by two therapists working independently – two patients could therefore be seen simultaneously. Unlike with individual therapy, therapists enter each contact with a patient with no prior information about the patient or their problem. The information gathered by therapists during sessions was entered on *advice clinic data recording sheets* designed by the STEPS team.

The Scottish Index of Multiple Deprivation (SIMD; Scottish Executive, 2003) was used to convert attendees' post-codes into social deprivation scores. The SIMD was commissioned by *Scottish Neighbourhood Statistics*. This index uses a wide range of administrative data (31 indicators) classified into 6 domains; income, employment, housing, health, education and access. The SIMD uses a *Decile* approach to the

categorisation of deprivation i.e. the Scottish population is divided into 10 equal categories of 10%. A *Microsoft Excel* SIMD calculator was used to convert post-codes into deprivation scores.

Results

Age and Gender of Advice Clinic Attendance

Of the 140 individuals booked to attend an advice clinic session between the 11th November 2004 and 4th May 2005, 83% kept their appointment. A total of 21 advice clinics were held between the 11th November and the 4th May. A mean number of 6.7 individuals were booked to see a therapist on each occasion an advice clinic was held. The month with the highest number of individuals booked to attend was April 2005 (n = 30). April was also the month with the highest number of individuals booked to attend per advice clinic (n = 7.7). The mean age of all the individuals booked to attend the advice clinics was 38.9 (S.D. = 12.3). Analysis of these individuals' gender indicated that 56% were female and the remaining 44% were male.

Deprivation scores

Of the 140 individuals booked to attend the advice clinics, 16% failed to provide post-codes for their home-addresses. *Table 1* indicates that of those individuals who were able to provide post-codes, 32% came from the most deprived *decile* in Scotland (i.e. *Scottish*

Index of Multiple Deprivation score of 10). Only 1% of individuals came from the least deprived *decile* (i.e. SIMD score of 1).

INSERT TABLE 1 HERE

Previous contact with mental health services

Regarding whether or not any of the 140 individuals booked to attend advice clinics had any previous contact with mental health services, 14% indicated that they had. *Table 2* highlights that of these individuals: 40% had attended sessions with a psychiatrist, 20% had direct access contact with a clinical psychologist, and 20% had received person-centred counselling.

INSERT TABLE 2 HERE

Problems presenting at advice clinics

Table 3 lists the prevalence rates for the different types of problems presented by the 115 individuals who attended the advice clinics. The most commonly presented problem (as interpreted by the hosting therapist) was ‘stress’ (47%), closely followed by ‘depression’ (45%). Other problems occurring in over 10% of the individuals attending the advice

clinics included: 'relationship problems' (17%), 'panic attacks' (17%), 'generalized anxiety disorder' (17%), 'sleep' (15%) and 'bereavement' (11%).

INSERT TABLE 3 HERE

Self-help material

The STEPS team utilizes a wide range of self-help materials ranging from relaxation CD's to self-help booklets on: stress, depression, eating disorders etc. All self-help booklets written by the STEPS team have a Flesch Kincaid reading score of below 4 (reading age under 9 years). Of the individuals attending the advice clinics 57% were given self-help material.

Stress control

Stress Control consists of 6 ninety minute weekly sessions. It is an evening class – not a group therapy, so there is no onus on attendees to talk. Each session has a different focus:

- **Session 1:** Information about stress.
- **Session 2:** Control your body – relaxation and exercise.
- **Session 3:** Control your thoughts – think your way out of stress.
- **Session 4:** Control your actions – boost self-confidence.
- **Session 5:** Control panic.
- **Session 6:** Control sleep problems, control your future.

Analyses indicated that of the individuals who attended the advice clinics, 42% were booked to attend *Stress Control*. A further 11% were offered places on the course but choose not to attend (at least not immediately).

Contact with STEPS after advice clinic

Some 81% of individuals attending the advice clinics required no further individual help from the STEPS Team. The most common form of further contact was a course of cognitive behavioural therapy (13%) to be delivered over the course of 6 sessions. Some 5% were seen for a one-off review appointment only. The remaining 1% were seen for person-centered therapy with the STEPS team.

Referral to other agencies

The vast majority of individuals attending the advice clinics (86%) did not require referral to other agencies. *Table 4* lists the agencies to which the remaining 14% were referred. Most commonly individuals were sent to either *community mental health teams* (4%) or *direct access psychology departments* (3%).

INSERT TABLE 4 HERE

Discussion

The present paper aimed to gain a greater understanding of the type of patients using STEPS advice clinics and the problems that they present with. A total of 140 individuals were booked to attend advice clinics held between the 11th November 2004 and the 4th May 2005. Why some individuals chose not to attend remain unclear: difficulties may have resolved spontaneously, the person may have forgotten their appointment, or the nature of the person's problem may have directly impacted on their ability to attend (e.g. social anxiety, low motivation, hopelessness etc). Encouragingly, the through-put of individuals attending advice clinics was high – approximately 7 individuals were booked to attend each session of advice clinics. As more GPs become accustomed to using the fledgling service, and initiatives are launched to increase public awareness, it is likely that the mean number of people being seen at advice clinics will rise.

There was a relatively even gender split for individuals attending advice clinics (56% female, 44% male). This apparent balance between male and females is perhaps surprising considering the higher prevalence of problems like depression and anxiety in females (see: Singleton, Bumpstead, O'Brien, Lee and Meltzer, 2000). It is possible that the range of other less common difficulties (e.g. alcohol, bereavement) presenting at the advice clinics may have dissipated the traditional gender imbalance in the more prevalent problems.

Use of the *Scottish Index of Multiple Deprivation* (SIMD: Scottish Executive, 2003) indicated that approximately a third of individuals booked to attend advice clinics (who were able to provide post-codes for their home-address) came from the most deprived *decile* in Scotland. Only 1% of individuals came from the least deprived *decile*. However, it is difficult to draw firm conclusions regarding causality; just as deprivation may lead to psychological problems, psychological problems may also lead to deprivation.

Only 14% of those individuals attending the advice clinics had previous contact with mental health professionals. This is encouraging because it suggests that advice clinics are reaching an audience largely new to contact with mental health services, who would otherwise be adding to existing waiting lists for therapy or offered pharmacological interventions only.

The most commonly presenting problem at advice clinics was stress (47%), closely followed by depression (45%). However, the range of different problems presenting was considerable. Other frequently occurring difficulties included relationship problems, panic attacks, generalized anxiety disorder, sleep difficulties and bereavement issues. These figures can be compared with the rates of psychiatric morbidity among adults living in private households in the UK that were obtained by Singleton et al (2000). They noted that the most prevalent disorder among the population as a whole was ‘mixed anxiety and depressive disorder’ (akin to White’s (2000) conceptualization of *stress*) which was present in 88 cases per 1000. Singleton et al (2000) also noted that generalized anxiety disorder was the next most commonly found condition (44 adults per 1000). The

remaining disorders (depressive episode, phobias, obsessive-compulsive and panic) were less prevalent, ranging from 26 to 7 cases per 1000.

It is important to appreciate that specific types of problem rarely presented in isolation - constellations of co-occurring problems were noted instead. An important issue to consider when analyzing the problems that attendees presented with relates to *inter-rater reliability*. It is not clear whether there are sufficiently high levels of agreement between the 6 different therapists who hosted the advice clinics regarding the interpretation of attendees' problems. In addition to the problem categories listed on the data recording sheets, therapists also had the opportunity to write about presenting problems in a space provided on the sheet. This can lead to huge variation in how therapists interpret problems presented at advice clinics. One possibility for helping address this issue involves attempting to standardize the assessment procedure either by: implementing a brief period of training to reach a share understanding of problem definitions (sitting in on sessions together etc), or using a standardized assessment protocol (a set of specific questions asked with each patient seen). The latter suggestion is potentially difficult to implement because time restrictions may render assessment protocols impractical. However, the protocol does not have to be exhaustive; it may simply involve a list of somatic/psychological symptoms to which the individual simply replies *yes* or *no*. Of course, the risk with this approach is that the advice clinics could be reduced to a purely mechanistic exercise.

There was great variety in the advice that was provided by hosting therapists – this was due not only to the diversity of presenting problems, but also individual differences in the preferences of hosting therapists. The type of advice given included practical guidance relating to benefits, income and work-related problems; the provision of self-help material; the suggested use of other STEPS services (*Stress Control*, CBT therapy etc) and, if need be, referral on to other services.

Conclusions

These findings highlight how advice clinics serve as a form of psychological triage that allow judgements to be made on the severity of problems, facilitating if necessary, link-up with other primary care mental health services or indeed referral on to other agencies. The possibility remains that in the absence of the advice clinics offered by STEPS, the individuals that would benefit most from individual therapy would be faced with long waiting times, or offered no help beyond GP treatment as usual. Some 13% of individuals attending advice clinics were deemed to require cognitive behavioural therapy (CBT), with an additional 13% being referred on to other mental health services. In addition to reducing the time waiting to be seen by a therapist, advice clinics (as part of range of other rapid access services) provide an opportunity to ensure that resources are being allocated appropriately. Advice clinics therefore help address what Brown et al (2000) described as ‘a need to move toward efficient and effective treatments that can help a large number of patients with minimum effort.’

It is important to note a number of limitations associated with this investigation of the advice clinics offered by STEPS. The population used in the evaluation was essentially self-selecting (i.e. they put themselves forward for and attended advice clinics of their own volition) and may therefore not accurately represent the type of individuals presenting in a primary care setting. In addition, it must be stressed that this paper is not an evaluation of the effectiveness of advice clinics. This will instead form part of a future paper evaluating STEPS rapid access services.

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Table 1. SIMD Deprivation scores of attendees compared to the rest of Scotland

		Frequency	Percent of 140 individuals booked to attend	Percent of 118 individuals who provided post-codes
SIMD Score	1	1	1	1
	2	4	3	3
	3	2	1	2
	4	3	2	3
	5	12	9	10
	6	16	11	14
	7	7	5	6
	8	12	9	10
	9	16	11	14
	10	45	32	38
	Total	118	84	100
	No Post-code	22	16	
	Total	140	100	

Table 2. Previous contact with mental health services

	Frequency	Percent of 140 individuals booked to attend	Percent of 19 individuals with previous contact
Previous contact?	Psychiatry	8	40
	Direct Access Psychology	4	20
	Counselling	4	20
	Nature of contact unclear	1	7
	Sectioned under Mental Health Act	1	7
	Addiction Team	1	7
Total	19	14	100
No previous contact	121	86	
Total	140	100	

Table 4. Agencies to which individuals attending advice clinics were referred.

	Frequency	Percent
None	101	86
CMHT	4	4
Direct Access Psychology	3	3
Referred to which agency? Addiction Team	2	2
G.P.	2	2
Sandyford Clinic (sexual health)	2	2
Glasgow Marriage Counselling Service	1	1
Total	115	100

Chapter 2: Major Research Systematic Review

PTSD in Psychosis: Assessing prevalence rates and
correlates of Post-psychotic PTSD and PTSD
comorbid to psychosis

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*Major Research Systematic Review submitted in partial fulfilment of the requirements for
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*Prepared in accordance with requirements for submission to Clinical Psychology Review
(see Appendix 2.1)*

Abstract

Research examining PTSD in psychosis can be dichotomised into studies investigating PTSD comorbid to psychosis (i.e. Comorbid PTSD), and PTSD precipitated by the experience of psychosis or psychiatric treatment (i.e. Post-psychotic PTSD). There is a need to integrate various research findings regarding potential clinical correlates of these two manifestations of PTSD occurring in psychosis. The impact of methodological quality on PP-PTSD and Comorbid PTSD prevalence rates has not been examined. Ten studies investigating PP-PTSD and twenty studies investigating comorbid PTSD were systematically reviewed. Clinical correlates were extrapolated and studies were rated for methodological quality using a scoring system devised for this review. Trauma in childhood, multiple episodes of trauma and on-going trauma were found to be particularly associated with Comorbid PTSD. PP-PTSD was strongly associated with depression, anxiety and appraisals made about psychotic symptoms and psychiatric admissions. Comorbid PTSD prevalence rates were negatively correlated with the methodological quality of studies. Ratings allocated to the sampling methods employed by studies accounted for 40% of the variance in comorbid PTSD prevalence rates. Future research should adopt an integrated approach to investigating how distress independent of psychosis potentially evolves into traumatic reactions associated with the experience of psychosis.

Introduction

There is growing research interest in the interplay between Post-traumatic Stress Disorder (PTSD) and psychosis. To fulfill DSM-IV criteria for PTSD, an identifiable stressor which is potentially life-threatening needs to be defined, and the content of symptom should refer to that stressor (Breslau et al, 2002). The diagnostic criteria also stipulate that the person's response to the trauma must have involved 'intense fear, helplessness or horror'. The use of *Criterion A* has been criticized for being too restrictive (Power & Dalgleish, 1997) because it fails to acknowledge the psychological impact of events such as childhood abuse (Allen, 2001) or psychosis (Shaw et al, 1997) which, although not life-threatening, are nonetheless traumatic. Understanding PTSD is relevant to psychosis for two reasons:

1. Evidence suggests that there are high rates of trauma in individuals diagnosed with psychosis.
2. There is an on-going debate in the literature as to whether the experience of psychosis and/or its treatment is sufficiently traumatic to induce PTSD.

PTSD comorbid to a diagnosis of Psychosis

As with the general population, individuals diagnosed with psychosis can experience traumatic events that are independent to their experience of psychosis (e.g. road traffic accidents, physical assaults). A number of studies have suggested that psychotic populations present with *elevated* rates of childhood sexual abuse and other traumas (e.g. Ross & Joshi, 1992; Masters, 1995; Mueser et al, 1998). Neria et al (2002) noted that

more than two thirds of patients initially hospitalised for psychosis had experienced at least one traumatic event in their lifetime, about half had been exposed to a life-threatening trauma, and almost one third had been victimised in childhood.

Mueser et al (2002) proposed an interactive model linking trauma, PTSD, and the course of severe mental illness. Based on factors known to influence the course of schizophrenia and other types of severe mental illness, it was suggested that specific symptoms of PTSD and associated conditions (e.g. substance abuse) exacerbate severe mental illness. This in turn leads to poorer working alliance with the therapist, use of higher cost psychiatric services, and a worse outcome.

Trauma associated with the experience of psychosis

Psychotic experiences are not inherently life-threatening. Therefore psychosis does not qualify as a *Criterion A* event. Nevertheless, the experience of psychosis may involve the *perception* of threatened death or serious injury which can have a marked psychological impact on the individual and induce feelings of ‘intense fear, helplessness or horror’ (Herring, 1995; Jordan, 1995). This has led some researchers to claim that the experience of psychotic symptoms, and/or the treatment people receive for psychosis, can give rise to levels of post-traumatic stress symptomatology that are sufficiently high to meet diagnostic cut-offs i.e. Post-psychotic PTSD (PP-PTSD; Shaw et al, 1997; 2002).

Causal factors potentially implicated in Post-Psychotic PTSD

It has been suggested that the severity of intrusive and frightening psychotic experiences can account for much of the variance in PP-PTSD symptomatology (Williams-Keeler et al, 1994, Shaw et al, 1997). Some authors propose that psychotic symptoms (hallucinatory and delusional disturbances) can shatter the person's experience of themselves, the world, and others (Bayley, 1996; Davidson & Strauss, 1992; Shaner & Eth, 1989) in a similar way to non-psychotic trauma (Janoff-Bulman, 1979). Descriptions of the re-experiencing of psychotic episodes, and the widespread avoidance of cognitive, affective, and situational reminders of the experience (Shaner & Eth, 1989), appear to be consistent with current conceptualizations of PTSD (Ehlers & Clark, 2000).

Traumatic experiences of psychiatric services and admission to hospital may also be implicated in elevating levels of PP-PTSD (Morrison et al, 1999). The implementation of compulsory admission procedures, or use of enforced sedation, restraint, and seclusion, has been suggested to heighten the person's sense of fear, victimization and helplessness over their experiences (Beveridge, 1998; Brody, 1995; Rooney et al, 1996).

To differentiate between the types of trauma that can present in psychosis, Tarrier (2005) recently proposed a classification system for traumatic events experienced by individuals with psychosis. Four different categories have been proposed: *independent*, *possibly independent*, *dependent* and *illness-related* (see Table 1).

INSERT TABLE 1 ABOUT HERE

In the current review the term PP-PTSD will be used to describe PTSD which has been precipitated by traumatic events that are either *dependent* or *illness-related*. PTSD that has been precipitated by traumatic events that are *independent* or *possibly independent* of the experience of psychosis will be referred to as ‘Comorbid PTSD’.

Making sense of the evidence

With some studies focusing on PP-PTSD and other studies focusing on PTSD comorbid to psychosis, understanding what factors correlate with which particular manifestation of PTSD can be confusing. It is possible that differences in the methodological quality and scientific rigor employed by studies may also impact on the prevalence rates for PP-PTSD/Comorbid PTSD. Consequently, there is a need for a systematic review to be conducted aimed at drawing a distinction between research that focuses on PP-PTSD and research focusing on Comorbid PTSD, determining prevalence rates for PP-PTSD/Comorbid PTSD, identifying potential correlates of PP-PTSD/Comorbid PTSD and highlighting methodological issues to help inform future research.

Methodology

Aims

Following Tarrrier's (2005) classification of traumatic experiences in psychosis the current systematic review aimed to investigate the prevalence of PP-PTSD and comorbid PTSD amongst individuals with psychosis. Secondly, the clinical correlates of PP-PTSD and PTSD were investigated. Finally, the systematic review sought to determine whether methodological factors contribute to the variance in PTSD prevalence. Methodological quality was investigated using the following domains:

- a. Sampling
- b. Covariate assessment
- c. PTSD Assessment
- d. Methodology (Design, Power and Analysis)

A scoring system was designed specifically for this systematic review to rate studies (available by request from author). This scoring system was influenced by the Scottish Intercollegiate Guidelines Network (SIGN, 2002) guidelines for assessing the quality of cohort studies and also the Clinical Trial Assessment Measure (CTAM; Tarrrier & Wykes, 2004). The scoring system consisted of four sections targeting the four distinct aspects of empirical rigor outlined above. Each of the four sections was scored out of a total of 25, producing an overall score out of 100 when the sub-scores were totalled. This overall score for *methodological quality* was then used to rank studies.

Inclusion/Exclusion criteria

The following inclusion and exclusion criteria were used to select relevant papers for the systematic review.

Inclusion criteria:

1. Studies in which the prevalence of PTSD was assessed using standardised measures.
2. Studies that employed patients with psychotic disorders
3. Papers reported in English.
4. Papers published after 1990

Exclusion criteria:

1. Case studies, and studies adopting a qualitative methodology.
2. Unpublished dissertations.
3. Studies that focused exclusively on patients diagnosed with Bipolar Affective Disorder.
4. Studies that recruited on the basis of a primary diagnosis of PTSD as apposed to a primary diagnosis of psychotic disorder.
5. Papers reporting expert opinion.

Search Strategy

Electronic bibliographic databases (Psychinfo, Medline, and CDSR) were searched. Limits were set to papers published between January 1990 and May 2007. Details of studies meeting inclusion criteria were entered in the 'Web of Science' citation database to identify further papers. The first author determined study eligibility by reading the titles and abstracts of papers using inclusion/exclusion criteria. Hand-searching of a number of journals was also conducted e.g. *Behavioural and Cognitive Psychotherapy* and *The British Journal of Psychiatry*. Personal communications were also made to two leading experts in the area of trauma and distress in the context of serious mental illness.

Search Terms:

1. Schizophrenia or Psychosis or Psychoses or Bipolar
2. PTSD or (Post Traumatic Stress Disorder) or (Posttraumatic Stress Disorder) or (Posttraumatic Stress Symptoms) or (Post Traumatic Stress Symptoms)
3. Comorbid or comorbid\$

The reference section of papers identified by the computerised database search which fulfilled the inclusion criteria were hand searched for any relevant papers. A description of the number of papers obtained at each stage of the search is provided in Appendix 2.2.

Results

Post-Psychotic PTSD

Samples recruited in PP-PTSD research

Ten studies were included in this review that investigated *Post-psychotic PTSD* i.e. PTSD precipitated by factors dependent on, or related to, the experience of psychosis (see Appendix 2.3 for summaries of the studies). Two of these studies reported on the same data i.e. Shaw et al (1997; 2002). One sample was recruited from Germany (Priebe et al, 1998), one from Finland (Meyer et al, 1999), two from Australia (Shaw et al, 1997/2002; McGorry et al, 1991), one from the US (Kennedy et al, 2002); and four from the UK (Jackson et al, 2004; Harrison & Fowler, 2004; Chisholm et al, 2006; Morrison et al, 1999).

The combined number of participants in the nine different samples was 425 (median = 38, IQR: 35.5 - 48.0). The median proportion of male participants in the nine different samples was 60.0% (IQR: 50.4 - 73.1). The median age of participants in the nine different samples was 34.4 years (SD = 6.6). Harrison & Fowler (2004) did not report a prevalence rate for PP-PTSD. The other studies used a variety of different scales to assess PP-PTSD caseness (see Table 2). The median prevalence rate for PP-PTSD was 44.9% (IQR: 25.0 - 52.0).

INSERT TABLE 2 ABOUT HERE

Correlates of PP-PTSD

Psychiatric and positive symptom severity

In terms of associations with overall levels of psychiatric symptoms, Jackson et al (2004) failed to find significant correlations between levels of PP-PTSD and scores on the Psychiatric Assessment Scale (KGV; Krawiecka et al, 1977). However, Meyer et al (1999) found that a PANSS (Kay et al, 1987) total score greater than 63 at eight week follow-up in their study was the only significant risk factor for predicting PP-PTSD.

Meyer et al (1999) found a significant positive correlation between positive symptom severity and the level of PP-PTSD. Other studies (Priebe et al, 1998; Shaw et al, 1997/2002; Chisholm et al, 2006) found that positive symptom severity was not associated with PP-PTSD. Although Harrison and Fowler (2004) also found no association between the severity of positive symptoms and PP-PTSD, they did note a significant positive correlation between the severity of positive symptoms and hyper-arousal associated with *hospitalization-related* trauma. This was not the case with *psychosis-related* trauma.

Negative symptoms

To date only three studies have investigated specific links between PP-PTSD and negative symptoms. McGorry et al (1991) found no significant relationship between the level of negative symptoms and PP-PTSD caseness. However, both Meyer et al (1999) and Harrison and Fowler (2004) did find significant associations between negative symptoms and distress associated with the experience of psychosis.

Depression

There appeared to consistent evidence of an association between levels of PP-PTSD and depression (McGorry et al, 1991; Priebe et al, 1998; Meyer et al, 1999; Morrison et al, 1999; Kennedy et al, 2002). Harrison & Fowler (2004) found that depression scores were significantly associated with *psychosis-related* (but not *hospitalization-related*) intrusions and hyper-arousal. Potentially related to levels of depression; Shaw et al (2002) found that participants meeting criteria for PP-PTSD reported more suicidal thoughts than participants that did not meet criteria for PP-PTSD.

Anxiety

Three studies have investigated links between PP-PTSD and anxiety. Jackson et al (2004) and Morrison et al (1999) found significant differences on the HADS (Zigmond & Snaith, 1983) Anxiety sub-scale between those with and without PP-PTSD. Priebe et al

(1998) noted that PP-PTSD severity correlated significantly with PSE (Wing et al, 1974) *Specific Neurotic Syndromes* and PSE *Non-specific Neurotic Syndromes*.

Descriptions of trauma

Only four of the PP-PTSD studies (Shaw et al, 1997; Meyer et al, 1999; Harrison & Fowler, 2004; Jackson et al, 2004) provided prevalence rates for specific types of traumatic events linked to the experience/treatment of psychosis that participants had encountered. Of these studies, only Jackson et al (2004) provided information about what individuals were referring to when levels of PP-PTSD were assessed: 46% reported that they were thinking back to time of their ‘breakdown’, 11% to their ‘psychotic episode’, 17% to the ‘time when they were ill’, 9% to their ‘schizophrenia’ and 17% ‘when things got on top of them’.

Trauma associated with treatment

Meyer et al (1999) found that 24% of the traumatic events reported by participants in their study were related to hospitalization, compared to 69% to psychosis, 5% to ‘other’ sources of trauma and 1% could not be categorised. A similar pattern was noted by Harrison & Fowler (2004) who found that 41% of the traumatic events reported by their cohort were related to hospitalization with the remaining 59% being linked to psychotic symptoms. Those experiencing trauma related to ‘psychotic symptoms’ scored significantly higher on the IES Total, IES *Intrusion*, and IES *Hyperarousal* sub-scores

than those experiencing trauma associated with hospitalization (Harrison & Fowler, 2004). Contrary to what has been widely hypothesised, there did not appear to be a clear and consistent link between psychiatric admission and PP-PTSD. McGorry et al (1991), Priebe et al (1998), Morrison et al (1999) and Shaw et al (2002) failed to find significant associations between the level of PP-PTSD and the number of psychiatric admissions. Morrison et al (1999) also failed to find significant associations between the level of PP-PTSD and the duration of admissions or time since admission. Contrary to what had been hypothesised, patients with a history of *compulsory* admission had significantly lower levels of PTSD symptoms (Morrison et al, 1999). Meyer et al (1999) noted that in a follow-up of participants recruited after an acute psychiatric admission, noted that those who had been admitted on a compulsory basis had higher levels of *treatment-related* traumatic symptoms, but those admitted voluntarily had higher *psychosis-related* traumatisation. In terms of specific types of stressor associated with hospitalization, Meyer et al (1999) noted that factors such as curfew, forced medication, seclusion, or application of any coercive measures were significantly associated with *treatment-related traumatization* but not *total-traumatization* scores (i.e. a combined score of psychosis-related and treatment-related traumatization scores).

Cognitive factors potentially mediating PP-PTSD

Shaw et al (2002) found that although individuals with PP-PTSD did not report higher numbers of unpleasant hospital experiences, they did appraise hospital experiences to be more distressing and had more intrusive memories about hospital experiences. Similarly,

Jackson et al (2004) found that participants' perceptions of the stressfulness of admission were higher in those with PP-PTSD.

A similar pattern was evident in the associations between PP-PTSD and specific types of positive symptoms. Whereas, Chisholm et al (2006) found that individuals with persecutory delusions did not have significantly higher levels of PP-PTSD than those with other types of delusions, appraisals made about persecutory delusions (e.g. how powerful the persecutor was, how catastrophic the threatened harm was etc) were associated with the level of PP-PTSD. Chisholm et al (2006) also found that perceived helplessness, perceived uncontrollability and the perceived presence of crisis support at the time of the index psychotic episode were significantly correlated with the level of PP-PTSD. The authors of the study claim that these variables represent 'candidate psychological predictors' of PP-PTSD.

Shaw et al (2002) found no association between the severity of a PP-PTSD and levels of insight into the experience of psychosis. Jackson et al (2004), investigating potential associations between PP-PTSD and coping style in psychosis, found that 26% percent of the sample had a *Sealing Over* coping style compared to 74% who had an *Integration* coping style. There was no significant difference between these groups in PP-PTSD diagnosis (22% vs. 35% respectively). However, there was a significance difference between the two groups in IES-Avoidance scores, and there was a trend suggesting that integrators scored higher on IES-Intrusion scores.

Trauma independent of psychosis

Only two studies (Shaw et al, 2002; Chisholm et al, 2006) tested associations between PP-PTSD and past traumatic events that were independent to the experience of psychosis. In terms of a potential overlap between PP-PTSD and PTSD precipitated by events independent to the experience of psychosis (i.e. comorbid PTSD), Shaw et al (2002) noted that PP-PTSD was present in 80% of participants with a *current* diagnosis of comorbid PTSD and 67% with a *lifetime* diagnosis of comorbid PTSD. Multivariate analyses indicated that PTSD symptomatology associated with experiences independent of illness/treatment did not play a predictive role in the severity of PP-PTSD. In contrast, Chisholm et al (2006) found that previous experiences of traumatic events independent of psychosis (as assessed by the Stressful Life Experiences Screen; Stam et al, 1996) were a significant predictor of PP-PTSD.

Methodological quality of studies assessing PP-PTSD

The ten studies investigating PP-PTSD were ranked on the basis of the overall methodological rigour allocated using the scoring system devised for the current systematic review (Appendix 2.4). Correlational analyses were performed to determine if there were any significant associations between the overall methodological quality and the PP-PTSD prevalence rates obtained in the different studies. With Shaw et al (1997; 2002) reporting on data from the same sample, the Shaw et al (2002) study was excluded these analyses. If studies reported multiple PP-PTSD prevalence rates (e.g. if participants

were assessed longitudinally), the earliest obtained prevalence rate was used for the correlational analyses. If two different PTSD scales were used at any one time-point (self-report vs. interview-based) the interview-based prevalence rate was used. Results indicated that the prevalence rates of PP-PTSD did not have any significant correlations with the overall methodological quality, or the sampling, assessment of covariates, PTSD assessment and methodology sub-scores.

Length of time since discharge from last psychiatric admission and rates of PP-PTSD

Table 3 summarises information provided in seven of the PP-PTSD studies about the length of time that had passed since the last psychiatric discharge. There were no significant correlations between the prevalence rates for PP-PTSD and the length of time since discharge in the seven studies that provided this information ($\rho = -0.13$, $p = 0.394$). Visual examination of a scatter plot for the association between the variables revealed an out-lying study (i.e. Meyer et al, 1999). When this study was removed from the analysis, there was a trend approaching significance regarding the negative correlation between prevalence rates for PP-PTSD and the length of time since discharge ($\rho = -0.66$, $p = 0.078$).

INSERT TABLE 3 ABOUT HERE

Comorbid PTSD

Samples recruited to investigate comorbid PTSD

Twenty studies were identified that investigated PTSD occurring comorbid to a diagnosis of psychosis (see Appendix 2.5 for summaries of the studies). Thirteen of the studies recruited samples in the US (Zimmerman & Mattia, 1999; Mueser et al, 2004; Scheller-Gilkey et al, 2004; Resnick et al, 2003; Gearon et al, 2003; Mueser et al, 1998; Mueser et al, 2001; Strakowski et al, 1995; Gearon et al, 2004; Neria et al, 2002; Switzer et al, 1999; Strauss et al, 2005; Frueh et al, 2005), three in the UK (Sarkar et al, 2005; Chubb & Bisson, 1996; Kilcommons & Morrison, 2005), one in Australia (Howgego et al, 2005), one in Brazil (Braga et al, 2005), one in Canada (Tibbo et al, 2003), and one in Italy (Pallanti et al, 2004)

All of the studies reported data derived from separate samples. The twenty different samples consisted of a total of 2611 participants (median = 54.0, IQR = 30.0 - 159.3). The median proportion of male participants in the nineteen studies that provided information about the gender of participants was 55.0% (IQR = 36.2 - 61.5). The median age of participants in the seventeen studies that provided information about participant ages was 40.6 years (IQR = 36.2 - 45.6). A variety of different measures were used to ascertain the prevalence rates of comorbid PTSD in serious mental illness (see Table 4). The median prevalence rate for comorbid PTSD prevalence was 34.1% (IQR = 19.5 - 49.5).

INSERT TABLE 4 ABOUT HERE

Correlates of comorbid PTSD

A large number of studies identified in this review as investigating PTSD comorbid to psychosis also recruited participants with a range of other primary diagnoses (e.g. unipolar depression, personality disorders). As such this section of the review highlights correlates of PTSD comorbid to (what Mueser and colleagues have termed) *serious mental illness*.

Four studies reporting rates of Comorbid PTSD (Strakowski et al, 1995; Tibbo et al., 2003; Pallanti et al., 2004; Braga et al., 2005) constituted more general investigations into the rates of psychiatric comorbidity in severe mental illness. Because *PTSD comorbidity* was not the principal focus of these studies, none of them investigated potential correlates of comorbid PTSD.

Differences in primary diagnoses

In terms of levels of comorbid PTSD, there appeared to be comparatively lower prevalence rates in individuals diagnosed with schizophrenia. Zimmerman & Mattia (1999) noted that patients with Major *Depressive Disorder (MDD) with psychotic features* were nearly 4 times more likely to have PTSD than patients with *MDD without*

psychotic features. Mueser et al (1998) noted significant differences in prevalence rates for comorbid PTSD rates in different types of psychiatric diagnoses. Rates were highest in patients with depression (58%) and borderline personality disorder (54%) and lowest in schizoaffective disorder (37%) and schizophrenia (28%). Neria et al (2002) found that patients with bipolar disorder and schizophrenia had the lowest rates of PTSD (20.4% and 22.1% respectively) - significantly lower than other psychoses. Similarly, Switzer et al (1999) noted that participants with schizophrenic diagnoses were under-represented in the group with comorbid PTSD compared to the non-PTSD group. The reasons for comparatively lower rates of comorbid PTSD in schizophrenia, relative to other forms of mental illness, remain unclear.

Psychiatric and positive symptom severity

As many of the comorbid PTSD studies recruited patients with a mix of serious mental illness diagnoses, few employed measures specifically assessing psychotic symptoms. Resnick et al (2003) found that the PANSS total score did not correlate significantly with the CAPS total or CAPS subscale scores. In terms of specific links between comorbid PTSD and positive symptoms, Kilcommons & Morrison (2005) did not find significant links between the PANSS Positive Component and the *Frequency* and *Distress* subscores of the PSS-SR (Foa et al, 1993). Gearon et al (2004) and Resick et al (2003) also failed to find significant correlations between the PANSS Positive Component and CAPS/CAPS-S Total score. However, significant correlations were noted between the

PANSS positive component and the CAPS-S *Arousal* sub-scale (Gearon et al, 2004) and the CAPS *Avoidance* sub-scale (Resick et al, 2003).

Specific types of positive symptoms

Regarding potential links with specific types of positive symptoms, Kilcommons & Morrison (2005) found that the *Frequency* and *Distress* sub-scores of the PSS-SR (Foa et al, 1993) had significant positive associations with hallucinations. Zimmerman & Mattia (1999) found that patients diagnosed with PTSD comorbid to *major depressive disorder (MDD) with psychotic features* were significantly more likely than individuals with *MDD with psychotic features* but no comorbid PTSD to have experienced auditory hallucinations. There were no differences between the two groups with regard to other types of hallucinations or delusions. Similarly, Kilcommons & Morrison (2005) failed to find significant links between delusions and severity of comorbid PTSD (as assessed by the PSS-SR *Frequency* or PSS-SR *Distress* sub-scores).

Negative symptoms

Only two studies had investigated associations between negative symptoms and comorbid PTSD. Whereas one study found that the PANSS Negative Symptom Component had significant positive correlations with the CAPS-S total score and CAPS-S *Arousal* subscale (Gearon et al, 2004), the other study failed to find significant correlations

between the PANSS Negative component and the CAPS Total/subscale scores (Resnick et al, 2003).

Depression and suicidal ideation

Scheller-Gilkey, et al (2004) found that the HDRS depression scores had significant positive correlations with levels of comorbid PTSD. Potentially related to levels of depression, Strauss et al (2006) found that patients with comorbid PTSD were significantly more likely to report suicidal ideation than those without PTSD. Furthermore, the association between PTSD and suicidal ideation remained statistically significant even when other key variables were controlled for (Strauss et al, 2006).

Quality of life

Howgego et al (2005) found significant differences between those with and without a comorbid PTSD diagnosis on the Australian World Health Organisation Quality of Life-BREF (WHOQUOL-BREF; Murphy et al, 2000) questionnaire. Participants without comorbid PTSD, relative to those with comorbid PTSD, scored significantly higher on Physiological health, Psychological health and Environment. These findings support the notion that greater levels of trauma and comorbid PTSD were associated with a poorer quality of life.

Psychiatric treatment

Mueser et al (2004) noted that participants with ‘two or more’ psychiatric hospitalizations in the last year had higher PTSD rates than those with one psychiatric admission during that time, this group in turn had higher PTSD rates than those with no psychiatric admissions during that time. Switzer et al (1999) noted that in the 12-months prior to assessment participants with comorbid PTSD had a significantly higher number of contacts with different service professionals, used a significantly greater number of different service categories and had significantly more days of service use. A significantly higher proportion of patients with comorbid PTSD had experienced an inpatient stay over the proceeding month, and individuals with comorbid PTSD had taken a significantly higher number of different medications. The participants with comorbid PTSD also rated significantly lower on the ‘Number of people for whom professional help works’ and ‘How likely they would be to seek help with mental health problem in the future’ measures (Switzer et al, 1999). Frueh et al (2005) found that there were no statistical differences in reports of traumatic or harmful psychiatric experiences (measured by the Psychiatric Experiences Questionnaire) between patients meeting the criteria for ‘probable PTSD’ and those that did not. Participants who met the criteria for having ‘probable PTSD’ did however report feeling significantly less safe, more fearful, and more distressed in psychiatric settings (Frueh et al, 2005).

Demographic factors

Mueser et al (1998) found that a diagnosis of Comorbid PTSD was not related to gender, marital status and age. However, more recently Mueser et al (2004) found that being older at the point of assessment (i.e. over 40.3 years), being unemployed at the time of assessment, and being caucasian as opposed to being black, were all associated with significantly higher levels of comorbid PTSD..

The number of traumatic events

Neria et al (2002) found that patients were found to be 2.5 times more likely to meet criteria for PTSD if they had multiple traumas i.e. three or more. Kilcommons & Morrison (2005) found that the PTSD Symptom Scale - Self Report (PSS-SR; Foa et al, 1993) *Frequency* and *Distress* sub-scores had significant positive correlations with the total number of lifetime traumas. Sarkar et al (2005) found that patients were significantly more likely to meet the criteria for a lifetime diagnosis of PTSD if they had experienced multiple traumas than if they reported a single traumatic event. Neria et al (2002) also found that patients experiencing on-going traumas were more than four times as likely to have had comorbid PTSD compared to patients with one-off traumatic events.

Trauma in childhood

Neria et al (2002) found that participants were 2.5 times more likely to meet criteria for PTSD if they were 'younger at the time of first trauma'. Similarly, participants were also 2.5 times more likely to meet criteria for comorbid PTSD if they were 'victimized in childhood'. Gearon et al (2003) found that participants who had been exposed to physical abuse in childhood had significantly higher rates of comorbid PTSD. Similarly, participants who had been exposed to childhood sexual abuse had significantly higher rates of PTSD than those that had not been (Gearon et al, 2003). Scheller-Gilkey, et al (2004) found that the *Frequency* and *Severity* scores on the Davidson PTSD Scale had significant correlations with both the *Frequency* and *Severity* scores on the 'Childhood Traumatic Events Scale'. Regression analyses conducted by Mueser et al (1998) found that being sexually assaulted as a child, and the number of types of trauma experienced by the individuals, were significant predictors of comorbid PTSD. These two variables alone resulted in correct classification of 69% of the cases. Focusing specifically on female participants, Mueser et al (1998) also highlighted that being attacked without a weapon and witnessing a killing or injury in childhood were related to PTSD occurring comorbid to serious mental illness.

Trauma in adulthood

Gearon et al (2003) found that rates of comorbid PTSD were significantly higher in individuals who had experienced the following traumas relative to those who had not:

sexual abuse in adulthood, suffering a life-threatening illness in adulthood, being robbed with a weapon in adulthood, being threatened with a knife or gun, and being exposed to a road traffic accident. However, the analyses did not control for the interdependence of these different traumatic events. In addition, this study used a highly selected sample with participants all being female substance abusers diagnosed with schizophrenia.

Mueser et al (1998) found that being sexually assaulted and witnessing a killing or serious injury was related to comorbid PTSD in female participants. No specific trauma types occurring in adulthood were specifically identified as being related to comorbid PTSD in men. More recently, Mueser et al (2004) found that individuals experiencing homelessness in the six months prior to assessment was associated with significantly higher levels of comorbid PTSD.

Physical health was also shown to be associated with levels of comorbid PTSD. Participants with 'two or more' GP visits for health problems in the previous year had higher rates of comorbid PTSD than those individuals with only 'one' visit, this group in turn had higher rates than those participants with no such visits Mueser et al (2004). The number of non-psychiatric hospitalizations in the previous year also had a significant relationship with comorbid PTSD rates. Those with two or more had higher comorbid PTSD rates than those with 'one', who in turn had higher rates than those with 'none'. Participants scoring low on the SF-12 Physical Component score had higher comorbid PTSD rates than those with higher scores (Mueser et al, 2004).

Substance abuse

Associations have been noted between PTSD comorbid to severe mental illness and abuse of alcohol (Mueser et al, 2004) and illicit substances (Scheller-Gilkey et al, 2004). Gearon et al (2003; 2004) recruited samples of female participants with current illicit-drug abuse or dependence (past three months) to their studies, however, these studies did not recruit a control group to facilitate comparisons of rates of comorbid PTSD.

Detection of comorbid PTSD in serious mental illness

Mueser et al (1998) found that only 2% (N = 3) of the 119 participants with PTSD had this diagnosis in their charts. Similarly, Switzer et al (1999) found that only 1.6% (N = 3) of the sample of 181 participants carried clinic-assigned PTSD diagnoses, yet a total of 40% (N = 72) of the sample met criteria for comorbid PTSD. Using a smaller sample, Resnick et al (2003) found that 6.4% (N = 3) of the 47 participants recruited to their study reported that a psychiatrist or family doctor had told them at some point prior to the interview that they had PTSD, yet 13% (N = 6) met criteria for comorbid PTSD. These studies highlight a general under-reporting and under-treatment of comorbid PTSD.

Methodological quality of studies investigating comorbid PTSD

The 20 studies were ranked according to scores allocated to them using the scoring system devised for this review (see Appendix 2.3). Correlational analyses were

performed to investigate potential associations between comorbid PTSD prevalence rates and the methodological rigor of the studies. If studies reported multiple comorbid PTSD prevalence rates (e.g. if participants were assessed longitudinally), the earliest obtained prevalence rate was used for the correlational analyses. If two different PTSD scales were used at any one time-point (e.g. self-report vs. interview-based) the interview-based prevalence rate was used. There were significant correlations between the prevalence rates for comorbid PTSD and:

1. The mean age of participants ($\rho = 0.479, p = 0.030$)
2. The overall percentage rating for Methodological Quality (i.e. the total of the 4 different categories used to rate the studies) ($\rho = -.579, p = 0.005$)
3. The percentage rating for Sampling ($\rho = -.643, p = 0.001$)
4. The percentage rating for Covariate assessment: ($\rho = -.434, p = 0.032$)

Predicting Prevalence Rates of PTSD Comorbid to Psychosis

A hierarchical multiple regression analysis was performed to examine methodological predictors of comorbid PTSD prevalence (Table 5). The ‘sampling’ score was entered into the model. The model had the following statistics: R was 0.63, R^2 was 0.40, Adjusted R^2 was 0.37, and was significant ($F = 11.347, p = 0.004$). This was the only predictor variable that remained significant for inclusion into the model and accounted for 40% of the variance in comorbid PTSD rates.

INSERT TABLE 5 ABOUT HERE

Discussion

Building on Tarrrier's (2005) classification of traumatic experiences in psychosis, the current systematic review made a distinction between studies investigating PTSD precipitated by: events independent of psychosis (comorbid PTSD), and events related to psychosis (PP-PTSD). In reviewing the two groups of studies, concerns emerged about the conceptual validity of PP-PTSD and comorbid PTSD. These concerns can be summarised by four key questions:

1. Does PP-PTSD actually constitute a form of PTSD?
2. Can symptoms of comorbid PTSD/PP-PTSD be distinguished from other symptoms that are intrinsic or comorbid to psychosis?
3. Does 'psychosis-related trauma' or 'trauma independent of psychosis' actually precipitate the distress that is labeled PP-PTSD?
4. Are comorbid PTSD and PP-PTSD being measured appropriately?

Findings from the current systematic review will be discussed in the context of these various concerns.

Does PP-PTSD actually constitute a form of PTSD?

Post-traumatic stress disorder (PTSD) is unique in being the only DSM-IV (A.P.A., 1994) psychiatric condition that requires a specific type of event to have occurred for diagnosis to be made (Mol et al, 2005). According to *criterion A* of the DSM-IV PTSD criteria, this precipitating event must constitute 'a threat to the physical integrity of the self....and

cause an intense fear, helplessness or horror, in the patient'. As such, a psychotic episode does not necessarily qualify as a *criterion A* event.

Theorists have emphasised that at the core, traumatic experiences lead to PTSD because of the distress they cause (Joseph et al, 1995; McFarlane, 1992). Shaw et al (2002) claim that PP-PTSD mimics PTSD in the sense that intrusive memories that occur are tied to the specific trauma proposed to have precipitated the PTSD. There is general consensus that the experience of psychosis has the capacity to elicit fear, hopelessness or horror. Delusions commonly include intense fears of being killed, raped, or dying as well as fears of killing/hurting others (Shaw et al, 1997). Somatic delusions and hallucinations include experiences of infestation, and perceptions of body parts disintegrating, shrinking, or exploding (Shaw et al, 1997).

Aspects of treatment can also constitute sources of traumatic stress. Acute psychiatric hospitalization can involve coercive measures: such as police assisted involuntary admission, restraint, and forced medication (Fisher, 1994; Hammill et al, 1989; Shaw et al, 1997). Priebe et al's (1998) argued that aspects of involuntary admission do actually fulfil DSM-IV *criterion A* for PTSD. However, contrary to what had been hypothesised by studies included in this systematic review, the number or duration of psychiatric admissions was not significantly associated with PP-PTSD caseness (McGorry et al, 1991; Priebe et al, 1998; Morrison et al, 1999; Shaw et al, 2002). This was in marked contrast to associations noted between comorbid PTSD and an increased number of psychiatric admissions in the 12-months prior to assessment (Switzer et al, 1999; Mueser

et al, 2004). Importantly however, individuals meeting PP-PTSD caseness *appraised* their experiences of admission to be more distressing and stressful (Shaw et al, 2002; Jackson et al, 2004). These findings are consistent with previous research highlighting how the perceived level of threat is a more accurate predictor of PTSD than the actual severity of the traumatic event (Shalev, 1992).

So, although the experience of psychosis and its treatment may not necessarily be objectively verifiable as life threatening, a key point appears to be that individuals can *subjectively appraise* their experiences to be life threatening. Difficulties with *criterion A* are not unique to PP-PTSD. Power and Dalgleish (1997) have criticized it for being too restrictive because it fails to acknowledge the psychological impact of events such as childhood abuse (Allen, 2001). Calls to amend *criterion A* have also been strengthened by recent evidence indicating that life events can generate as many PTSD symptoms as ‘traumatic’ events (Mol et al, 2005).

Can symptoms of PP-PTSD/comorbid PTSD be distinguished from symptoms intrinsic and comorbid to psychosis?

Detecting distinct forms of psychopathology occurring comorbid to a psychotic illness is inherently difficult. In the main, the primary conceptualization of the impact of the experience of psychosis on an individual’s life has been ‘post-psychotic depression’. This was a conceptualization that initially provoked controversy and contention. Depressive symptoms can be difficult to delineate from negative symptoms in psychosis, and were interpreted in a variety of different ways (Bartels and Drake, 1988; Knights & Hirsch,

1981). However, the syndrome of ‘post-psychotic depression’ is now a well-established clinical construct with important therapeutic and prognostic implications (Herman, 1987; Birchwood et al, 1993; 2000).

McGorry et al (1991) highlighted the importance of attempting to determine whether a discrete syndrome of post-traumatic stress truly exists in individuals diagnosed with psychosis i.e. one that is phenomenologically distinct from, and hierarchically superior, to less specific: anxiety, depression and arousal-related symptoms.

In an attempt to better understand distinctions between symptoms of psychosis, trauma and distress, Shaw et al (1997) proposed that a patient's mental state comprises four components: a) phenomenology driven by the primary disease process; b) phenomenology of PTSD type caused by a reaction to the threat the individual experiences to their sense of self; c) the existence of dissociative phenomena triggered by the experience of symptoms of the illness; and d) the perception of the treatment and the environmental response. Shaw et al (1997) concluded that it remains a complex theoretical and practical argument as to which disorder or phenomenological process may be the primary source of a particular symptom.

There is clearly considerable overlap between the symptoms of PTSD and psychosis. Avoidance and detachment characteristics of PTSD may be confused with negative symptoms (Shaner & Eth, 1989; Lundy, 1992). Stampfer (1990) proposed a theory that negative symptoms of schizophrenia may actually be a ‘manifestation of traumatic stress disorder that is fundamentally similar in terms of the clinical phenomena and pathophysiological disturbance to chronic PTSD’. Of the studies included in the current

systematic review, McGorry et al (1991) and Priebe et al (1998) failed to find significant relationships associations between PP-PTSD and negative symptoms. Although Meyer et al (1999) did find a positive correlation between negative symptoms and PP-PTSD, this did not remain an independent factor in multivariate analyses. These results cast doubt on Stampfer's (1990) claims. Regarding the association between *comorbid PTSD* and negative symptoms, no firm conclusions can be made owing to the small number of investigations that have been conducted to date.

The difference between intrusive thoughts and delusional preoccupation can require subtle differentiation (Steinberg et al, 1994; Deering et al, 1996; Taiminen and Tuominen, 1996; Shaw et al, 1997). Encouragingly, the evidence obtained in the current systematic review indicated that PP-PTSD was not significantly associated with objectively rated levels of positive symptoms (Priebe et al, 1998; Shaw et al, 1997/2002; Harrison & Fowler, 2004; Chisholm et al, 2006). Similarly, levels of comorbid PTSD were not significantly associated with positive symptom levels (Kilcommons & Morrison, 2005; Gearon et al, 2004; Resick et al, 2003). However, in terms of links with specific types of positive symptoms; comorbid PTSD was shown to be associated with auditory hallucinations (Zimmerman & Mattia, 1999; Kilcommons & Morrison, 2005).

Suggestions that the presence of positive symptoms give rise to clinical confusion with PTSD symptomatology are also weakened by the fact that current systematic review noted that prevalence rates of comorbid PTSD were consistently lower in patients diagnosed with schizophrenia than in those patients with other serious mental illnesses (Mueser et al, 1998; Zimmerman & Mattia, 1999; Neria et al, 2002; Switzer et al, 1999).

Overall, the literature included in the current systematic review appears to suggest that symptoms intrinsic to the experience of psychosis can be distinguished from PP-PTSD and comorbid PTSD symptoms.

Parallels have been drawn between posttraumatic avoidance and the efforts of some patients recovering from psychosis to seal over, isolate, or suppress psychotic experiences (McGlashan et al, 1975). Only one study identified by the current systematic review investigated links between coping style and PTSD symptomatology. Jackson et al, (2004) found no significant difference between participants with and without PP-PTSD in the extent to which they ‘sealed over’.

There is considerable overlap between PTSD symptoms and symptoms that can occur comorbid to psychosis e.g. anxiety and depression. In this systematic review PP-PTSD was consistently associated with levels of anxiety (Jackson et al, 2004; Morrison et al, 1999; Priebe et al, 1998) and depression (Morrison et al, 1999; McGorry et al, 1991; Kennedy et al, 2002; Harrison & Fowler, 2004; Priebe et al, 1998; Meyer et al, 1999). Similarly, Scheller-Gilkey (2004) noted a significant correlation between comorbid PTSD and levels of depression. Both comorbid PTSD and PP-PTSD were also found to have significant associations with suicidal ideation (Strauss et al, 2006; Shaw et al, 2002). This is perhaps unsurprising given that previous research has highlighted psychosis and PTSD as independent risk factors for suicide (Ben-Yaacow & Amir, 2004; Hawton et al, 2005).

Meyer et al (1999) claim that associations between anxiety/depression and PTSD are to be expected due to symptom overlap. Consistent with this view, Shaw et al (2002) stated

that ‘psychosis, PTSD, anxiety, and mood symptoms do co-exist and may be difficult to separate out’. However, it must be appreciated that this is not a problem unique to assessing PP-PTSD or PTSD comorbid to psychosis. Instead, it is a difficulty with PTSD assessment generally. The high rate of comorbid affective disorders in PTSD has been established in a number of studies. On average, rates of depression (usually reported as MDD) are approximately 50% (Kessler et al., 1995; Blanchard et al., 1998; North et al., 1999).

Future research charting changes in PP-PTSD or comorbid PTSD symptomatology against changes in positive, negative symptoms, depressive and anxiety symptoms, may help to delineate PTSD symptoms from other symptoms intrinsic and comorbid to psychosis. The current systematic review indicated that the only longitudinal research conducted to date was the McGorry et al (1991) study into PP-PTSD. Unfortunately however, positive psychotic symptoms were not assessed in this study, and traumatic symptoms were assessed entirely with self-measure instruments rather than interview based measures.

Does ‘psychosis-related trauma’ or ‘trauma independent of psychosis’ actually precipitate what is labeled PP-PTSD?

McGorry et al (1991) emphasized that the relative etiological importance of the psychosis-related trauma relative to other factors, particularly premorbid variables (McFarlane, 1988; 1989) is critical issue in the conceptual validity of PP-PTSD. Frame & Morrison (2001) suggest that there are likely to be various different causes of PTSD within psychosis that broadly fall across three categories of trauma (psychotic symptoms,

hospitalization, and other traumas). Individuals with psychosis are at an elevated risk of experiencing traumatic events such as assaults (Shaw et al, 2002), and it is an important issue whether non-illness trauma rather than psychosis-related trauma precipitates the PP-PTSD phenomenology (Breslau et al, 1999; Mueser et al, 1998).

The current systematic review indicated that PTSD precipitated by events independent to the experience of psychosis (comorbid PTSD) was associated with on-going trauma (Neria et al, 2002) and a history of multiple traumatic events (Neria et al, 2002; Kilcommons & Morrison, 2005; Sarkar et al, 2005). Traumatic events occurring in early life were shown to increase the likelihood of developing comorbid PTSD (Neria et al, 2002; Scheller-Gilkey et al, 2004). In particular, being sexually assaulted as a child appeared to have strong predictive utility (Mueser et al, 1998; Gearon et al, 2003). Analyses in the current systematic review also indicated that higher prevalence rates of comorbid PTSD were associated with increasing mean ages of participants in the various studies. This could be interpreted as signalling that increasing age increases the likelihood of experiencing traumatic events. Alternatively, it could be interpreted as highlighting an impaired ability to tolerate traumatic events as individuals get older.

An important weakness of research into PP-PTSD is that, in general, only cursory attempts have been made to assess, and indeed control for, trauma independent of the experience of psychosis (i.e. comorbid PTSD). For example, Meyer et al (1999) stated that ‘there was a low occurrence of interfering traumatic events unrelated to present psychotic episode’, and Kennedy et al (2002) ‘screened out subjects with known past histories of physical and sexual abuse and war histories’. However, Shaw et al (2002)

asked participants about previous trauma and administered the CAPS for ‘other’ trauma; permitting participants to clearly differentiate between current (hospitalization/illness) and other stressors. Results of the multiple regression indicated that comorbid PTSD did not predict the development of PP-PTSD (Shaw et al, 1997). However, Chisholm et al (2006) found that trauma history as assessed by the *Stressful Life Experiences Screen* (Stamm et al, 1996) was associated with PP-PTSD. In support of this finding, Chisholm et al (2006) cited research linking a history of previous trauma to the development of PTSD after a subsequent traumatic event (e.g. Astin et al, 1995; King et al, 1996; Resnick & Kilpatrick, 1994). This raises the possibility that rather than ‘contaminating’ PP-PTSD, previous trauma unrelated to psychosis may actually be a key part of a process that leads to the development of PP-PTSD. Mueser et al’s (2002) interactive model of trauma, PTSD and serious mental illness predicted that comorbid PTSD will interfere with the ability of patients to establish a working alliance, which in turn leads to patients receiving fewer illness management services than necessary (e.g. medication, case management). Consistent with this, Freuh et al (2005) noted that participants with comorbid PTSD reported feeling ‘less safe, more distressed and more fearful in psychiatric settings’. Switzer et al (1999) found that individuals with comorbid PTSD reported being significantly less willing to seek help for mental health problems in the future. Consequently, pre-existing distress caused by events independent to the experience of psychosis may increase the likelihood of treatment for psychosis being perceived as distressing.

Are comorbid PTSD and PP-PTSD being assessed appropriately?

Analyses in the current systematic review indicated that in the studies investigating comorbid PTSD, higher levels of overall methodological quality were associated with lower prevalence rates for comorbid PTSD. In particular, the greater the rigor that studies applied to sampling participants and measuring potential covariates were associated with lower prevalence rates. The sampling rigor alone contributed to a significant model that accounted for 40% of the variance in comorbid PTSD prevalence rates. Although prevalence rates of PP-PTSD were not significantly associated with the methodological quality studies, this may have been a consequence of the small number of studies conducted to date.

Little attempt has been made in PP-PTSD research to qualitatively describe traumatic events that precipitated PP-PTSD. There was a tendency to broadly differentiate between *psychosis*-related and *treatment*-related trauma. Whereas, some studies (e.g. Shaw et al; 1997; McGorry et al, 1991) implicated the experience of psychosis and psychiatric hospitalization as precipitating PP-PTSD, they failed to establish the differential contribution of such stressors. However, other studies (e.g. Meyer et al, 1999; Harrison & Fowler, 2004) concluded that the majority of traumatic events precipitating incidents of PP-PTSD appeared to be related to psychosis rather than hospitalization. There is currently no comprehensive screening tool for investigating trauma associated with the experience of psychosis and treatment. The *Hospital Experiences Questionnaire* (Shaw et

al, 1997) investigates trauma associated with psychiatric admission, but a broader focus incorporating aspects of the experience of psychosis is required.

Some studies investigating PP-PTSD chose not to employ measures designed specifically to assess PTSD (e.g. Morrison et al, 1999; Chisholm et al, 2006). The *Impact of Event Scale* (IES; Horowitz et al, 1975), for example, is not a diagnostic measure of PTSD. A particular failing of the IES is that it does not assess the hyper-arousal aspect of PTSD symptomatology. Even studies that did include measures of PTSD were weakened by the fact that the traumatic symptoms were only assessed using self-report measures (e.g. McGorry et al, 1991; Jackson et al, 2004; Kennedy et al, 2002) rather than diagnostic interviews. This was also the case for several of the studies investigating comorbid PTSD (e.g. Mueser et al, 2004; Kilcommons & Morrison, 2005; Strauss et al, 2006).

Conclusions

This systematic review highlighted a number of important issues. The conceptual validity of PP-PTSD is weakened by the fact that the experience of psychosis and its treatment do not necessarily constitute a *criterion A* event. Despite concerns about whether PTSD symptoms can be delineated from the symptoms of psychosis, research findings highlighted in this systematic review suggest that symptoms of comorbid PTSD/PP-PTSD are not significantly associated with levels of negative and positive symptoms of psychosis. However, distinguishing comorbid PTSD and PP-PTSD symptoms from anxiety and depression occurring comorbid to psychosis appears to be more difficult. To

date only cursory attempts have been to understand how comorbid PTSD in psychosis is associated with the emergence of PP-PTSD. Although comorbid PTSD may contaminate the assessment of PP-PTSD, it is also possible that traumatic events independent of the experience of psychosis may constitute part of a process that leads to PP-PTSD. Research into both PP-PTSD and comorbid PTSD has been weakened by the fact that a number of studies used self-report measures to assess PTSD symptomatology. Future research should focus on using interview-based measures.

A key outcome of the current systematic review was the important role that methodological quality was highlighted as playing in the prevalence rates obtained for comorbid PTSD. It is clear that greater levels of methodological rigor (particularly in the sampling of participants) were associated with lower the prevalence rate of comorbid PTSD. Another important finding was the impact that individuals' appraisals about the experience of psychosis appear to have on levels of PP-PTSD. Appraisals about the nature of persecutory delusions were correlated significantly with the level of PP-PTSD (Chisholm et al, 2006). Despite no significant differences in the number or duration of admissions, individuals with PP-PTSD appraised their experiences of admission to be more distressing and stressful (Shaw et al, 2002; Jackson et al, 2004). Chisholm et al (2006) also found that perceptions about helplessness, control, and social support during the index episode were associated with PP-PTSD. Appraisals have been shown to play a role in other threat-based affective difficulties following psychosis i.e. post-psychotic depression (e.g. Birchwood et al, 1993; 2000). The associations between PP-PTSD and levels of depression; post-psychotic depression and appraisals (Birchwood et al, 1993;

2000); and appraisals and PP-PTSD, highlight the possibility that similar mechanisms might be underlying different forms of threat-based psychopathology associated with emotional adaptation to psychosis.

Future Directions

Owing to concerns about conceptual validity it may be helpful to move away from using that term PP-PTSD. Instead, *emotional distress associated with the experience of psychosis* may capture the nature of individuals' difficulties whilst avoiding clinical confusion with comorbid PTSD and the thorny issue of whether aspects of psychosis or its treatment actually constitute *criterion A* events. This approach would also facilitate an examination of mechanisms potentially linking what was formerly referred to as PP-PTSD with other forms of threat-based psychopathologies in psychosis e.g. post-psychotic depression (Birchwood et al, 1993; 2000). It is hoped that identifying overarching commonalities in different threat-based psychopathologies would help bring an end to the apparent proliferation of different terms being used to describe emotional adaptation to psychosis (e.g. PP-PTSD, Post-psychotic depression, sealing over etc). As such, placing the current systematic review (particularly the strong association between PP-PTSD and appraisals of psychotic experiences) in the context of a broader review of literature investigating emotional adaptation to psychosis, may help facilitate an analysis of whether common psychological mechanisms potentially underlie a variety of threat-based psychopathologies resulting from emotional adaptation to psychosis.

Weaknesses of the current systematic review

A number of limitations were set by the parameters within which this systematic review was conducted i.e. only papers written in the English language were covered, and only published manuscripts were reviewed (leaving the review susceptible to publication bias). The ability of this review to comment on the potential impact of methodology on the prevalence of PP-PTSD was limited by the small number of studies that have investigated the phenomenon. The variety of different assessment measures used to assess PTSD and potential correlates meant that a degree of caution should be exercised in interpreting the synthesis of research findings. The research papers included in this systematic review were rated for methodological quality by only one reviewer. In hindsight, it would have been preferable to verify these scores by employing a second rater. Finally, the section of the systematic review that focused on comorbid PTSD included some studies that recruited patients with diagnoses of serious mental illnesses other than just psychotic disorders.

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Table 1 Classification of traumatic events experienced by psychotic patients (Tarrier, 2005)

Event Type	Event Description
An independent traumatic event	The patient's account of an unambiguous external event, which is objectively verifiable. That is, it is documented in some type of record or is verified by a third person.
A possibly independent traumatic event	The patient's account of an external event for which there is no corroborating information.
A dependent traumatic event	An event that objectively results from the psychosis and/or its consequences, such as hospitalization, detainment under a lawful mental health act (involuntary detention), and coercive treatment. This category of event type includes the general trauma of psychosis that can occur when one is suffering from a serious illness, for example cancer.
An illness-related traumatic event	An event that is part of the illness experience, for example, an event relating to a delusional interpretation or fear, such as persecution or paranoia, or an event relating to a perceived threat as part of a hallucinatory experience.

Table 2. Scales employed to measure PP-PTSD

PTSD Scale	Study authors	PP-PTSD Prevalence Rate
PTSD Interview (Watson et al, 1991): DSM-III-R PTSD	Priebe et al (1998)	51.0%
Penn PTSD Inventory (Hammarberg, 1992). Scores of 35 or above	Kennedy et al (2002)	Schizophrenia = 23.0% Bipolar = 40.0%
Clinician administered PTSD Scale (CAPS-1, Blake et al, 1995)	Meyer et al (1999) Shaw et al (2002)	11.0%
CAPS (Blake et al, 1990). DSM-III-R PTSD	Shaw et al (1997)	52.0%
The PTSD Scale (Friedman et al, 1986): Self-report DSM-III PTSD	McGorry, et al (1991) Jackson et al (2004)	45.8% (4 months) 34.5% (11 months) 31.0%
None assessed.	Harrison & Fowler (2004)	N/A
Not assessed with a diagnostic measure. IES - Total score of 26 or greater used to indicate clinical caseness for PTSD Devilly (2004) criteria: 0-8: subclinical, 9-25: mild, 26-43: moderate, 44 to 75: severe	Chisholm et al (2006)	61.0%
Not assessed with a diagnostic measure. IES - Total scores of greater than 30 have commonly been adopted to indicate clinical caseness for PTSD (e.g. Sembi et al, 1998).	Morrison et al (1999)	44.0%

Table 3. Prevalence rates and the number of months since last discharge

Study	Length of time since last discharge (months)	Rates of PP-PTSD (%)
*Meyer et al (1999)	.00 (inpatient sample)	11.0%
Shaw et al (1997; 2002)	.00 (inpatient sample)	52.3%
McGorry et al (1991)	4.00	45.8%
Chisholm et al (2006)	4.97 (i.e. 149 days)	61.0%
McGorry et al (1991)	11.00	34.5%
Jackson et al (1991)	18.00	31.0%
Morrison et al (1999)	27.69	44.0%

* This study was identified as an out-lying study in correlational scatter-plots

Table 4: Assessment tools used to diagnose PTSD comorbid to serious mental illness

PTSD Scale	Study authors	Prevalence Rate of Comorbid PTSD
PTSD Symptom Scale (PSS-I): DSM-IV PTSD	Sarkar et al (2005)	27%
The structured clinical interview for DSM-IV (SCID; Del-Ben et al, 2001)	Braga et al (2005)	3.8%
The Structured Clinical Interview for DSM-IV axis I disorders (SCID) (First et al, 1996)	Zimmerman & Mattia (1999)	57.9%
	Gearon et al (2004)φ	42.0%
	Pallanti et al (2004)	1.3%
Structured Clinical Interview for DSM-III-R- Patient version. DSM-III-R PTSD	Strakowski et al (1995)	23.0%
PTSD Checklist (PCL; Blanchard et al, 1996): Self report screening measure. DSM-IV PTSD	Mueser et al (2004)	34.8%
	Mueser et al (2001)¥	Time 1: 50.0% Time 2: 35.0%
	Strauss et al (2006)	48.0%
Davidson PTSD rating scale	Scheller-Gilkey et al (2004)	Not reported
Clinician administered PTSD Scale (CAPS, Blake et al, 1990)	Resnick, et al (2003)	13.0%
	Chubb & Bisson (1996)	50.0%
	Mueser et al (2001)¥	Time 1: 27.0% Time 2: 21.0%
CAPS-S (Gearon et al, 2001) Modified Clinician administered PTSD Scale with Criterion A excluded.	Gearon et al (2003)	46.0%
	Gearon et al (2004)φ	21.0%
PTSD Checklist (PCL-S; Weathers, Litz, Herman et al, 1993).	Mueser et al (1998)	43.0%
	Frueh et al (2005).	27.0%
The Mini International Neuropsychiatric Interview (Mini, version 4.4) was administered to all participants to confirm the diagnosis of schizophrenia and screen for comorbid anxiety disorders. N.B. If DSM-IV PTSD criteria were met then the CAPS (Blake et al, 1990) was administered.	Tibbo et al (2003)	0.0%
The trauma and DSM-III-R PTSD module used in the national comorbidity Survey (NCS; Kessler et al, 1995)	Neria et al (2002)	14.3%
Posttraumatic Stress Diagnostic Scale (PDS, Foa, 1995)	Howgego, et al (2005)	33.3%
Composite International Diagnostic Interview (CID-I; Kessler, 1994)	Switzer et al (1999)	42.0%
DSM-III-R: Post-traumatic Stress Disorder Symptom Scale – Self-Report (Foa et al, 1993):	Kilcommons, & Morrison (2005)	53.1%

φ Gearon et al (2004) used two different assessments measures

¥ Mueser et al (2001) used two different assessments measures

Table 5. Results of Hierarchical Multiple Regression for prevalence rates of comorbid PTSD in psychosis

	R	R2	Adjusted R2	F	Sig. of F	Beta
Sampling subscore (%)	.63	.40	.37	11.35	0.004	-.63

Chapter 3: Major Research Project Proposal

Is post-psychotic PTSD consistent with the cognitive
model for persistent PTSD?

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*Major Research Project Proposal (3rd draft) submitted in partial fulfilment of the
requirements for the degree of Doctorate in Clinical Psychology (D.Clin. Psy.)*

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Introduction

The primary aim of the study is to determine if post-psychotic PTSD (PP-PTSD) is consistent with Ehlers and Clark (2000) cognitive model for persistent PTSD. For PP-PTSD is to be considered a conceptually valid form of persistent PTSD, individuals experiencing it (relative to those with psychosis who do not) should experience both ‘a sense of serious current threat...and idiosyncratic negative appraisals of a traumatic event’ (Ehlers and Clark, 2000). In addition, this study for the first time seeks to extend the work of Holmes, Grey and colleagues on trauma-related intrusions in PTSD to post-psychotic PTSD. Specifically, attempts will be made to establish if intrusions experienced by individuals with PP-PTSD can be matched to emotional ‘hot-spots’ in autobiographical memory.

A cognitive model for persistent PTSD

Ehlers and Clark's (2000) cognitive model of persistent PTSD suggests that a key feature of persistent PTSD is that individuals are characterized by idiosyncratic negative appraisals of the traumatic event and/or its sequelae that have the common effect of creating a sense of *serious current threat*. This threat can be either external (e.g. the world is a dangerous place, people are dangerous) or internal (e.g. a threat to one's view of oneself as a capable/acceptable person who will be able to achieve life's important goals). The sense of current threat that is maintained by negative appraisals is accompanied by intrusions, arousal, and strong emotions such as anxiety, anger, shame, or sadness. The negative appraisals also prompt a series of dysfunctional cognitive and

behavioural responses that have the short-term aim of reducing distress but have the long-term effect of preventing cognitive change and therefore maintain the disorder.

Diagnosing PTSD in Psychosis

To fulfil DSM-IV criteria for PTSD, an identifiable stressor which is potentially life-threatening needs to be defined, and the content of the symptoms should refer to the stressor (Breslau, Chase, & Anthony, 2002). Posttraumatic stress disorder-type symptoms (intrusive re-experiencing, avoidance, hyper-arousal, etc.) on their own, without a connection to the stressor (i.e. *Criterion A* in DSM-IV), would not qualify for a PTSD diagnosis (Green, Lindy, & Grace, 1995). However, *Criterion A* has recently been criticized for being too restrictive (Power & Dalgleish, 1997) because it fails to acknowledge the psychological impact of events such as childhood abuse (Allen, 2001) or psychosis (Shaw, McFarlane & Bookless, 1997), which are not themselves life-threatening, but traumatic nonetheless.

The observation that Post Traumatic Stress Disorder (PTSD) and psychosis can co-occur was first made by Jeffries (1977). The intervening years have seen a number of studies claim that a significant number of patients with psychosis fulfil the criteria for PTSD (Shaw, McFarlane, & Bookless, 1997; McGorry, Chanen, McCarthy et al, 1991; Priebe, Broker, & Gunkel, 1991). McGorry et al (1991) used a modified version of the PTSD scale (Friedman, Schneidman, West, & Corson, 1986) to detect PTSD in psychosis. This 15 item self-report measure links directly to DSM-IV criteria for PTSD, but excludes the need for fulfilment of *Criterion A*. Shaw et al (2002) however, have criticised the use of a self-report measure to classify PTSD in psychosis. Instead, they

advocate the use of intensive interview-based methods to examine the contribution of treatment and illness factors in the development of what they term ‘post-psychotic post traumatic stress disorder’ (PP-PTSD). Shaw et al (2002) used the *Clinician Administered PTSD Scale* (CAPS-1; Blake et al, 1995), with patients being asked to consider the symptom questions (i.e. B, C, D, phenomena) as reactions to the experience of psychosis and its treatment. The CAPS can be used to assess both current and lifetime PTSD symptomatology. The accepted cut-off score of 50 or higher (Blake et al, 1995) was used to rate each participant as PTSD positive. Gearon, Thomas-Lohrman and Bellack (2001) have produced a modified version of the CAPS for use with patients with schizophrenia (i.e. the CAPS-S). Gearon, Bellack and Tenhula (2004) have provided preliminary evidence that the CAPS-S is both a reliable and valid measure.

Rates of post-psychotic PTSD

A number of studies have investigated the prevalence of PP-PTSD (see table 1). At discharge Frame and Morrison (2001) noted a prevalence rate of 67%. Approximately one week after discharge, Shaw et al (2002) put the figure at 52%. Approximately 4-6 months post-discharge Frame and Morrison (2001) obtained a figure of 50%. McGorry et al (1991) reported a rate of 46% four months post-discharge, which declined to 35% eleven months after discharge. Jackson, Knott, et al (2004) found that 31% of their sample could be assigned a diagnosis of PTSD approximately eighteen months after their first episode of psychosis. Together these studies provide support for a link between the prevalence of PP-PTSD and time since hospital discharge. The one notable exception to the bulk of studies reporting large proportions of individuals with PP-PTSD was Meyer et

al (1999). Using a Finnish sample of patients with psychotic disorders, they found a PP-PTSD rate of 11% eight weeks following discharge. The authors highlight a number of potential reasons for the disparity between their findings and the higher prevalence rates noted in other studies:

- They excluded patients with affective psychoses, whereas studies like McGorry et al (1991) and Shaw et al (1997) did not. However, this argument is weakened by the fact that Priebe et al (1998) obtained a PTSD rate of 51% using a sample of 105 patients with a diagnosis of schizophrenia.
- The hospital from which patients were recruited utilised a need adapted treatment model for schizophrenia which focused on an active avoidance of coercive measures and subsequent traumatic symptoms.

This second point raises the possibility that the participants recruited in Meyer et al's (1999) study are not representative of patients presenting with schizophrenia generally. Relative to patients attending other hospitals, the participants in this study appear to be at a reduced risk of experiencing trauma associated with treatment. So, the comparatively low prevalence rates of PP-PTSD obtained by Meyer et al (1999) may be linked to a bias in sampling. In addition, the treatment of patients with psychosis in Finland routinely incorporates the use of psychotherapy with each patient. The utilisation of different treatment methods may therefore be an important factor in the lower levels of posttraumatic stress symptoms noted in this study.

INSERT TABLE 1 ABOUT HERE

What causes post-psychotic PTSD?

Studies have highlighted how particular aspects of the experience of acute psychosis can be sufficiently traumatic to precipitate the development of PP-PTSD (Lundy, 1992; McGorry et al., 1991; Shaw, McFarlane, & Bookless, 1997; Williams-Keeler et al., 1994). Some authors propose that hallucinatory and delusional disturbances can shatter the person's experience of themselves, the world, and others (Bayley, 1996; Davidson & Strauss, 1992; Shaner & Eth, 1989) in a similar way to non-psychotic trauma (Janoff-Bulman, 1979). The accounts of sufferers' of PP-PTSD (e.g. Herrig, 1995; Jordan, 1995) and clinical case studies clearly depict the terror of psychosis. Descriptions of the re-experiencing of psychotic episodes, and the widespread avoidance of cognitive, affective, and situational reminders of the experience (Shaner & Eth, 1989), appear to be consistent with current conceptualizations of PTSD (Ehlers & Clark, 2000).

It is also possible that PP-PTSD may be linked to traumatic experiences of psychiatric services and admission to hospital. Morrison, Bowe, Larkin, and Nothard (1999) noted that in a sample of 34 patients, the prevalence of PTSD in relation to psychiatric admission (defined using a cut-off score on the Impact of Events Scale; Horowitz, Wilner, & Alvarez, 1979) was found to be 44%. The majority of patients also reported experiencing strong and varied emotional reactions to psychiatric admission. The implementation of compulsory admission procedures, or use of procedures such as

enforced sedation, restraint, and seclusion, has been suggested to heighten the person's sense of fear, victimization and helplessness over their experiences (Beveridge, 1998; Brody, 1995; Rooney et al., 1996). Consideration of such stresses led McGorry and his colleagues to suggest that hospital experiences may be a direct cause of PP-PTSD (McGorry et al., 1991). However, neither the McGorry study nor the study reported by Priebe, Broker, and Gunkel (1998) found any significant relationship between the number, or circumstance (voluntary/enforced), of hospital admissions and the severity/rate of PP-PTSD.

Operationalising predictions about persistent PTSD in PP-PTSD

According to Ehlers and Clark's (2000) cognitive model of persistent PTSD, PP-PTSD should be characterised by: negative idiosyncratic appraisals, a sense of serious current threat, and emotional hot-spots in autobiographical memory of traumatic experiences.

1. Negative idiosyncratic appraisals

Current models of PTSD place great emphasis on the role of coping mechanisms and psychological appraisals of trauma to help account for the large individual differences in responses to the same traumatic events (Joseph, 1999; Ehlers & Clark, 2000). Jackson, Knott, et al (2004) note that in psychosis, knowledge is limited about the mediating effects that individuals' appraisals of psychosis-related experiences have on the potential for these experiences to be considered traumatic (e.g. the degree to which the patient appraised an admission to hospital as stressful and how s/he coped with it).

Ehlers & Clark's (2000) claim that idiosyncratic negative appraisals of a traumatic event are an important determinant of PTSD could be investigated in PP-PTSD using scales designed to assess subjective appraisals of psychotic experiences (e.g. the Interpretation of Voices Inventory and the Beliefs about Paranoia Scale).

2. A sense of current serious threat

Fear of recurrence in psychosis: PTSD occurring in the context of a chronic, or potentially recurrent, illness is an area of growing research interest. Black and White (2005) recently investigated post-traumatic stress symptoms (PTSS) experienced by haematological cancer survivors. They note that 'fear of recurrence' in cancer appears to relate to Ehlers & Clark's (2000) model because 'it represents a perception of serious current threat and a belief that the trauma is not time limited' (Black & White, 2005). The hypothesis that individuals with greater fear of recurrence would be more likely to suffer PTSS was supported. Black and White (2005) conclude that this finding supports the contention that 'fear of recurrence' may be perceived as a sense of serious current threat, thus affecting individuals' appraisals and memories of trauma and increasing the possibility of them experiencing PTSS. To date, no attempt has been made to establish if similar links exist in individuals who have remitted psychosis – another disorder that can have a chronic, recurrent course. Gumley and Schwannauer (2006) have recently devised a Fear of Recurrence Scale (FoRSe) for use with individuals with psychosis, thereby facilitating an exploration of links between fears of recurrence in psychosis and PP-PTSD.

Intolerance of uncertainty: Psychosis has a potentially chronic, recurrent course. As such, life with psychosis can be fraught with uncertainty. It is possible that the extent to which individuals are intolerant of uncertainty may be linked to threat appraisal in PP-PTSD. Intolerance of uncertainty has been defined as ‘an excessive tendency to find uncertain situations; stressful and upsetting, to believe that unexpected events are negative and should be avoided, and to think that being uncertain about the future is unfair’ (Dugas, Hedayati, Karavidas et al, 2005). Intolerance of uncertainty is assessed using the Intolerance of Uncertainty Scale (IUS; Freeston et al., 1994). To date no research has not been conducted to investigate if levels of intolerance of uncertainty are elevated in patients with PTSD or PP-PTSD.

3. Intrusive images and ‘hot-spots’ in trauma memories

Several authors have recently identified the importance of ‘hot-spots’ in the memory of traumatic events (Ehlers & Clark, 2000; Grey, Young, & Holmes, 2002; Richards & Lovell, 1999). The term ‘hotspot’ is used to refer to the specific parts of trauma memory that cause the highest levels of emotional distress, that may be difficult to recall to mind deliberately, and that are associated with intense reliving of the trauma. Hotspots can be explored during exposure/reliving therapy (Foa, Riggs, Massie, & Yarczower, 1995) where the trauma is discussed in great detail, encouraging high affect. Holmes et al’s (2005) findings indicated that patients can match the majority of their intrusive images to a given hotspot i.e. the fragments of the trauma being involuntarily re-experienced corresponded to the worst moments of explicit trauma recall. These findings provide support for Ehlers & Clark (2000) claim that ‘hotspots’ are moments re-experienced as

intrusions. Holmes et al (2005) note that themes in hot-spot cognitions can be viewed as those: concerning a sense of threat to one's physical integrity (e.g. general threat), or those which were not apparently related to physical threat, but to threat to one's sense of self (e.g. abandonment and low self-esteem). Although Holmes & Steel (2004) have investigated schizotypy as a vulnerability factor for traumatic intrusions, to date no research has been conducted to investigate emotional hot-spots in PP-PTSD.

The Current Study

Based on the preceding review it should be possible to operationalise the concept of PP-PTSD in terms of: a sense of current serious threat (i.e. fear of recurrence and intolerance of uncertainty), negative idiosyncratic appraisals of psychotic experiences (i.e. interpretation of voices, beliefs about paranoia) and emotional hot-spots linked to intrusive autobiographical memories.

Hypotheses:

1. Patients presenting clinically with post-psychotic PTSD will be more fearful of their psychosis recurring than will remitted psychotic participants without post-psychotic PTSD matched for gender, age and number of psychotic episodes.
2. Patients presenting clinically with post-psychotic PTSD will present with greater intolerance of uncertainty relative to remitted psychotic participants without post-psychotic PTSD matched for gender, age and number of psychotic episodes.
3. Patients presenting clinically with post-psychotic PTSD will score significantly higher on the Interpretation of Voices Inventory and the Beliefs about Paranoia

Scale than will remitted psychotic participants without post-psychotic PTSD matched for gender, age and number of psychotic episodes.

4. Intrusive memories experienced by patients presenting with post-psychotic PTSD will link directly to emotional hot-spots in their autobiographical memory of the subjective experience of psychosis.

Methodology

Participants

Two groups of participants will be recruited. *Group one* will consist of patients presenting with post-psychotic PTSD (PP-PTSD). *Group two* will consist of remitted psychotic patients without PP-PTSD matched for age, gender and number of previous psychotic episodes.

Due to the exploratory nature of this research it is not possible to perform a sample size calculation. Provisionally it is hoped that 10 participants will be recruited to each of the two groups (total $n = 20$). This study will seek to determine the magnitude of the differences between the two groups. A preliminary data analysis will be conducted. If effect sizes indicate that larger numbers of participants are required then recruitment will be continued.

Participants will be aged between 18-65 years old. They will be required to meet DSM-IV criteria (A.P.A, 1994) for schizophrenia. Diagnoses will be confirmed by inspecting case-notes. Only individuals who are not ‘actively psychotic’ (defined by a score of 4 or less on any single item of the positive symptom scale of the PANSS) will be asked to participate. Participants will be required to consent before being included in the study.

Individuals who are ‘actively psychotic’ (defined by a score of 5 or more on any single item of the positive symptom scale of the PANSS) will be excluded. Participants will be excluded by the presence of; a learning disability, a primary diagnosis associated with psycho-active substance use, the presence of organic disorder, or language difficulties that preclude assessment (e.g. non-English speakers).

Tarrier (2005) recently proposed a classification system for traumatic events experienced by psychotic individuals. Four different categories have been proposed: *independent*, *possibly independent*, *dependent* and *illness-related* (see table 2). Only traumatic events which are *dependent* or *illness-related* will be considered in this study. Individuals who have been diagnosed with PTSD subsequent to trauma unrelated to their experience of psychosis, and those who have experienced a significant trauma unrelated to their psychosis (i.e. those with *independent/possibly independent* trauma) will be excluded.

INSERT TABLE 2 ABOUT HERE

Recruitment

Participants will be recruited from community mental health teams in Glasgow. Appropriate community mental health teams will be identified and the research aims presented to them. A variety of different mental health care professionals will be able to recommend potential participants to the study including: psychiatrists, clinical psychologists and community psychiatric nurses. Dr Kathryn Sowerbutts (Consultant Psychiatrist, Auchinlea House) will be a co-investigator for the study.

The *Clinician-Administered Posttraumatic Stress Disorder Scale for use with patients with schizophrenia* (CAPS-S; Gearon et al, 2001) will be used to establish the presence of PP-PTSD. By the very nature of their concerns, individuals with PP-PTSD may be reluctant to participate in research aimed at discussing their experiences. This highlights the need for the researcher to work collaboratively with clinicians who know the patients. This will ensure that the specific sensitivities and concerns of patients are considered before they are approached about participation.

Participants for *Group 2* (psychotic patients without PP-PTSD) will be recruited on a voluntary basis using letters sealed in envelopes outlining the nature of the research and what it entails. The letters will be given to patients deemed suitable by reception staff when they attend for appointments. Advertisements inviting participation will also be placed in venues attended by suitable patients.

Measures

The *Clinician-Administered Posttraumatic Stress Disorder Scale for use with patients with schizophrenia* (CAPS-S; Gearon et al, 2001) is a 17-item structured interview that measures the 17 symptoms of PTSD noted in DSM-IV. The frequency and intensity of each symptom is rated. The test is essentially a modified version of the CAPS (Blake et al, 1990). The language has been changed to an 8th grade reading level, additional behavioural definitions and anchors have been inserted, and examples relevant to the life experiences of this population have been provided. Gearon et al (2001) also added specific interview prompts to help patients and interviewers differentiate between psychotic thought processes that were obviously unrelated to trauma versus symptoms of PTSD (e.g. paranoid delusions vs. hypervigilance).

The *Positive Scale of Positive and Negative Syndrome Scale* (PANSS; Kay, Fiszbein & Opler, 1987): The PANSS is a 30 item observer rated scale used to assess the presence and severity of symptoms of psychopathology, including positive (e.g. delusions, hallucinatory behaviour) and negative (e.g. blunted affect, emotional withdrawal) symptoms. Derived scores include 'positive', 'negative' and 'global psychopathology' scale scores. Psychometric studies have reported good inter-rater reliability (e.g. correlation coefficients around 0.80) and satisfactory internal consistency, construct validity and concurrent validity in relation to other measures of psychopathology (Kay et al., 1988; Kay et al, 1989; Peralta & Cuesta, 1994).

The *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983) is a widely used self-report instrument designed as a brief assessment tool of the distinct dimensions of anxiety and depression in non-psychiatric populations (Hermann, 1997). It is a 14 item questionnaire that consists of two sub-scales of seven items designed to measure levels of both anxiety and depression. The HADS is quick and easy to administer and has readily been applied to a range of clinical presentations where anxiety and depression may co-exist with the manifestation of physical illness (Walker et al, 1999). Bjelland, Dahl, Haug & Neckelmann (2002) note that the psychometric properties of the HADS are such that it can be used with confidence clinically.

The *Impact of Event Scale-Revised (IES-R)* (Weiss, 1996) is a 22 item scale, with items loading onto three factors: intrusions, avoidance and hyper arousal, and which provides a measure of symptomatology relating to a specific traumatic stressor.

The *Fear of Recurrence Scale* (FoRSe; Gumley & Schwaunnauer, 2006) consists of 23 items generated from participants' idiosyncratic early signs of psychosis. Analysis of the factor structure of the FoRSe revealed three different factors: Intrusiveness: e.g. 'I have experienced thoughts intruding into my mind'. Awareness: e.g. 'The world has seemed more vivid and colourful'. Fear of recurrence: e.g. 'The thought of becoming unwell has frightened me'.

The *Intolerance of Uncertainty Scale* (IUS; Freeston et al., 1994) consists of 27 items assessing: uncertainty, emotional and behavioural reactions to uncertain situations, implication of being uncertain, and attempts to control the future. The IUS has been

found to demonstrate sound validity (Freeston et al., 1994) and reliability (Dugas et al., 1997).

The *Interpretation of Voices Inventory* (IVI: Morrison et al., 2002) is a 26-item questionnaire that measures the beliefs that people hold about hearing voices. There are three sub-scales measuring: metaphysical beliefs, positive beliefs and beliefs about loss of control. Each question is worded hypothetically ("If I were to hear sounds or voices that other people could not hear, I would probably think that...") and participants respond to each item by circling how much they agree with the statements about voice (1 = not at all, 2 = somewhat, 3 = moderately so, 4 = very much).

The *Beliefs About Paranoia Scale* (BAPS: Morrison, Gumley, Schwannauer, et al, 2005) is a self-report measure to assess meta-cognitive beliefs about paranoia in non-patients. It has 18 items and three empirically distinct subscales: negative beliefs about paranoia, beliefs about paranoia as a survival strategy, and normalising beliefs. The scale has been shown to have acceptable internal consistency and was associated with measures of paranoia, delusional ideation and anxiety (Morrison et al, 2005).

Design

A cross-sectional design will be employed. Descriptive, between-group and correlational analyses will be performed. The independent variable in all between group analyses will be whether participants have PP-PTSD. The dependent variables will be: measures of serious current threat (Fear of Recurrence and Intolerance of Uncertainty), measures of

symptom/illness appraisal (Belief about Paranoia Scale, Interpretation of Voices Inventory) and levels of anxiety/depression (HADS).

Within group analyses will be conducted to examine links between intrusive autobiographical memories and emotional hot-spots in the PP-PTSD group.

Procedure

Stage 1 – Investigating Between Group Differences

Informed consent will be sought from each participant. Privacy, confidentiality and right to withdraw from the study (without detriment to current or future treatment) will be discussed (Barker et al, 2002). After being briefed on the nature of the study, potential participants will be allowed a minimum of 24 hours to consider whether they wish to consent.

All participants will be required to complete the CAPS-S (Gearon et al, 2001). This will help establish that participants in Group 1 have PP-PTSD, whilst also ensuring that participants in Group 2 do not.

Participants in both Group 1 and Group 2 will be required to complete: the PANSS, the FoRSe, the IUS, the IVI and the BAPS. However, unlike participants in Group 2, participants in Group 1 (the PP-PTSD participants) will be asked to complete the IES-R.

The order of administration of assessments will be randomised (where possible) to control for order effects.

For the convenience of participants, the assessment battery will be administered over the course of 3 separate hourly sessions (one hour for the CAPS, one hour for the PANSS and another hour for the remaining measures).

Stage 2 – Investigating Intrusive Thoughts Associated with PP-PTSD

The principal aims of *Stage 2* of the study is to investigate intrusions linked to individuals' subjective experience of psychosis, and evaluate a recently devised treatment programme for traumatic reactions to psychosis (Gumley and Schwannauer, 2006). Specifically, this section of the research will test *Hypothesis 4*: intrusive memories experienced by patients presenting with post-psychotic PTSD will link directly to emotional hot-spots in their autobiographical memory of the subjective experience of psychosis.

Only participants in Group 1 (those identified as having PP-PTSD) will be included in this part of the research. The implementation of this component of the study depends on funding being secured from Greater Glasgow R & D network. The proposed funding will be used to recruit a research therapist who will deliver a single case series treatment programme. In the absence of funding this part of the research will not proceed.

Following an adaptation of the definition used by Holmes et al (2005), intrusions will be defined as follows:

'By intrusions we mean memories that suddenly pop into your mind as if from nowhere. They may take you by surprise, and feel like the events are happening again NOW in the present. We do not mean times when you deliberately choose to think about these things. Intrusions may take the form of visual pictures, sounds, smells etc, as well as verbal thoughts'.

Hotspots will be elicited during a 'reliving' session. The person will be asked to recount their intrusive memory, with their eyes closed, in the first-person present-tense, giving as much detail as possible, including their emotional and cognitive states (e.g. Foa et al., 1995; Foa & Rothbaum, 1998). Immediately after the recollection, patients will be asked to identify the 'worst moments' in their account. This information will be entered into a table, which will record for each hotspot, the situation, the emotions, and associated thoughts or meanings. Finally patients will be asked if any of their intrusive memories matched any of their hotspots. To facilitate them do this, they will be shown the table of the hotspots that they describe combined with a list of the previously described intrusions. Patients will then be asked:

'Is the content of your intrusions the same as any of your worst moments? If yes, please show me which one it is.'

A manual devised by Holmes & Grey (2002) to help identify intrusive images, hotspots and any potential matches between them will be used. In addition, regular supervision sessions will be held to address difficulties that may arise.

Holmes et al's (2005) expressed concerns that asking patients to match their hotspots with their intrusions potentially introduces a bias to over-reporting (due to familiarity) or under-reporting (due to preciseness of the moment). They caution that using blind-raters could also introduce a different bias in that the rater does not have access to the mental image, and may therefore be less likely to make the content link.

In the current study, PP-PTSD participants will be asked to match their emotional hotspots to intrusions. In addition however, two blind-raters working independently will match transcribed accounts of participants' emotional hotspots to the list of intrusions that they have provided. This will facilitate an analysis of inter-rater reliability.

Dr Emily Holmes, a recognised authority on hotspots in trauma memory, has kindly agreed to cooperate in the current research.

Statistical Analyses

Due to the small sample size non-parametric Mann Whitney tests will be use to test the three between group hypotheses. Cautiously, and assuming linearity with dependent variables, an analysis of covariance will be used with HADS anxiety as the covariate, to evaluate the robustness of effects. For the fourth hypothesis, within group analyses will be conducted to ascertain the proportion of themes in intrusive thoughts that can be matched to emotional hotspots in autobiographical memory.

Ethical Considerations

There are a number of factors that have the potential to impact on the ethical viability of this study:

1. The nature of the research may involve participants talking about episodes from their past that cause them distress. The written consent that will be sought from participants will be explicit about the potentially distressing nature of aspects of the research.
2. When a member of the research team is meeting with a participant, care will be taken to ensure that they have access to a key-worker or nominated representative in event of them becoming distressed.
3. It is important that participants with PP-PTSD receive adequate support for the difficulties that they are experiencing. Prior to agreeing to participate in the research, individuals with PP-PTSD will be asked to consent to data collected relating to their trauma being shared with the treatment team. If funding for *Stage 2* of the study is secured, the treatment programme for individuals with PP-PTSD will form an integral part of the research. If the application for funding is unsuccessful, then the study's findings will be fed back to the treatment team so that clinical practice can be adapted to meet any needs not currently being met.
4. As a result of the nature of their past experiences, individuals with PP-PTSD will be reluctant to self-select. It is also highly likely that many of these individuals will be unaware of the reasons behind the on-going distress they are experiencing.

For these reasons it is crucial that clinicians be involved in the recruitment of participants with PP-PTSD

The involvement of clinicians in the recruitment of potential participants raises the possibility that patients may feel obliged to participate in the study. It is paramount that individuals involved in the research guard against the possibility of individuals feeling coerced into participating. It will be emphasised to patients that participation is entirely voluntary.

Potential benefits of research:

1. This research will facilitate systematic identification of psychological needs consistent with NHS Quality Improvement Scotland (NQIS) guidelines for schizophrenia.
2. Possible implications for service delivery include an increased awareness of the potential for patients to develop PP-PTSD as a result of their subjective experience of psychosis. The research may also have theoretical implications in that it could potentially facilitate improved understanding of the emotional consequences of the subjective experience of psychosis.
3. Potential clinical benefits of this research include assisting in the development of psychological therapies aimed at treating individuals' responses to psychosis-related trauma.

Ethical Approval

Application for ethical approval will be submitted to Greater Glasgow Primary Care Trust (GGPCT) Committee. The project will be registered under the Trust Research and Development Directorate. British Psychological Society Guidelines on ethical issues in research (BPS, 1997) will be adhered to during data collection.

Timescale

- 28th March 2006 – Deadline for submission to Research Ethics Committee.
- April/May/June – Presentation of Research Aims to Community Teams.
- Data collection beginning thereafter.

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Table 1: Studies investigating the prevalence rates of PP-PTSD

Paper	Time of PP-PTSD Assessment	Criteria used to establish PP-PTSD	Prevalence of PP-PTSD
Frame & Morrison (2001)	At hospital discharge	Davidson Trauma Scale (DTS, Davidson, 1996) Trauma type = 'general and in relation to specific events, including psychosis and hospitalization'. Hierarchical regression analyses revealed that: 'the experience of psychotic symptoms (as well as hospitalization) made a substantial contribution to the traumatising of the sample'.	67.0%
Shaw, McFarlane & Bookless (1997)/Shaw, McFarlane, Bookless & Air (2002)	Approximately one week post-discharge	CAPS-1, Blake et al, 1995): DSM-IV PTSD. Patients asked to consider the symptom questions (B, C, D phenomena) as reactions to the experience of psychosis and its treatment. Cut-off score of 50 or higher to ascertain PTSD.	52.3%
Meyer, Taiminen, Vuori, Aejjaelae & Helenius (1999)	Approximately 8 weeks post discharge	Clinician administered PTSD Scale (CAPS, Blake et al, 1995): DSM-IV PTSD. Specific psychotic experiences (e.g. frightening hallucinations and delusions and negative aspects of treatment were used as the 'traumatic event' in the assessment of posttraumatic events. The Clinician rating scoring rule assessing both clinical and sub-clinical symptoms, was used to estimate the common prevalence of clinical and sub-clinical PTSD.	11.0% Taking into account both clinical and sub-clinical symptoms, PTSD diagnosis was met by 17%
McGorry, Chanen, McCarthy, Van Riel, Mckenzie & Singh (1991)	Approximately 4 months post-discharge	The PTSD Scale (Friedman et al, 1986): Self-report measure linked to DSM-III PTSD Used to establish PTSD 'caseness' in a categorical sense. Modified so that PTSD was explored in relation to the experiences of hospitalization and psychosis	45.8%
Frame & Morrison (2001)	Approximately 4-6 months post-discharge	Davidson Trauma Scale (DTS, Davidson, 1996) Trauma type = 'general and in relation to specific events, including psychosis and hospitalization'. Hierarchical regression analyses revealed that: 'the experience of psychotic symptoms (as well as hospitalization) made a substantial contribution to the traumatising of the sample'.	50.0%
McGorry, Chanen, McCarthy, Van Riel, Mckenzie & Singh (1991)	Approximately 11 months post-discharge	The PTSD Scale (Friedman et al, 1986): Self-report measure linked to DSM-III PTSD Used to establish PTSD 'caseness' in a categorical sense. Modified so that PTSD was explored in relation to the experiences of hospitalization and psychosis	34.5%
Jackson, Knott, Skeate & Birchwood (2004)	Approximately eighteen months post-first episode of psychosis	Modified version of the PTSD scale (Friedman et al, 1986). Linked directly to criteria for DSM-IV PTSD but excluding the need for fulfilment of criterion A. Post-traumatic stress symptoms were assessed with respect to the overall experience of first episode psychosis and its treatment.	31.0%
Priebe, Broker & Gunkel (1998)	Not stated	PTSD Interview (Watson et al, 1991): severity or frequency of each PTSD is rated on a scale from 1 (no/never) to 7 (extreme/always). Symptoms were regarded as existent if the score was 4 or greater. The diagnosis was then made according to DSM-III-R criteria. The traumatic event was an involuntary admission, or if non was present, other negative aspects of treatment that patients had experienced.	51.0%

Table 2: Classification of traumatic events experienced by psychotic patients (Tarrier, 2005)

Event Type	Event Description
An independent traumatic event	The patient's account of an unambiguous external event, which is objectively verifiable. That is, it is documented in some type of record or is verified by a third person.
A possibly independent traumatic event	The patient's account of an external event for which there is no corroborating information.
A dependent traumatic event	An event that objectively results from the psychosis and/or its consequences, such as hospitalization, detainment under a lawful mental health act (involuntary detention), and coercive treatment. This category of event type includes the general trauma of psychosis that can occur when one is suffering from a serious illness, for example cancer.
An illness-related traumatic event	An event that is part of the illness experience, for example, an event relating to a delusional interpretation or fear, such as persecution or paranoia, or an event relating to a perceived threat as part of a hallucinatory experience.

Amendments to Major Research Project Proposal

An application for a research grant to fund a therapist to deliver therapeutic interventions aimed at treating PP-PTSD was unsuccessful. Consequently, the treatment component outlined in *Stage 2* of the research proposal was not undertaken. The ethics proposal submitted for the research project stated that in the absence of a research therapist, *Stage 1* of the research could still be completed. Therefore, *Stage 1* of the research project proceeded as outlined in the research proposal. Consent was obtained from the participants for the researcher to write to the clinical team responsible for their care summarising the results of the assessment and, where necessary, making suggestions regarding follow up care e.g. referral to clinical psychology

Chapter 4: Major Research Project

A cross-sectional examination of candidate
psychological factors associated with Post-Psychotic
PTSD

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*Major Research Project submitted in partial fulfilment of the requirements for the degree
of Doctorate in Clinical Psychology (D.Clin. Psy.)*

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*Prepared in accordance with requirements for submission to Acta Psychiatrica
Scandinavica (see Appendix 4.1)*

Abstract

Introduction: Experiencing schizophrenia can be sufficiently distressing to precipitate Post-psychotic PTSD (PP-PTSD). Understanding about PP-PTSD has developed without reference to contemporary trauma theory. A conceptual framework informed by Ehlers & Clark (2000) is used to determine if PP-PTSD was associated with a sense of serious current threat and negative appraisals of psychosis.

Methods: This study recruited 27 individuals with schizophrenia. Associations that PP-PTSD caseness had with fear of recurrence, intolerance of uncertainty, beliefs about paranoia and interpretations about hallucinatory voices were investigated. Links with psychiatric symptoms were also assessed.

Results: The prevalence rate of PP-PTSD was 37%. PP-PTSD caseness was associated with being fearful about psychosis recurring, being intolerant of uncertainty, and making negative appraisals about paranoia. Fear of recurrence was the only significant predictor of PP-PTSD caseness.

Conclusions: PP-PTSD appears to be largely consistent with a conceptual framework for persistent PTSD. Fear of recurrence was identified as a candidate psychological factor for PP-PTSD.

Key words: Psychosis, Trauma, PTSD, Distress

Significant outcomes:

- Individuals with PP-PTSD present with a sense of serious current threat and make negative idiosyncratic appraisals about psychotic symptoms.
- PP-PTSD caseness was associated with elevated levels of depression, anxiety and negative symptoms.
- A score of > 56 on the Fear of Recurrence Scale demonstrated good specificity and sensitivity for identifying patients with PP-PTSD.

Limitations:

- A small sample size limits generalizability.
- A diagnostic interview was not used to confirm diagnoses of DSM-IV schizophrenia.
- The cross-sectional nature of the study limits understanding of potential longitudinal links between PP-PTSD and the dependent variables.

Introduction

Posttraumatic Stress Disorder (PTSD) is an extreme form of stress reaction that can occur following the experience, or witnessing, of life-threatening events. Symptoms that people with PTSD may experience include difficulty sleeping, feeling detached or estranged from reality, and the re-experiencing of the trauma through nightmares and flashbacks. A diagnosis of PTSD is dependent on symptoms being severe and frequent enough to significantly impact on the individual's daily life. To fulfill DSM-IV criteria for PTSD, an identifiable stressor which is potentially life-threatening needs to be identified, and the content of the symptoms should refer to the stressor (Breslau et al, 2002). Posttraumatic stress disorder symptoms presenting without such a stressor would not qualify for a PTSD diagnosis (see *Criterion A* of the DSM-IV criteria). The use of *Criterion A* has been criticized for being too restrictive (Power & Dalgleish, 1997) because it fails to acknowledge the psychological impact of events such as childhood abuse (Allen, 2001) or psychosis (Shaw et al, 1997) which, although not life-threatening, are nonetheless traumatic.

Psychotic experiences can involve the *perception* of threatened death or serious injury. As such psychosis has been shown to have a marked psychological impact on the individual; inducing feelings of 'intense fear, helplessness or horror' (Herring, 1995; Jordan, 1995). Researchers have claimed that psychotic experiences can precipitate a traumatic reaction similar to PTSD (Williams-Keeler et al, 1994). The phrase Post-psychotic PTSD has been coined to account for this phenomenon (Shaw et al, 1997; 2002).

White & Gumley (in submission) recently conducted a systematic review of research into PP-PTSD. The mean and median prevalence rates for PP-PTSD were 41.9% and 44.9% respectively. There appeared to be consistent evidence for links between PP-PTSD and levels of depression (Morrison et al, 1999; McGorry et al, 1991; Kennedy et al, 2002; Harrison & Fowler, 2004). Some studies demonstrated links between positive symptoms and trauma associated with the experience of psychosis (Meyer et al, 1999; Harrison & Fowler, 2004). However, Shaw et al (1997/2002) found no significant differences between subjects with and without a PP-PTSD diagnosis on the severity of psychotic symptoms. Chisholm et al (2006) found that the content of persecutory delusions (e.g. the power of the persecutor) correlated with the level of PP-PTSD. This raises the possibility that the appraisal of symptoms may be an important factor mediating the link between positive symptoms and PP-PTSD. Three studies investigating links between PP-PTSD and negative symptoms (McGorry et al, 1991; Meyer et al, 1999; Harrison & Fowler, 2004) have failed to produce a consistent pattern of findings. There is clearly a need for further research to be conducted to clarify potential clinical correlates.

PP-PTSD has been linked to traumatic experiences of psychiatric services and admission to hospital. Morrison et al (1999) demonstrated that a substantial minority (44%) of participants met clinical caseness for PP-PTSD in relation to psychiatric admission. The implementation of compulsory admission procedures, or use of procedures such as enforced sedation, restraint, and seclusion, has been suggested to heighten the person's sense of fear, victimization and helplessness (Brody, 1995; Rooney et al., 1996; Beveridge, 1998). Shaw et al (2002) and Jackson et al (2004) found that participants meeting caseness for PP-PTSD appraised their experiences of admission as more

distressing and stressful. Unidentified PP-PTSD may impact negatively on treatment compliance because patients may attempt to avoid distressing reminders of psychosis, including psychiatric services, medical staff and medication (Meyer et al, 1999).

Although the research evidence indicates that PP-PTSD can be reliably identified, substantial gaps in understanding remain. Only four studies investigating PP-PTSD (Kennedy et al, 2002; Meyer et al, 1999; Shaw et al, 2002; Chisholm et al, 2006) have also assessed traumatic events independent to the experience of psychosis. Chisholm et al (2006) recently identified previous trauma as a predictor of PP-PTSD. Other predictor variables included: a history of previous psychotic episodes, perceived helplessness and uncontrollability at the time of index psychotic episode, the content of persecutory delusions and the perceived presence of crisis support after the psychotic episode. However, in order to develop psychological therapies aimed at treating PP-PTSD, candidate psychological factors linked to threat maintenance must be identified.

No research has attempted to determine if the phenomenology of PP-PTSD is informed by contemporary PTSD theory. A conceptual framework proposed by Ehlers and Clark's (2000) claims that idiosyncratic negative appraisals of the traumatic event and/or its sequelae are a key feature of persistent PTSD. Negative appraisals prompt dysfunctional cognitive and behavioural responses aimed at reducing distress that inadvertently prevent cognitive change and therefore maintain the disorder. Ehlers and Clark (2000) claim that idiosyncratic negative appraisals also have the common effect of creating a sense of serious current threat. This sense of current threat is accompanied by intrusions, arousal, and strong emotions e.g. anxiety, anger, shame, or sadness.

As a potentially chronic condition, many patients with psychosis have to live with the serious current threat of psychosis recurring. Black and White (2005) claimed that fear of recurrence in cancer relates to Ehlers & Clark's (2000) model because 'it represents a perception of serious current threat and a belief that the trauma is not time limited'. Their hypothesis that individuals with greater fear of cancer recurrence would be more likely to suffer post traumatic stress symptoms was supported.

Fear of recurrence in psychosis is akin to a persistent worry state precipitated by a potentially chronic illness process. Worry is defined as a 'repetitive thought activity, which is usually negative and frequently related to feared future outcomes or events' (Borkovec, 1994). High worriers tend to use avoidance coping behaviours, be intolerant of ambiguity and uncertainty, and be hindered by elevated evidence requirements when faced with real-life problems (Tallis et al, 1991; Davey, 1993; Freeston et al, 1994). A theoretical model proposed by Dugas et al (1998) suggested that intolerance of uncertainty plays a key role in the acquisition and maintenance of worry. Dugas et al (2005) have defined intolerance of uncertainty as 'an excessive tendency to find uncertain situations stressful and upsetting, to believe that unexpected events are negative and should be avoided, and to think that being uncertain about the future is unfair'. Individuals who are intolerant of uncertainty are at an increased likelihood of interpreting ambiguous information as threatening (Heydayati et al, 2003). To the author's knowledge no research has been conducted to date investigating intolerance of uncertainty in psychosis.

Based on the Ehlers & Clark (2000) framework it should be possible to operationalize the concept of PP-PTSD in terms of: a sense of current serious threat (i.e. fear of recurrence and intolerance of uncertainty) and negative idiosyncratic appraisals of psychotic experiences (e.g. i.e. hallucinatory voices and paranoia). It is hoped that testing these predictions will help to identify candidate psychological factors likely to be associated with the maintenance of PP-PTSD. It is hypothesised that relative to clinical controls, patients with post-psychotic PTSD will:

1. Be more fearful of their psychosis recurring.
2. Have greater intolerance of uncertainty.
3. Make more negative idiosyncratic appraisals of psychotic experiences i.e. hallucinatory voices and paranoia.

Methodology

Participants

Participants were 27 individuals who had been consecutively referred for PP-PTSD assessment from four different community mental health centres in Greater Glasgow and Clyde.

Design

A cross-sectional design was employed. All participants were referred to the study on the basis that CMHT staff involved in the individuals' care were of the opinion that they were experiencing on-going distress associated with their experience of psychosis (e.g. experiencing flash-backs of psychosis/treatment related events, avoidance of stimuli linked to psychosis/treatment etc). Between group comparisons were then performed between the participants that at assessment met criteria ('PP-PTSD group') and those referred for assessment that did not meet PP-PTSD ('non PP-PTSD group'). Due to the exploratory nature of the research it was not possible to conduct a power calculation. Instead, it was decided that once ten individuals had been recruited to the 'PP-PTSD' group, comparisons would be made with the 'non PP-PTSD' group to determine the effect sizes associated with the hypotheses. These analyses indicated that effect sizes were sufficiently large.

Inclusion criteria

Participants were required to meet DSM-IV criteria (A.P.A, 1994) for schizophrenia. Diagnoses were determined by case-note review and discussion with the Consultant Psychiatrist responsible for their care. To warrant a referral for a PP-PTSD assessment, individuals had to be reporting distress associated with their experience of psychosis. Participants had to possess suitable literacy skills to be able to read and answer the measures used in the study.

Exclusion Criteria

Individuals who were ‘acutely psychotic’ (defined by a score of 5 or more on any item of the PANSS Positive Component) were excluded. Participants were also excluded by the presence of a learning disability, a primary diagnosis associated with psycho-active substance use, the presence of organic disorder, or language difficulties that preclude assessment (e.g. non-English speakers), a diagnosis of PTSD precipitated by factors independent of their psychosis. Tarrier’s (2005) classification system of trauma in psychosis was used to assist in this process (see Table 1). PP-PTSD only relates to traumatic events that are either *dependent* or *illness-related*.

INSERT TABLE 1 ABOUT HERE

During the PP-PTSD assessment participants were asked whether they were experiencing on-going distress associated with any traumatic events independent of psychosis. Participants were also asked if they had ever been diagnosed with PTSD. No participants reported that they had been. A review of the participants' case files confirmed that none of the participants had a pre-existing diagnosis of PTSD relating to trauma independent of the experience of psychosis.

Measures

The *Clinician-Administered Posttraumatic Stress Disorder Scale for use with patients with schizophrenia* (CAPS-S; Gearon et al, 2001) is structured interview that measures the seventeen symptoms of PTSD noted in DSM-IV. The frequency and intensity of each symptom is rated. The test is a modified version of the CAPS (Blake et al, 1990). The language had been changed to an 8th grade reading level, additional behavioural definitions and anchors have been inserted, and examples relevant to the life experiences of this population have been provided. The CAPS-S has demonstrated sound levels of reliability and validity (Gearon et al, 2003; 2004).

The *Positive Scale of Positive and Negative Syndrome Scale* (PANSS; Kay, Fiszbein & Opler, 1987): The PANSS is a 30-item observer rated scale used to assess the presence and severity of positive (e.g. delusions, hallucinatory behaviour) and negative (e.g. blunted affect, emotional with-drawl) symptoms. Derived scores include 'positive', 'negative' and 'global psychopathology' scale scores. Psychometric studies have reported good inter-rater reliability (e.g. correlation co-efficients around 0.80) and satisfactory

internal consistency, construct validity and concurrent validity in relation to other measures of psychopathology (Kay et al., 1988; Kay et al, 1989).

The *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983) is a widely used self-report instrument designed as a brief assessment tool of the distinct dimensions of anxiety and depression in non-psychiatric populations (Hermann, 1997). It is a 14-item questionnaire that consists of two sub-scales of seven items designed to measure levels of both anxiety and depression. Bjelland et al (2002) noted that the psychometric properties of the HADS are such that it can be used with confidence clinically.

The *Impact of Event Scale-Revised* (IES-R; Weiss and Marmar, 1997) is a 22-item scale, with items loading onto three factors: intrusions, avoidance and hyper-arousal, and which provides a measure of symptomatology relating to a specific traumatic stressor. The instrument has been shown to have strong internal consistency and test-retest reliability (Weiss & Marmar, 1997).

The *Fear of Recurrence Scale* (FoRSe; Gumley & Schwannauer, 2006) consists of 29-items generated from participants' idiosyncratic early signs of psychosis. Analysis of the factor structure of the FoRSe revealed three different factors: Intrusiveness: e.g. 'I have experienced thoughts intruding into my mind'. Awareness: e.g. 'The world has seemed more vivid and colourful'. Fear of recurrence: e.g. 'The thought of becoming unwell has frightened me'. Gumley and Schwannauer (2006) have demonstrated that the FoRSe has

good internal consistency, test-retest reliability and strong positive correlations with the Early Signs Scale (Birchwood et al, 1989).

The *Intolerance of Uncertainty Scale* (IUS; Freeston et al., 1994) consists of 27-items assessing: uncertainty, emotional and behavioural reactions to uncertain situations, implication of being uncertain, and attempts to control the future. The IUS has been found to demonstrate sound validity (Freeston et al., 1994) and reliability (Dugas et al., 1997).

The *Interpretation of Voices Inventory* (IVI; Morrison et al., 2002) is a 26-item questionnaire measuring beliefs that people hold about hearing voices. There are three sub-scales measuring: metaphysical beliefs, positive beliefs and beliefs about loss of control. Questions are worded hypothetically ("If I were to hear sounds or voices that other people could not hear, I would probably think that..."). Participants respond to each item by indicating how much they agree (1 = not at all, 2 = somewhat, 3 = moderately so, 4 = very much). The inventory was found to demonstrate sound reliability and validity (Morrison et al, 2002).

The *Beliefs About Paranoia Scale* (BAPS-Short Form; Morrison et al, 2005; Gumley et al, in submission) is a self-report measure to assess meta-cognitive beliefs about paranoia in non-patients. It has three empirically distinct subscales: negative beliefs about paranoia, beliefs about paranoia as a survival strategy, and normalising beliefs. The scales were shown to have acceptable internal consistency and were associated with the measures of paranoia, delusional ideation and anxiety (Morrison et al, 2005).

Procedure

The research aims were presented to local community mental health teams. A vignette (see Appendix 4.2) was used to help mental health practitioners (i.e. Psychiatrists, Clinical Psychologists and Community Psychiatric Nurses) understand how PP-PTSD presents clinically. On the basis of this information, mental health practitioners were asked to discuss the prospect of a referral with individuals they felt were appropriate. With the individual's consent, a referral form was completed (see Appendix 4.3). The researcher then arranged to meet with the individual. The Patient Information Sheet (see Appendix 4.4) was used to discuss the research with the individual and they were asked to provide written consent to participate in the research.

Participants were first interviewed about their illness history. This included being asked: *'Is there an episode of being unwell that particularly stands out in your memory?'* As a prompt, patients were asked: *'Have you experienced intrusions about times when you were unwell with psychosis?'* Holmes and colleagues (2005) definition of intrusions was then read to each participant:

'By intrusions we mean memories that suddenly pop into your mind as if from nowhere. They may take you by surprise, and feel like the events are happening again NOW in the present. We do not mean times when you deliberately choose to think about these things. Intrusions may take the form of visual pictures, sounds, smells, as well as verbal thoughts'.

Using the participants' self-generated worst moment of their illness as the precipitating event, the CAPS-S (Gearon et al, 2001) was completed with each participant. The recommended cut-off score of 45 or higher (Weathers et al, 1999) was used to classify participants.

The PANSS, HADS, IES-R, FoRSe, IUS, IVI and BAPS were then completed with the patients. The order of administration of assessments was rotated to control for order effects. Data were collected between the 22nd November 2006 and 16th April 2007.

Analyses

Between Group: The independent variable in the between group analyses was PP-PTSD status. The dependent variables were the measures of serious current threat (FoRSe and IUS), and measures of symptom appraisal (BAPS, IVI). Due to the small sample size, non-parametric Mann Whitney tests were used to test the between group hypotheses. In accordance with Field (2005), effect sizes for the between group comparisons were calculated using the following equation:

$$e.s. = \frac{z}{\sqrt{n}}$$

(*e.s.* = effect size, *Z* = Z-score, *n* = number of participants)

Cohen (1988; Pages 477 – 478) provides an explanation of how to interpret effect sizes and suggests that effect sizes of the magnitude of 0.2 be regarded as weak, 0.4 be considered medium, and 0.6 be considered to be strong.

Within Group: Non-parametric Spearman ρ correlation analyses were performed to determine the association between the CAPS-S scores and the dependent variables.

Post-hoc Analysis: Logistic regression analyses were used to determine if dependent variables could be used to predict PP-PTSD caseness. Receiver Operating Characteristic (ROC) analysis was used to determine specificity and sensitivity of measures for predicting PP-PTSD caseness.

Ethical Approval

The research project was granted ethical approval by NHS Greater Glasgow and Clyde Research Ethics Committee on the 13th April 2006 (ref: 06/S0701/29) (Appendix 4.5).

The project was registered under Greater Glasgow and Clyde Research and Development Directorate in May 2006 (Ref: PN06CP007) (Appendix 4.6).

Results

Twenty-seven participants aged between 24 and 59 years (mean age: 38.93 years, SD = 10.33) were recruited to the research. An additional three individuals refused to consent to a referral being made to the study when approached by a CPN, Psychiatrist, or Clinical Psychologist. A further five patients identified as being potentially appropriate for the study were considered too unwell by their key-worker and referrals were therefore not completed. No patients were excluded as a result of information gained during assessment by the researcher. The male:female ratio of the sample was 20:7. All participants were Caucasian. Table 3 provides descriptive information about the sample. Given the small sample size both parametric and non-parametric data are provided. The mean score on the PANSS Positive Component was 12.3 (SD = 3.1, Median = 11.0, IQR = 10.0 – 14.0), PANSS Negative Component was 11.7 (SD = 4.8, Median = 10.0, IQR = 9.0 – 13.0), HADS Depression was 7.4 (SD = 5.0, Median = 7.0, IQR = 3.0 – 11.0) and the HADS Anxiety mean score was 10.6 (SD = 5.1, Median = 12.0, IQR = 8.0 – 13.0). The mean number of admissions for the sample was 3.9 (SD = 4.4, Median = 2.0 IQR = 0.0 – 6.0). The mean number of months since last psychiatric admission was 72.3 months (SD = 56.3, Median = 66.0, IQR = 26.5 – 101.0).

PP-PTSD status according to IES-R criteria vs. CAPS-S criteria

Thirty-seven percent (N = 10) of those referred for PP-PTSD assessment met criteria for PP-PTSD on the CAPS-S. Sembi et al (1998) used an IES (Horowitz et al, 1979) total

score of greater than 30 to classify PTSD caseness. The IES-R differs from the IES in having seven extra items that constitute a Hyper-arousal sub-scale. In the current study, IES scores were calculated by summing the IES-R Avoidance and IES-R Intrusiveness sub-scores. Using the Sembi et al (1998) criteria 33% (N = 9) of those referred for PP-PTSD assessment met criteria for PP-PTSD.

INSERT TABLE 2 ABOUT HERE

Table 2 provides an indication of the overlap between the individuals meeting criteria for PP-PTSD on CAPS-S and the IES criteria. Cramer's V analysis of sameness was used to statistically test the degree of overlap between the two forms of classification. The result of the analysis (Cramer's V = .759, $p < 0.001$) indicated that there was a highly significant overlap between the two forms of PP-PTSD classification.

INSERT TABLE 3 ABOUT HERE

Table 3 summarises between-group comparisons on demographic information and psychiatric ratings. Participants who met caseness for PP-PTSD, relative to those that did not, had significantly higher scores on the PANSS Negative Component, PANSS Composite, PANSS General sub-scores and PANSS Total score ($p < 0.01$). Similarly, participants who met caseness PP-PTSD scored significantly higher on HADS

Depression, HADS Anxiety ($p < 0.05$) and HADS Total score ($p = 0.01$). There were significant differences on the IES-R Avoidance ($p < 0.01$), IES-R Intrusiveness ($p < 0.001$), IES-R Hyper-arousal subscales, and the IES-R Total scores ($p < 0.001$). A trend approaching significance suggested that individuals who met criteria for PP-PTSD, relative to those that did not, had more psychiatric admissions. There were no significance differences regarding gender, age, scores on the PANSS Positive Component, and the number of months that had passed since the last psychiatric discharge.

INSERT TABLE 4 ABOUT HERE

Table 4 provides information on the differences between those who met PP-PTSD caseness and those who did not, on the FoRSe, IVI, BAPS and the IUS. Participants who met criteria for PP-PTSD scored significantly higher on the FoRSe Fear of Relapse, FoRSe Intrusiveness subscales and FoRSe Total score ($p < 0.01$). Participants with PP-PTSD had significantly higher scores on the BAPS Negative Beliefs subscale and the Intolerance of Uncertainty scale ($p < 0.05$). However, there was no significant difference between the groups in scores on the FoRSe Awareness sub-scale, the IVI subscale/total scores, BAPS Survival Strategy subscale, BAPS Normalizing Beliefs subscale or the BAPS Total Score.

INSERT TABLE 5 ABOUT HERE

The correlational analyses listed in Table 5 largely mirrored the patterns of associations observed in the between-group comparisons. The only exception was the significant positive correlation between the CAPS-S Total score and the PANSS Positive Component. The subscales of the CAPS-S had a variety of significant correlations with the other dependent variables (see Table 5). Of particular note were the significant correlations that CAPS-S Avoidance had with the IUS, all of the PANSS indices, all of the HADS indices, all of the IES-R indices and each of the FoRSe indices apart from FoRSe awareness. CAPS-S Re-experiencing had significant positive correlations with the IUS, HADS Anxiety and the HADS Total score and each of the IES-R indices. In addition, CAPS-S Re-experiencing had significant correlations with each of the PANSS subscales (apart from the PANSS Positive Component) and each of the Fear of Recurrence Scale (apart from FoRSe awareness). Finally, CAPS-S Hyper-arousal had significant positive correlations with the IUS, the PANSS total score, the PANSS General Component, PANSS Positive Component, IES-R Intrusiveness, IES-R Hyper-arousal and all of the HADS and IES-R indices.

Post Hoc Analysis

Logistic regression analyses were used to create a model aimed at predicting PP-PTSD caseness. Indices representing each of the three cognitive variables significantly linked to

PP-PTSD in the univariate analyses were included in the logistic regression analyses. Because two of the three FoRSe subscales were significantly associated with PP-PTSD caseness, the FoRSe Total Score was entered into the logistic regression along with the BAPS Negative Beliefs subscale and the intolerance of uncertainty scale. To verify that this yielded the best model, three separate logistic regression analyses were run using a different FoRSe index on each occasion i.e. FoRSe Total score, FoRSe Intrusiveness score, and FoRSe Fear of Relapse score. These analyses confirmed that entering the FoRSe Total Score into the model produced the optimal β and Wald/ χ^2 values. Only the results for that particular model are reported (Table 6). The backward stepwise selection method was used that involves the least significant variables being eliminated one by one on the basis of maximum likelihood. The analyses indicated that only the FoRSe Total Score contributed significantly to a model predicting PP-PTSD caseness.

INSERT TABLE 6 ABOUT HERE

ROC Analysis

Receiver Operating Characteristic (ROC) analysis was used to measure the predictive utility of the FoRSe Total score to distinguish between patients meeting PP-PTSD caseness and those who did not. The rate of true-positive predictions at different risk levels (the sensitivity) was plotted against the rate of false-positive predictions (1 - specificity) in order to construct a ROC curve. An area of 1.0 under the ROC curve represents a perfect model, and an area of 0.5, which is below the diagonal line,

represents a prediction made by chance (Fig. 1). The area under the curve (0.882 ± 0.079 , 95% IC 0.73 – 1.04) was highly significant ($p = 0.001$)

INSERT FIGURE 1 ABOUT HERE

The results of the ROC analysis (see Appendix 4.7) indicated that the optimal cut-off on the FoRSe for identifying PP-PTSD was a score > 56 . The sensitivity for this score was 80%, whilst the specificity was 82.4%.

Discussion

The aim of the current study was to determine if PP-PTSD is consistent with a conceptual framework informed by Ehlers and Clark's (2000) cognitive model of persistent PTSD. It was hoped that this would in turn help identify candidate psychological factors potentially maintaining PP-PTSD.

The PP-PTSD group recruited to the study had a mean time since last psychiatric discharge of 55 months. This suggests that the consequences of trauma associated with psychosis and/or hospitalisation are potentially enduring and sustained. PP-PTSD caseness was significantly associated with elevated levels of negative symptoms, depression and anxiety. However, there were no significant differences in positive symptoms between participants with PP-PTSD and controls. This is consistent with previous research (Shaw et al, 1997; 2002) and supports the notion that PP-PTSD is not an artefact of differences between the groups in the levels of positive symptoms.

Results indicated that relative to controls, the PP-PTSD group had significantly greater fears about relapse and more intrusive thoughts about their illness recurring. The avoidant symptoms of PP-PTSD appeared to be particularly strongly associated with fears about recurrence. Fears about relapse may lead individuals to avoid contact with stimuli they associate with traumatic aspects of the experience of psychosis. Equally however, avoidance of trauma related stimuli may potentially maintain fearful responses by preventing processing and elaboration of intrusive memories (Ehlers & Clark, 2000).

Individuals meeting caseness for PP-PTSD were significantly more intolerant of uncertainty than were those who did not. Intolerance of uncertainty has been shown to play a key role in the acquisition and maintenance of worry (Dugas et al, 1998) and to have strong links with Generalized Anxiety Disorder (GAD), Obsessive Compulsive Disorder (OCD), and Panic Disorder (Dugas et al, 1998; Dugas et al., 2001; Tolin et al, 2003). However, this is the first time that intolerance of uncertainty has been linked with PTSD or PP-PTSD symptomatology.

Alternative interpretations can not be ruled out as to why the PP-PTSD group were more fearful of recurrence, more intolerant of uncertainty and more negative in their appraisals of paranoia. It could be argued that the links between PP-PTSD status and these variables were contaminated by significant differences between the groups in negative, depressive and anxiety symptoms. Future research may benefit from matching patients with and without PP-PTSD on measures of these symptoms. This would facilitate an investigation of whether differences in fear of recurrence, intolerance of uncertainty and appraisals of paranoia are actually epiphenomenon of differences in negative symptoms, depression and/or anxiety. Of course it is important to appreciate that increased levels of negative symptoms, depression and anxiety observed in the PP-PTSD group in the current research may actually be a consequence of the same pathology that drives the PP-PTSD (Stampfer, 1990). Previous researchers have noted that avoidance and detachment characteristic of PTSD may be confused with negative symptoms (Shaner & Eth, 1989; Lundy, 1992). In addition, Meyer et al (1999) claim that associations between the symptoms of PTSD and anxiety/depression are to be expected due to symptom overlap.

So in effect, scores on the HADS and the negative sub-scale of the PANSS may actually be reflecting PP-PTSD symptomatology. Future research of a longitudinal nature would help to determine how potential changes in levels of PP-PTSD are related to changes in symptoms of psychosis and symptoms comorbid to psychosis (e.g. depression/anxiety).

The significant differences between individuals meeting PP-PTSD caseness and those who did not, on the FoRSe and the IUS support hypotheses one and two. As with Ehlers and Clark's (2000) conceptual framework for persistent PTSD, a sense of current threat appears to be a key aspect of PP-PTSD. The results of the logistic regression highlighted fear of recurrence as a significant predictor of PP-PTSD caseness. Post-hoc analyses revealed that a FoRSe cut-off score of over 56 demonstrated good sensitivity and specificity for identifying PP-PTSD. Chisholm et al (2006) previously identified a number of candidate psychological variables for identifying PP-PTSD including perceived helplessness, uncontrollability at the time of the index psychotic episode, content of persecutory delusions at episode and the perceived presence of crisis support after the psychotic episode. However, the current study highlights Fear of Recurrence in psychosis as a candidate psychological variable for PP-PTSD for the first time. This has potentially important implications for the quick and reliable identification of those presenting with PP-PTSD.

In terms of idiosyncratic negative appraisals, individuals meeting caseness for PP-PTSD, relative to clinical controls, did not make significantly more negative interpretations of hallucinatory voices. However, participants who met criteria for PP-PTSD did have

significantly more negative appraisals about paranoia. These results partially support hypothesis three. The absence of a more clear-cut association between negative idiosyncratic appraisals and PP-PTSD may be due to the fact that the IVI and BAPS were administered to participants irrespective of whether they had actually experienced hallucinatory voices or elevated paranoia. These measures were therefore assessing *hypothetical* appraisals. In hindsight, using measures aimed at assessing more general beliefs about the experience of psychosis might have been more appropriate e.g. the *Personal Beliefs about Illness Questionnaire* (Birchwood et al, 1993).

Potential resilience factors for PP-PTSD are poorly understood. Research has claimed that psychological variables may allow individuals to tolerate and modulate distress (McFarlane & Yehuda, 1996). Shaw et al (2002) and Jackson et al (2004) found that insight and coping style were not significantly associated with PP-PTSD. Black and White (2005) in an examination post-traumatic stress symptoms in cancer highlighted the importance of a *sense of coherence*. Antonovsky (1979, 1987) proposed that adaptive coping is moderated by 'generalised resistance resources' e.g. wealth, social support, and ego strength. These resources create circumstances that promote a strong sense of coherence. Sense of coherence has been shown to have an inverse relationship with psychological stress (Mullen et al, 1993). Frommberger et al (1998) suggested that a sense of coherence may constitute a resiliency factor against posttraumatic stress syndromes. Black and White (2005) supported these claims by finding significant relationships between sense of coherence, post-traumatic stress and fears of recurrence in cancer survivors. The related concept of *Global Meaning*, has also been found to

moderate the relationship between intrusive thoughts and psychological distress in cancer survivors (Vickberg et al, 2000; 2001). Future research should investigate the potential role of factors such as sense of coherence or global meaning in building resilience to PP-PTSD.

The current study has a number of strengths. Two measures were used to assess PP-PTSD caseness: one self-report measure (IES-R) and an interview-based measure (CAPS-S). The substantial overlap between the two measures provided good support for the reliable identification of individuals meeting PP-PTSD. The fact that none of participants had a previous diagnosis of PTSD (independent to the experience of psychosis) maximised the likelihood that distress experienced by the PP-PTSD group was due to the trauma associated with psychosis that they described. Although the sample size was comparatively small, the relative large effect sizes obtained in the research suggest that the study was sufficiently powered. Recruitment is an inherent difficulty in individuals with psychotic disorders - particularly those who have been traumatised by their experiences. The use of referral system to recruit people to the study was helpful in promoting awareness about PP-PTSD among professionals working in mental health service.

There were several limitations associated with the current study. The cross-sectional nature of the study limits understanding of potential longitudinal links between PP-PTSD and the dependent variables. Future research should aim to prospectively follow participants to help gain an understanding of how PP-PTSD impacts on prognosis in psychosis. The absence of a diagnostic interview to confirm case-file diagnoses of

schizophrenia is a weakness. The case file review combined with discussions with the Consultant Psychiatrist responsible for the participants' care, offered only a degree of certainty regarding diagnosis. The use of a recognised screening tool for traumatic life events (e.g. the Stressful Life Experiences Screening; Stamm et al, 1996) may have facilitated a more standardised assessment of traumatic events independent of psychosis. A failure to control for differences between the PP-PTSD and the non PP-PTSD group in levels of negative, depressive and anxiety symptoms means that differences between the groups in fear of recurrence, intolerance of uncertainty and negative beliefs about paranoia could be interpreted as being associated with differences these particular symptom levels. Finally, the majority of patients referred for assessment (63%) did not meet criteria for PP-PTSD. This high rate of false positives suggests that referrers were not particularly sensitive to identifying the condition. Greater emphasis on educating staff about how PP-PTSD can present may have facilitated the recruitment of a larger number of individuals with the condition. The results of the current study suggest that the Fear of Recurrence Scale (FoRSe, Gumley & Schwannauer, 2006) can be used by clinicians and researchers in the future to screen effectively for PP-PTSD.

To date there has been little or no attempt to qualitatively describe the traumatic experiences that precipitate PP-PTSD. Future research may wish to address this. The continued use of the term PP-PTSD is potentially problematic. Controversy remains over the fact that psychosis does not constitute a DSM-IV Criterion A event. In addition, the 'Post-psychotic' aspect of PP-PTSD negates the possibility that traumatic responses to psychosis can co-exist with an acute psychotic episode, and can also continue following a relapse from remission. It may be better to conceptualise PP-PTSD as *emotional distress*

associated with psychosis. This conceptualization would facilitate an examination of mechanisms potentially linking threat-based emotional distress (PP-PTSD) and other affective difficulties evident in psychosis e.g. Post-psychotic Depression (Birchwood et al, 1993; 2000).

Overall, PP-PTSD appears to be largely consistent with predictions made of persistent PTSD generally. Results highlighted Fear of Recurrence as a candidate psychological variable implicated in the maintenance of PP-PTSD caseness. This may help guide future attempts to address PP-PTSD therapeutically. Morrison et al (2003) have suggested that traumatic memories or flashbacks of acute psychotic episodes can predispose individuals to a recurrence of the psychotic symptoms. Consequently, promoting understanding about PP-PTSD may help reduce relapse in patients presenting with psychosis.

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Table 1. Classification of Traumatic Events Experienced in Psychosis (Tarrier, 2005)

Event Type	Event Description
An independent traumatic event	The patient's account of an unambiguous external event, which is objectively verifiable. That is, it is documented in some type of record or is verified by a third person.
A possibly independent traumatic event	The patient's account of an external event for which there is no corroborating information
A dependent traumatic event	An event that objectively results from the psychosis and/or its consequences, such as hospitalization, detainment under a lawful mental health act (involuntary detention) and coercive treatment. This category of event type includes the general trauma of psychosis that can occur when one is suffering from a serious illness, for example, cancer.
An illness-related traumatic event	An event that is part of the illness experience, for example, an event relating to a delusional interpretation or fear, such as persecution or paranoia, or an event relating to a perceived threat as part of a hallucinatory experience.

Table 2 Overlap between PP-PTSD according to the IES (Horowitz et al, 1979) (i.e. IES-R intrusiveness and IES-R avoidance scores combined) and the CAPS-S

		PP-PTSD status according to CAPS-S scoring criteria		Total
		No PP-PTSD	PP-PTSD	
PP-PTSD status according to Sembi et al (1998) IES criteria	No PP - PTSD	16	2	18
	PP-PTSD	1	8	9
Total		17	10	27

Table 3: Demographic information and psychiatric ratings for participants.

Variable			All participants (N = 27)	Non-PTSD (N = 17)	PTSD (N = 10)	Group Comparison		
						χ^2	df	p
Gender	Male	N (%)	20 (74.1%)	12 (70.6%)	8 (80.0%)	.29	1	.59
	Female	N (%)	7 (25.9%)	5 (29.4%)	2 (20.0%)			
Age	Mean (SD)		38.9 (10.3)	38.5 (10.7)	39.6 (10.3)	79.50	-28	-0.1
	Median (IQR)		38.0 (32.0 – 46.0)	38.0 (29.5 – 47.0)	37.00 (32.0 – 46.3)			
Number of months since last discharge	Mean (SD)		72.3 (56.3)	83.7 (57.6)	55.1 (52.4)	48.50	-1.47	-0.3
	Median (IQR)		66.0 (26.5 – 101.0)	67.00 (48.0 – 104.0)	36.0 (13.3 – 93.5)			
Number of psychiatric admissions	Mean (SD)		3.9 (4.4)	3.00 (4.5)	5.2 (3.9)	48.50	-1.86*	-0.4
	Median (IQR)		2.0 (0.0 – 6.0)	1.00 (0.0 – 5.5)	5.5 (1.5 – 10.0)			
PANSS Positive Component	Mean (SD)		12.3 (3.1)	11.4 (2.5)	13.8 (3.7)	53.50	-1.60	-0.3
	Median (IQR)		11.0 (10.0 – 14.0)	11.0 (10.0 – 13.5)	14.0 (10.0 – 18.0)			
PANSS Negative Component	Mean (SD)		11.7 (4.8)	10.0 (3.7)	14.7 (5.3)	32.00	-2.69**	-0.5
	Median (IQR)		10.0 (9.0 – 13.0)	9.0 (8.0 – 11.0)	13.0 (10.5 – 18.5)			
PANSS Composite Sub-scale	Mean (SD)		24.0 (6.4)	21.4 (4.0)	28.5 (7.5)	33.50	-2.61**	-0.5
	Median (IQR)		22.0 (20.0 – 29.0)	20.0 (19.0 – 24.0)	30.0 (21.8 – 32.5)			
PANSS General Sub-scale	Mean (SD)		29.3 (6.1)	26.6 (3.6)	33.8 (6.9)	29.00	-2.83**	-0.5
	Median (IQR)		28.0 (26.0 – 32.0)	26.0 (24.0 – 29.0)	32.5 (28.0 – 39.5)			
PANSS Total Score	Mean (SD)		53.3 (11.7)	48.0 (6.3)	62.30 (13.4)	30.00	-2.77**	-0.5
	Median (IQR)		52.0 (45.0 – 61.0)	46.0 (43.5 – 53.0)	63.00 (50.5 – 70.8)			
HADS Depression	Mean (SD)		7.4 (5.0)	5.8 (4.7)	10.1 (4.7)	43.00	-2.12*	-0.4
	Median (IQR)		7.0 (3.0 – 11.0)	4.0 (2.0 – 10.5)	9.50 (6.5 – 12.0)			
HADS Anxiety	Mean (SD)		10.6 (5.1)	8.9 (4.83)	13.5 (4.4)	39.00	-2.33*	-0.5
	Median (IQR)		12.0 (8.0 – 13.0)	9.0 (4.0 – 12.0)	13.0 (9.8 – 18.0)			
HADS Total	Mean (SD)		18.0 (9.2)	14.7 (8.7)	23.6 (7.4)	34.00	-2.57*	-0.5
	Median (IQR)		17.0 (13.0 - 23.0)	15.0 (7.0 – 20.0)	23.0 (17.3 – 26.5)			
IES-R: Avoidance	Mean (SD)		13.4 (8.5)	9.8 (7.3)	19.4 (7.2)	31.50	-2.69**	-0.5
	Median (IQR)		14.0 (4.0 -19.0)	10.0 (3.5 – 17.0)	19.0 (13.5 – 25.5)			
IES-R: Intrusiveness	Mean (SD)		9.7 (9.6)	4.2 (5.6)	19.00 (7.53)	9.00	-3.83***	-0.7
	Median (IQR)		6.0 (1.0 – 17.0)	2.0 (0.0 – 7.0)	18.5 (14.0 – 24.3)			
IES-R: Hyperarousal	Mean (SD)		7.0 (6.5)	3.2 (3.1)	13.6 (5.3)	5.50	-4.01***	-0.8
	Median (IQR)		6.0 (1.0 -10.0)	3.0 (.5 – 6.0)	12.5 (10.0 – 17.0)			
IES-R: Total	Mean (SD)		30.1 (21.9)	17.2 (11.6)	52.0 (17.5)	6.50	-3.95**	-0.8
	Median (IQR)		24.0 (13.0 -45.0)	17.0 (5.0 – 24.5)	52.5 (40.0 – 61.0)			

*** p < 0.001 ** p < 0.01 * p < 0.05 † p ≤ 1.00

Table 4: Between group comparisons for the FoRSe, IVI, BAPS and the IUS.

Variable	Descriptive Statistic	All participants (N = 27)	Non-PTSD (N = 17)	PTSD (N = 10)	Mann Whitney	Z	Effect Size
Fear of Recurrence: Fear of Relapse	Mean (SD)	15.59 (6.31)	12.59 (4.29)	20.70 (6.04)	24.50	-3.05**	-0.6
	Median (IQR)	14.00 (10.00 – 20.00)	12.00 (9.50 – 16.00)	21.50 (15.25 – 25.75)			
Fear of Recurrence: Awareness	Mean (SD)	22.93 (7.32)	21.18 (7.23)	25.90 (6.81)	55.50	-1.49	-0.3
	Median (IQR)	22.00 (17.00 – 30.00)	20.00 (16.50 – 29.00)	26.00 (20.00 – 31.25)			
Fear of Recurrence: Intrusiveness	Mean (SD)	15.81 (6.65)	12.94 (5.41)	20.70 (5.77)	23.00	-3.13**	-0.6
	Median (IQR)	15.00 (10.00 – 23.00)	10.00 (9.00 – 16.50)	21.00 (16.00 – 25.50)			
Fear of Recurrence: total	Mean (SD)	54.33 (15.21)	46.71 (9.01)	67.30 (15.08)	20.00	-3.27**	-0.6
	Median (IQR)	50.00 (43.00 – 65.00)	47.00 (40.00 – 55.00)	71.00 (55.25 – 75.40)			
Interpretation of Voices Inventory: M	Mean (SD)	23.37 (8.26)	21.24 (6.32)	27.00 (10.14)	56.50	-1.44	-0.3
	Median (IQR)	21.00 (16.00 – 29.00)	19.00 (15.50 – 25.00)	26.00 (18.25 – 35.00)			
Interpretation of Voices Inventory: F	Mean (SD)	11.52 (8.00)	11.76 (4.21)	11.10 (3.41)	79.00	-.31	-0.1
	Median (IQR)	11.00 (8.00 – 14.00)	11.00 (8.00 – 15.50)	10.50 (8.00 – 14.00)			
Interpretation of Voices Inventory: C	Mean (SD)	11.04 (3.95)	10.00 (2.94)	12.80 (4.92)	55.50	-1.49	-0.3
	Median (IQR)	10.00 (8.00 – 13.00)	9.00 (7.50 – 12.50)	12.00 (9.25 – 17.00)			
Interpretation of Voices Inventory: Total	Mean (SD)	45.93 (13.37)	43.00 (11.40)	50.90 (15.55)	58.00	-1.36	-0.3
	Median (IQR)	43.00 (33.00 – 55.00)	42.00 (32.00 – 51.50)	50.50 (38.00 – 62.00)			
Beliefs about Paranoia: Survival Strategy	Mean (SD)	9.44 (3.95)	9.29 (4.21)	9.70 (3.68)	75.50	-.48	-0.1
	Median (IQR)	8.00 (6.00 – 11.00)	8.00 (6.00 – 10.00)	8.50 (6.75 – 12.00)			
Beliefs about Paranoia: Negative Beliefs	Mean (SD)	15.78 (4.92)	14.53 (4.39)	17.90 (5.26)	46.00	-1.97*	-0.4
	Median (IQR)	17.00 (10.00 – 20.00)	16.00 (10.00 – 18.00)	20.50 (14.50 – 22.00)			
Beliefs about Paranoia: Normalising Beliefs	Mean (SD)	12.52 (3.40)	11.88 (3.31)	13.60 (3.44)	54.00	-1.57	-0.3
	Median (IQR)	12.00 (10.00 – 15.00)	11.00 (10.00 – 13.00)	13.00 (11.00 – 16.50)			
Beliefs about Paranoia: Total	Mean (SD)	37.37 (8.50)	35.71 (8.32)	40.20 (8.44)	59.50	-1.28	-0.3
	Median (IQR)	36.00 (31.00 – 44.00)	34.00 (31.00 – 40.00)	39.50 (33.50 – 48.75)			
Intolerance of uncertainty	Mean (SD)	74.04 (26.78)	64.94 (21.52)	89.50 (28.75)	40.00	-2.26*	-0.4
	Median (IQR)	66.00 (51.00 – 87.00)	60.00 (50.00 – 78.00)	85.50 (64.75 – 120.00)			

*** p < 0.001 ** p < 0.01 * p < 0.05 * p ≤ 1.00

Table 5. Correlations between the CAPS-S and the PANSS, HADS, FoRSE, IES-R, IVI, BAPS and IUS

		CAPS-S Total	CAPS-S Re- experiencing	CAPS-S Avoidance	CAPS-S Hyper-arousal
PANSS					
PANSS Positive Component	ρ	.42*	.27	.42*	.41*
PANSS Negative Component	ρ	.54**	.42*	.58**	.26
PANSS Composite Sub-scale	ρ	.60**	.46*	.65**	.34*
PANSS General Sub-scale	ρ	.63**	.47*	.61**	.52**
PANSS Total Score	ρ	.66**	.50**	.67**	.48*
HADS					
HADS Depression	ρ	.65**	.39*	.62**	.56**
HADS Anxiety	ρ	.61**	.46*	.52**	.65**
HADS Total	ρ	.68**	.43*	.62**	.64**
FoRSe					
Fear of Recurrence: Fear of Relapse	ρ	.61**	.49*	.74***	.38*
Fear of Recurrence: Awareness	ρ	-.02	.07	-.09	.08
Fear of Recurrence: Intrusiveness	ρ	.60**	.54**	.62**	.34*
Fear of Recurrence: Total	ρ	.48*	.42*	.53**	.33*
IES-R					
Impact of Event Scale: Avoidance	ρ	.42*	.43*	.60**	-.01
Impact of Event Scale: Intrusiveness	ρ	.81***	.86***	.69***	.51**
Impact of Event Scale: Hyper-arousal	ρ	.75***	.70***	.69***	.51**
Impact of Event Scale: Total	ρ	.74***	.75***	.73***	.35*
IVI					
Interpretation of Voices Inventory: M	ρ	.24	.32	.26	.08
Interpretation of Voices Inventory: P	ρ	-.16	.08	-.20	.00
Interpretation of Voices Inventory: C	ρ	.19	.19	.24	.02
Interpretation of Voices Inventory: Total	ρ	.17	.28	.20	.09
BAPS					
Beliefs about Paranoia: Survival Strategy	ρ	.09	.15	.00	.35*
Beliefs about Paranoia: Negative Beliefs	ρ	.36*	.45*	.20	.20
Beliefs about Paranoia: Normalising Beliefs	ρ	.20	.16	.16	.37*
Beliefs about Paranoia: Total	ρ	.26	.32	.05	.37*
IUS					
Intolerance of uncertainty	ρ	.46*	.44*	.40*	.30

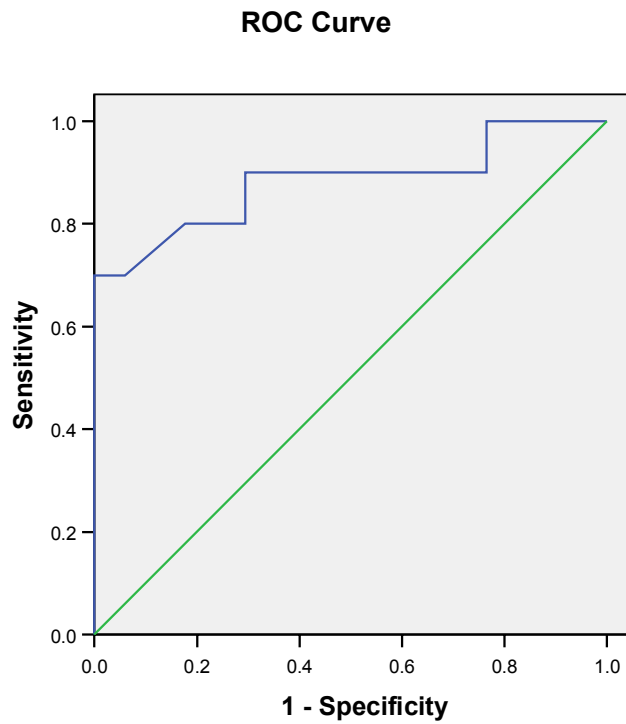
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ $\dagger p \leq 1.00$

Table 6. Results of the logistic regression analyses predicting PP-PTSD caseness

Predictor	β	SE β	Wald/ χ^2	Odds ratio/e ^{β}	p
Beliefs about Paranoia Scale: Negative Beliefs	.223	.154	2.096	1.250	.199
FoRSe: Total Score	.193	.086	5.463	1.213	.019*
Intolerance of Uncertainty	-.014	.029	.229	.986	.632

*p < 0.05

Fig. 1 The ROC Curve for the Fear of Recurrence Scale and PP-PTSD caseness



Diagonal segments are produced by ties.

Chapter 5: Single N Case Research Study Abstract

Using a ‘perfect nurturer’ to alleviate internalised shame in the context of Post-psychotic PTSD: A single N approach.

A psychological intervention for shame based Post-psychotic PTSD (PP-PTSD) is presented using single N methodology. Psychological formulation was guided by a conceptual framework informed by Lee et al’s (2001) clinical model of shame-based PTSD. A psychological intervention incorporating compassionate mind techniques pioneered by Lee (2005) is proposed. It is hypothesised that an increase in the capacity to emotionally nurture and self-soothe will result in a reduction of feelings of shame in a participant presenting with shame-based PP-PTSD. Baseline assessment of levels of intrusive memories, internalised shame, and an inability to exert self-compassion, will be followed by four phases of treatment: 1) Identifying critical voices and establishing a historical context to criticism 2) Assessing the credentials of the critic 3) Generating an image of a perfect nurturer 4) Using the perfect nurturer to facilitate a compassionate reframe. Data from standardized assessment measures, self-report diaries, and idiographic measures will be analyzed using a *double boot strap method* to determine if there are additive therapeutic effects of each of the 4 intervention phases. This study will represent the first attempt to systematically test the efficacy of a treatment for shame-based PP-PTSD. It is hoped that it will assist in the development of further therapeutic techniques aimed at reducing emotional distress in psychosis.

Keywords: Post-psychotic PTSD; shame; schema; single n

Appendix 1.1: Guidelines for submission to Primary Care Mental Health



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- 2 Miller DK and Goodman GN (1989) Gastric bypass procedures. In: Diemel M (ed) *Surgery for the Morbidly Obese Patient*. Lea & Febiger: Philadelphia, pp. 113–33.

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Appendix 2.1: Guidelines for submission to Clinical Psychology Review



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Appendix 2.2 - Details of Systematic Review Literature Search

Stage	Outcome
1	Total N yielded from search of electronic databases = 354
2	N retained after initial screening for eligibility via title and abstract = 38
3	N identified via search of reference list and retained after screening for study eligibility = 5
4	N identifies via web of science citation and related records search and retained after screening for study eligibility = 1
5	N identifies via consultation with expert retained after screening for study eligibility = 1
6	N excluded Upon reading full paper = 15
7	Total N of papers for systematic review = 30

Appendix 2.3: Summaries of studies investigating PP-PTSD

Source	Year recruitment began	Country	Cohort Size Number	Population	Hypotheses	Diagnostic Criteria used to ascertain PTSD	Trauma Scale Used	Type of Trauma	Rate of PTSD
Priebe, Broker & Gunkel (1998)	Not stated	Germany	105	Community-care patients suffering from schizophrenia Diagnosed with DSM-III-R schizophrenia Schizophrenia = 21, Schizoaffective = 2, Delusional = 11, Brief psychotic = 3, Psychosis not specified = 3	<ol style="list-style-type: none"> Investigate: how many patients reported involuntary admission in the past, frequency of PTSD symptoms and the frequency of PTSD diagnoses. Association between experience of involuntary admission in the past and current PTSD symptoms. Correlation between PTSD symptoms and other aspects of psychopathology 	PTSD Interview (Watson et al. 1991), severity of frequency of each (no/never) to 7 (extreme/always). Symptoms were regarded as existent if the score was 4 or greater. The diagnosis was then made according to DSM-III-R criteria. The traumatic event was an involuntary admission, or if none was present, other negative aspects of treatment that patients had experienced.		Involuntary admission or if no forced admission, other negative aspects of treatment	51%
Meyer, Taiminen, Vuori, Aylala & Helenius (1999)	November 1995	Finland	46	DSM-IV: Schizophrenia = 21, Schizoaffective = 2, Delusional = 11, Brief psychotic = 3, Psychosis not specified = 3	<ol style="list-style-type: none"> Assess the prevalence of PTSD after an acute psychotic episode in schizophrenic and delusional patients. Examine which psychotic symptoms and aspects of treatment were particularly traumatic for patients. Compare the extent of the traumatic impact of psychosis and coercive measures. Assess impact of sex, age, first psychiatric hospitalization and first involuntary admission on traumatic symptoms. 	Clinician administered PTSD Scale (CAPS; Blake et al. 1995) – DSM-IV PTSD. Specific psychotic experiences (e.g. frightening hallucinations and delusions) and negative aspects of treatment were used as the assessment of posttraumatic events. Symptom presence was scored using the calibration rule. The Clinician rating scoring rule assessing both clinical and subclinical symptoms, was used to estimate the common prevalence of clinical and sub-clinical PTSD.	Impact of Events Scale Revised IES-R (Weiss & Marmar, 1997)	Of 152 PTSD symptoms recorded, 105 (69%) were related to psychosis, 37 (24%) to hospitalization, 8 (5%) to other sources of trauma, and 2 (1%) could not be categorised PTSD symptoms related to sources of trauma other than psychosis or treatment were excluded from further.	11% (Week 8) Taking into account both clinical and sub-clinical PTSD symptoms, diagnosis was met by 17%
Shaw et al (1997, 2002)	Not stated	Australia	45	Schizophrenia = 18, Bipolar = 12, Schizoaffective = 5, Schizoaffective = 10	<ol style="list-style-type: none"> A series of phenomena in patients with acute psychotic disorders that are not primary features of the illness but rather a reactive state are a consequence of the trauma caused by the illness experience and psychological state induced by the fear, helplessness, and sense of being out of control. This response is not just due to the experience of the symptoms but also to the perception of the treatment and external factors, such as family reaction. 	CAPS-1; Blake et al. (1995). Patients asked to consider the symptom questions (B, C, D phenomena) as reactions to the experience of psychosis and its treatment. Cut-off score of 50 or higher to ascertain PTSD. DSM-III-R PTSD	Impact of Events Scale (Horowitz et al. 1979) Hospital Experience Questionnaire (HES)	Hospitalization and treatment: Global loss of control by the subject, either by submitting to enforced treatment or by feeling psychologically out of control by the subject's thoughts or actions to hurt others. Locked room (seclusion), thoughts of harming family, being physically abused, closed ward, being detained under a custody order, not told why admitted, worried about being in child custody, being away from work/study, forced to take medication, side-effects from medication, current treatment order, being admitted against wishes, not knowing how long in hospital, away from family/friends, under an administration order.	22 out of 42 given the CAPS had PP-PTSD = 52.3% (week 1) Shaw, McFarlane, Bookless & Air (2002): PP-PTSD = 52.3% 11 of 42 had PTSD 11 of 42 had PP-PTSD = 52.3% Comorbid PP-PTSD was present in 4 out of 5 with current NP-PTSD Comorbid PP-PTSD was present in 4 out of 6 with lifetime NP/PTSD

Kennedy, Dhalwal, Pedley, Sahrner, Greenberg & Manshadi (2002)	US	50	Schizophrenia = 30 Bipolar = 20	Identify subjects with Post-Traumatic Stress Disorder (PTSD) consequent to hallucinations and delusions and the experiences related to schizophrenic and bipolar subjects.	Scores of 35 or above	Impact of Events Scale Revised IES-R (Horowitz et al. 1979)	Hallucinations and delusions were identified as traumatic events in 60% of subjects with schizophrenia, but in only 15% of bipolar subjects	Schizophrenia = 23% Bipolar = 40%
McCorry, Chanen, McCarthy, van Riel, McKenzie & Singh (1991)	Australia	36	DSM-III: Schizophrenia = 63.9%, Schizoaffective = 2.8%, Affective Psychosis = 33.3%	1. Significant minority of subjects would meet DSM-III criteria for PTSD. 2. PTSD symptomatology would be prominent in first admission subjects and in those admitted on an ordinary basis. 3. Post-traumatic stress symptoms were present in 17% of subjects with PTSD with significant higher levels of negative symptoms. 4. There will be a positive correlation between measures of PTSD symptomatology and severity of negative symptoms.	The PTSD Scale (Friedman et al., 1986). Self-report DSM-III PTSD Can be used to establish PTSD 'caseness' in a categorical sense.	Impact of Event Scale (IES, Horowitz et al. 1979)	45.8% (4 months) 34.5% (11 months)	
Jackson, Knoff, Skeate & Birchwood (2004)	UK	35	First episode of non-affective psychosis conforming to broad ICD-10 criteria (F20, F22, F23, F25)	1. Establish the incidence of traumatic symptoms (intrusions, avoidance etc) in a sample of young people with first episode of psychosis. 2. Test the hypothesised link between objectively measurable and identifiable stressors such as police involvement, involuntary admission etc and the presence of PTSD symptoms. 3. Determine whether traumatic symptoms which follow an FEP are mediated by coping style and patients appraisals of the potency of their trauma.	Modified version of the PTSD scale (Friedman et al., 1986). Linked directly to criteria for DSM-IV PTSD but excluding the need for fulfillment of criterion A. Post-traumatic stress symptoms were assessed with respect to the overall experience of first episode psychosis and its treatment.	Impact of Events Scale (Horowitz, 1979). Modified version of the Hospital Experiences Questionnaire (McCorry et al. 1991)	31%. Approximately 18 months after first episode.	
Harrison & Fowler (2004) Not in original list	UK	38	ICD-10 criteria for schizophrenia or related non-affective functional psychosis diagnosed by a consultant psychiatrist. 100% of participants had a primary diagnosis of schizophrenia. Participants were excluded if they were in the acute stages of their illness, were diagnosed with depressive psychosis, had a primary diagnosis of substance abuse or an organic disorder, had a brain injury, were illiterate and did not have a working knowledge of English.	1. People who avoid traumatic memories of the experience of psychosis and hospitalization have more negative symptoms. 2. People who avoid traumatic memories of the experience of psychosis and hospitalization retrieve fewer specific and more over-general autobiographical memories and thus have more negative symptoms. 3. Intrusive memories of trauma and hyper-arousal caused by experiencing psychosis and hospitalization are linked to positive symptoms and depression	Did not use a diagnostic measure of PTSD	Impact of Events Scale – Revised (IES-R, Weiss & Marmar, 1997)	Because most of the sample scored low on the IES-R, it can be assumed that few would meet the diagnostic criteria for PTSD. These findings are in line with those of Meyer et al (1999) who found that 11% of their sample met diagnostic criteria for PTSD (Harrison & Fowler, 2004)	
Chisholm, Freeman & Cooke (2006)	UK	36	Individuals who had an episode of psychosis but were now in remission were recruited from adult mental health services in an inner	1) Approximately one third to one half of individuals who have recently experienced an acute non-affective psychotic episode but subsequently recovered will score sufficiently highly on the IES in relation to the psychotic.	Not assessed directly IES scores can be used to categorize	IES and Stressful Life Event Screening: assesses trauma history using a list of 20 adverse events.	IES: Experiences associated with psychosis and its treatment Stressful Life Event Screening: assesses trauma history using a	

Morrison, Bowe, Larkin & Northard (1999).	Not stated	UK	34	<p>London area</p> <p>Diagnosis of schizophrenia or related disorders of non-affective functional psychosis (codes F20-F29)</p> <p>ICD-10 diagnoses</p>	<p>episode to indicate that they would meet criteria for PTSD.</p> <p>2) Known predictors of PTSD reactions to external events will also be associated with PTSD reactions to psychotic episodes.</p> <p>3) People experiencing first episode psychosis will have significantly fewer PTSD reactions associated with psychotic episodes than those who have had more than one episode.</p> <p>4) Trauma reactions will be higher in individuals with persecutory delusions compared with those experiencing other types of delusion.</p> <p>5) Particular aspects of the content of persecutory delusions (e.g. the power of the persecutor) will be associated with traumatic reactions to psychotic episodes.</p>	<p>levels of PTSD (Devilly, 2004).</p> <p>Scores of:</p> <p>0 – 8 = subclinical</p> <p>9 -25 mild</p> <p>26-43 moderate</p> <p>44-75severe</p>	<p>Acute psychotic episodes as the index event.</p> <p>Patients were asked to consider the most difficult period of their psychotic episode as the index event. However, all participants included a clear delusional belief within their index event.</p>	<p>list of 20 adverse events.</p>	<p>symptoms had a reaction to their psychotic episode that was potentially severe enough to receive a PTSD diagnosis.</p> <p>13.9% categorized as having significant PTSD reactions</p> <p>25% had mild PTSD</p> <p>38.9% Moderate</p> <p>PTSD reactions severe PTSD symptoms.</p> <p>44% (N = 15) as measured by caseness on the IES.</p>
				<p>263 subjects were contacted by mail and asked to complete the questionnaires. These were randomly sampled from all of the available admission records of the local acute psychiatric hospital since its opening (6 years of records in total; every 10th name was selected from voluntary admissions and every 3rd name from involuntary admissions in an attempt to produce a similar sample size for each group). The response rate was 41% (13%), resulting in 34 returned questionnaires that had usable data.</p>	<p>1. A substantial proportion of patients admitted to psychiatric hospital would meet "caseness" for PTSD.</p> <p>2. Patients who had experienced a compulsory admission would exhibit higher levels of PTSD symptoms.</p> <p>3. In addition, this study intended to examine the emotional responses to the experience of psychiatric admission and to examine the relationship between admission history and attributions for admission and PTSD symptomatology</p>	<p>None used</p>	<p>Hospitalization Experiences Questionnaire (HEQ; designed by authors for purposes of this study).</p> <p>Impact of Events Scale (IES; Horowitz et al 1979).</p>	<p>Hospitalization Experiences Questionnaire: This questionnaire assessed variables relating to a patient's most recent psychiatric admission and admission history. It also assessed patients' psychological reactions to admission using 0 to 100 visual analogue scales regarding how angry, sad, and scared they felt as a result of admission and how much they were able to trust health professionals.</p> <p>Impact of Events Scale (IES; Horowitz et al, 1979). This is a 15-item measure of the frequency of PTSD symptomatology consisting of two subscales (intrusions and avoidance symptoms). This questionnaire assesses PTSD symptoms with reference to the specified event (in this case, the person's most recent psychiatric admission for a mental health problem). Total scores of greater than 30 have commonly been adopted to indicate clinical caseness for PTSD (e.g., Sembi et al, 1998).</p>	

Appendix 2.4: Methodological ratings for reviewed studies

Methodological quality rankings for studies investigating PP-PTSD.

Rank	Study Reference	Overall quality score (%)
1	Meyer et al (1999)	59.5%
2	Shaw et al (2002)	58.5%
3	Shaw et al (1997)	54.0%
4	Priebe et al (1998)	53.0%
5	Jackson et al (2004)	50.5%
6	Harrison & Fowler (2004)	49.0%
7	Chisholm et al (2006)	43.0%
8	McGorry et al (1991)	41.5%
9	Morrison et al (1999)	38.5%
10	Kennedy et al (2002)	36.0%

Methodological quality rankings for studies investigating Comorbid PTSD.

Rank	Study Reference	Overall quality score (%)
1	Mueser et al (2001)	60.0%
	Resnick et al (2003).	60.0%
3	Pallanti et al (2004)	56.5%
4	Gearon et al (2004)	54.0%
5	Tibbo et al (2003)	53.0%
6	Strakowski et al (1995)	52.0%
7	Braga et al (2005)	50.5%
8	Switzer et al (1999)	45.5%
	Gearon et al (2003)	45.5%
10	Chubb & Bisson (1996)	43.0%
11	Neria et al (2002)	42.5%
12	Zimmerman & Mattia (1999)	39.5%
13	Howgego, et al (2005)	38.5%
14	Mueser et al (1998)	36.5%
15	Frueh et al (2005)	36.0%
16	Scheller-Gilkey et al (2004)	34.5%
	Mueser et al (2004)	34.5%
18	Sarkar et al (2005)	33.0%
19	Kilcommons & Morrison (2005)	31.0%
20	Strauss et al (2006)	29.5%

Appendix 2.5: Summaries of studies investigating comorbid PTSD

Source	Year recruitment began	Country	Cohort Size Number	Population	Hypotheses	Diagnostic Criteria used to ascertain PTSD	Trauma Scale Used	Type of Trauma	Rate of PTSD
Sarkar, Mezey, Cohen, Singh & Oluonoroti (2005)	2002	UK	55	Opportunistic sample (27 forensic/offender patients and 28 non-offender psychiatric inpatients) Primary diagnosis of paranoid schizophrenia	Forensic patients will have: 1. higher rates of trauma experiences 2. higher rates of current and lifetime PTSD 3. Groups would differ in type and severity of trauma experienced 4. Groups would differ in age at which earliest and index trauma were experienced	PTSD Symptom Scale (PSS-1); DSM-IV PTSD	Trauma History Questionnaire (Green, 1996)	Crime related events (71%, 57%) General disaster and trauma (93%, 71%) Physical and sexual experiences (44%, 25%) Other (33%, 32%)	Total sample: 27% current PTSD, 40% lifetime Forensic: current (33%), lifetime (62%) Non-offender: Current (21%), Lifetime (25%)
Zimmerman & Mattia (1999)	Not stated		500	500 psychiatric outpatients: 235 of whom had had non-bipolar MDD (19 psychotic depression); 216 non-psychotic depression)	1. The prevalence of PTSD would be higher in patients with psychosis than non-psychotic depression. 2. There would be differences between psychotic depressives with and without PTSD as to the type of psychotic symptoms that they experience.	The structured clinical interview for DSM-IV (SCID; De-Ben et al, 2001)	N/A	3 most common types of trauma experienced by the entire sample were: Sexual assault by family member or someone known to the person (42.2%), non-sexual assault by family member or person known to person (20.0%), or being in a serious accident (11.1%)	11 out of 19 patients with psychotic depression (57.9%)
Braga, Mendlowicz, Mairrocas & Figueira (2005)	March 2001	Brazil	63	Outpatients with DSM-IV diagnosis of schizophrenia	1. Clinically stable outpatients with schizophrenia will show a relatively elevated prevalence of comorbid lifetime anxiety disorders. 2. Clinically stable outpatients with schizophrenia with comorbid anxiety would exhibit a lower level of subjective quality of life.	The anxiety section of the structured clinical interview for DSM-IV (SCID; De-Ben et al, 2001)	N/A	N/A	3.8%
Mueser, Salyers, Rosenber, Goodman et al (2004)		US	782	Serious Mental Illness: schizophrenia, schizoaffective disorder, bipolar disorder, or major depression with psychotic features vs. no psychotic disorder. Chart review, structured clinical interview for DSM-IV (SCID)	1. Evaluate the prevalence of PTSD in a large sample of patients with severe mental illness in multiple treatment sites across 4 US states. 2. Examine correlates of PTSD including demographic characteristics, clinical variables, health, and receipt of treatment.	PTSD Checklist (PCL; Blanchard et al, 1996); DSM-IV PTSD	Sexual Abuse Exposure Questionnaire (SAEQ; Rodriguez et al, 1997) Conflict Tactics Scales (CTS; Straus, 1989) Revised Conflict Tactics Scales (CTS; Straus et al, 1996) Clinical and health variables: Psychiatric hospitalization Alcohol disorder	Physical Assault (Childhood/Adulthood) Sexual Assault (Childhood/Adulthood) Lifetime physical assault = 84%, Lifetime sexual assault = 52%	34.8%
Schaller-Glikew, Moyness, Cooper, Kant, & Miller (2004)	1999	US	122	Schizophrenic spectrum disorder: outpatients: schizophrenia and schizoaffective disorder. Chart review, structured clinical interview for DSM-IV (SCID)	1. Increased early life stress would be associated with increased PTSD symptoms and substance abuse in patients with schizophrenia. 2. The relationship between early life stress and depressive symptoms in schizophrenia patients with and without substance abuse was also explored.	Davidson PTSD rating scale	Childhood Traumatic Events Scale (CTES)	Death of a family member or close friend (66.7%), sexual abuse (36.6%) History of substance abuse.	Not reported. Substance abusing schizophrenia group scored significantly higher on both frequency and severity sub-scales of the Davidson PTSD scale.
Resnick, Bond & Mueser (2003)	Not stated	US	47	Schizophrenia, schizoaffective disorder. Chart review, structured clinical interview for DSM-IV (SCID)	Lifetime trauma severity and PTSD severity would be associated with more schizophrenia symptoms.	Clinician administered PTSD Scale (CAPS, Blake et al, 1990) Modified Clinician administered PTSD Scale (CAPS, Blake et al, 1990); Criterion A excluded.	Trauma History Questionnaire Revised (THQR) – age at trauma occurrence and whether it constitutes criterion A Combat, accident.	Mean number of criterion A events for the sample was 3.19 33 of 47 CAPS interviews were based on criteria A events: Sexual assault = 34%, physical assault = 14.9%, sudden death or close friend = 10.5%	13%

Chubb & Bisson (1996)	Not stated	UK	20 (6 with chronic schizophrenia)	Pre-existing and enduring mental health difficulties: 13 (65%) = major depressive disorder. 6 (30%) = schizophrenia 1 (5%) = anxiety disorder.	DSM-IV diagnoses of either schizophrenia or schizoaffective disorder and current drug abuse or dependence (past three months)	Aim: To determine the incidence of PTSD shortly after a major coach accident in a group of individuals with a pre-existing and enduring mental illness.	Clinician Administered Post Traumatic Stress Disorder Scale (CAPS-1; Blake et al., 1990); DSM-IV PTSD	natural disaster, serious illness, sexual assault, Attack with/without weapon, etc	Psychological reactions to a coach accident/Degree of physical injury sustained.	50% of entire sample 17% (1 out of 6) patients; versus 64% of the non-schizophrenia group. 51%
Geaton, Kallman, Brown & Belack (2003)	1999	US	35	DSM-IV diagnoses of either schizophrenia or schizoaffective disorder and current drug abuse or dependence (past three months)	The prevalence of trauma and PTSD in a well-defined sample of drug-using or drug-dependent women with schizophrenia would be expected to be higher than rates in a general population of women with serious mental illness, as well as samples of drug-dependent women from the general population.	Clinician administered PTSD Scale (CAPS; Blake et al., 1990); modified for patients with schizophrenia by checking symptom descriptions more closely for applicability to the behavioural specific examples. DSM-IV PTSD. Using the recommended cut-off of total severity of symptoms: 45 or higher.	Traumatic Life Events Questionnaire	Childhood: sexual abuse, physical abuse, witnessed family violence; Adulthood: sexual abuse, physical assault or abuse, death of a close friend or loved one, life threatening illness, robbed with a weapon, loved one experienced a life-threatening accident, assault, or illness, Life threatened with knife or gun, Motor vehicle accident, Witnessed a stranger being assaulted, Re-victimization in adulthood of victims of childhood trauma.	51%	
Mieser, Goodman, Trumbetta, Rosenberg, Osher, Vidaver, Auciello & Foy (1998)	1996	US	275	DSM-IV: Patients with severe mental illness (e.g. schizophrenia and bipolar disorder): Schizophrenia = 23% Schizoaffective disorder = 11% Bipolar disorder = 18% Depression = 24% Borderline Personality disorder = 6% All other personality disorders = 12%	1. Evaluated the trauma history and PTSD in a large cohort of patients with severe mental illness receiving psychiatric services 2. Evaluating the presence of PTSD as a function of demographic and diagnostic differences. 3. Examined relationship between different types of trauma and PTSD diagnosis to determine whether similar associations were found as have been reported for the general population	PTSD Checklist (PCL-S; Weathers, Litz, Herman et al., 1993). PCL-S was completed for a single traumatic event that patients judged most severe. Symptoms that were rated as moderately severe or greater were classified as present. DSM-IV PTSD It is not a structured interview like the CAPS or the SCID. PTSD diagnosis should be regarded as probable or presumptive.	Trauma History Questionnaire (THQ; Green, 1996) Community Violence Scale (CVS; Foy et al., in press)	Events meeting the DSM-IV criterion A definition of traumatic event for PTSD were coded as present. Exposure to traumatic events based on the THQ was recorded separately for childhood (occurring before age 16) and for adulthood. Traumas assessed by THQ and CVS. Traumas were grouped into the following categories: Sexual assault (unwanted sexual contact or for children, sexual contact with someone who is more than 4 years older) Physical attack (without a weapon) Physical attack (with a weapon, witnessing a killing or serious injury to another, accident, disaster, and having a close friend or relative either murdered or killed by a drunk driver. Exposure to events that involved more than one type of trauma was coded for the single type of trauma most likely to result in PTSD on the basis of research in the general population.	43% of whole sample 28% in schizophrenia patients only 40% of bipolar patients 37% schizoaffective disorder. But: only 2% of those with diagnosis made in this study had a PP-PTSD diagnosis in their notes.	
Mieser, Saiyers, Rosenberg, Ford, Fox & Carty (2001)		US	30	Schizophrenia = 27% Schizoaffective disorder = 13% Bipolar disorder = 37% Major depression/dysthymic disorder (17%) Psychotic disorder not otherwise stated (6%) Substance use disorder in remission (13%) Active substance-use disorder (27%)	Examine the psychometric characteristics of three instruments for assessing trauma and PTSD in a sample of individuals with severe illness: the Trauma History Questionnaire, the Clinician Administered PTSD Scale, and the PTSD Checklist. Specifically, the inter-rater reliability, internal consistency, and test-retest reliability of these measures, and the convergent validity of the two PTSD measures were to be examined.	PTSD Checklist (PCL-S; Weathers, Litz, Herman et al., 1993). PCL-S was completed for a single traumatic event that patients judged most severe. Symptoms that were rated as moderately severe or greater were classified as present. DSM-IV PTSD It is not a structured interview like the CAPS or the SCID. PTSD diagnosis should be regarded as probable or presumptive.	Trauma History Questionnaire (THQ; Green, 1996)	Traumas were grouped into the following categories: Sexual assault (unwanted sexual contact or for children, sexual contact with someone who is more than 4 years older) Physical attack (without a weapon) Physical attack (with a weapon, witnessing a killing or serious injury to another, accident, disaster, and having a close friend or relative either murdered or killed by a drunk driver. Exposure to events that involved more than one type of trauma was coded for the single type of trauma most likely to result in PTSD on the basis of research in the general population.	Test time 1: CAPS = 40% CAPS with minimum severity of 65 = 27% PCL = 59% Test time 2: CAPS = 35% CAPS with minimum severity of 65 = 21%.	

Strakowski, Keck, McElroy, Lonzczak & West (1995)	1992	US	71	First Episode Psychosis: 39 bipolar 18 with schizophrenia spectrum disorder 14 psychotic depression	Determines whether comorbidity is commonly antecedent to the onset of psychosis If so whether certain types of antecedent comorbidity are specific for certain types of psychotic disorders. Both antecedent and total comorbid alcohol and drug abuse would be more common in affective psychoses and the alcohol abuse would be most common in patients with psychotic depression versus comparison groups.	The CAPS (Blake et al., 1990). Standard diagnostic scoring method defines a symptom as present if it is present at least once during the last month and an intensity of at least moderate distress or functional impairment. Weathers et al. (1989) stringent criteria = minimum score of 65. The PCL and CAPS were administered only to participants who had a traumatic event that met criteria A1/A2	N/A	N/A	For all the traumas the interviewer determined whether each event involved an objective threat of death or serious injury and also verified that the participant had experienced extreme fear, helplessness, or horror. In accordance with DSM-IV A1/A2 criteria.	PCL = 43%
Tibbo, Swanson, Chue & Lemleledo (2003)	Not stated	Canada	30	DSM-IV diagnosis of schizophrenia. Individuals had to be considered stable on their dose of anti-psychotics for the 1 month prior to the interview. Inability to give informed consent, significant past head injury, significant medical/neurological illness and active alcohol or drug abuse were considered exclusion criteria.	Aims: 1. Investigating the majority of anxiety disorders (including PTSD) in a cohort of individuals with schizophrenia. 2. Investigating if the anxiety symptoms related to the decisions and/or behaviors of the individuals with schizophrenia. 3. Examining functional outcome of anxiety disorders in individuals with schizophrenia.	The Mini International Neuropsychiatric Interview (Mini, version 4.4) was administered to all participants to confirm the diagnosis of schizophrenia and screen for comorbid anxiety disorders. If DSM-IV PTSD criteria were met then the CAPS was administered.	N/A	N/A	0%	
Pallanti, Quercioni & Hollander (2004) Not in original list – obtained by reviewing Braga et al (2004)	2000	Italy?	80 outpatients with DSM-IV schizophrenia and a comparison group of 27 patients with social anxiety	Schizophrenia patients were diagnosed with the SCID (DSM-IV) – recruited from an outpatient unit. 1. A higher prevalence of other comorbid anxiety disorders. 2. A greater number of suicide attempts in their history and attempts of greater lethality. 3. Lower social adjustment and quality of life. 4. The Liebowitz Social Anxiety Scale would reveal a similar profile for social anxiety disorder patients and schizophrenia patients with social anxiety disorder.	Schizophrenia patients with social anxiety disorder, compared to schizophrenia patients without social anxiety disorder would have: 1. A higher prevalence of other comorbid anxiety disorders. 2. A greater number of suicide attempts in their history and attempts of greater lethality. 3. Lower social adjustment and quality of life. 4. The Liebowitz Social Anxiety Scale would reveal a similar profile for social anxiety disorder patients and schizophrenia patients with social anxiety disorder.	SCID (DSM-IV) PTSD	N/A	N/A	1 out of 80 patients with schizophrenia (1.3%)	
Gearon, Belleck & Temuda (2004) Not in original list: obtained from review by Muller et al (2004)	Not stated	US	19	Female psychiatric outpatients diagnosed with DSM-IV schizophrenia and comorbid anxiety disorders. The Structured Clinical Interview for DSM-IV (SCID; First et al., 1994)	Aim: The study provides preliminary data for the reliability and validity of a version of the CAPS adapted for use with patients with schizophrenia.	CAPS-S (Gearon et al., 2001); DSM-IV PTSD in schizophrenia PTSD module of the SCID; DSM-IV PTSD	The Traumatic Life Events Scale (Kubany, 1985) was used to assess exposure to traumatic life events. Impact of Event Scale (Horowitz et al., 1979)	Not stated	8 of 19 (42%) met criteria for current PTSD on the SCID. 14 of these (50% sensitivity) were diagnosed as having PTSD on the basis of	

<p>Neria, Bromet, Sievers, Laveille & Fochtmann (2002)</p> <p>Not in original list: obtained from review by Muller et al (2004)</p>	<p>No stated</p>	<p>US</p>	<p>426</p>	<p>Schizophrenia or schizoaffective disorder (38.7%), Bipolar disorder with psychotic features (23.9%), (14.1%), organic substance disorders (13.8%) and other non-organic psychoses (9.4%)</p>	<p>Aim: Extend the understanding of the relationship between trauma and severe mental illness by examining the rates, correlates, and risk factors for trauma and PTSD in a diagnostically heterogeneous cohort of first-admission individuals with schizophrenia.</p>	<p>The trauma and DSM-III-R PTSD module used in the national comorbidity Survey (NCS; Kessler et al, 1995)</p>	<p>The trauma and DSM-III-R PTSD module used in the national comorbidity Survey (NCS; Kessler et al, 1995)</p>	<p>68.5% reported trauma exposure: Rape = 13.8%, sexual molestation = 15.0%, physical attack or assault = 29.8%, Combat = 2.1%, Suffered a great shock = 7.5%, Threatened with weapon/held captive/kidnapped = 13.1%, Accident = 21.1%, Disaster/fire/flood = 8.0%, Witness injury/death = 22.1%, serious neglect = 5.6%, Physical abuse in childhood = 21.6%, Life threatening illness = 1.6%, traumatic death = 10.3%, Other qualifying trauma = 7.3%</p>	<p>Lifetime rate in exposed sample (n = 230) = 26.6% Lifetime rate of PTSD in the full sample (n = 426) Women x2 more likely to meet criteria for PTSD in both samples. Total sample: % of participants with different diagnoses with PTSD: 10% of schizophrenia, 10.8% of bipolar, 21.7% of psychotic depression, 15.6% of organic psychoses, other disorders = 15.6% Trauma sample: % of participants with different diagnoses with PTSD: 22.1% of schizophrenia, 20.4% of bipolar, 33.3% of psychotic depression, 22.7% of organic psychoses, other disorders = 39.5% 33.3% of total sample met DSM-IV diagnostic criteria for PTSD Schizophrenia = 4/16 = 25% Trauma but no</p>
<p>Howeigo, Over, Meidrum, Yellowless, Dark, & Parslow (2005)</p>	<p>Not stated</p>	<p>Australia</p>	<p>27</p>	<p>Schizophrenia = 16 Borderline Personality Disorder = 5 Depression = 3 Bipolar Affective Disorder = 3</p>	<p>What was the trauma and PTSD profile for clients in an Australian CMHS? How did this profile compare to that reported in the international literature for similar groups of clients? Did the treating health professional know of this profile?</p>	<p>Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995)</p>	<p>N/A</p>	<p>20 clients (74%) reported exposure to at least one traumatic event. PTSD group (n = 9; 33% of total sample): 78% reported childhood sexual assault 53% reported adult sexual abuse</p>	

<p>Switzer, Dew, The, Govcolet, Demicott and Mullins (1999)</p>	<p>1995</p>	<p>US</p>	<p>181</p> <p>Only 3 clients from the entire sample carried clinic-assigned PTSD diagnoses.</p>	<p>DSM-IV diagnoses made after mental health medical record review for each participant.</p> <p>Substance abuse diagnoses: (48%) Depressive diagnosis (39%) Schizophrenic disorder diagnosis (24%)</p>	<p>What impact did PTSD symptomatology have on: The working alliance between clients and their managers Client health outcomes What factors may be contributing to the higher levels of trauma and PTSD reported in the literature for this population? What are the possible links between PTSD and other mental issues?</p> <ol style="list-style-type: none"> 1. Through a health centre clients with the highest rates of cases of traumatic events and high rates of PTSD compared to such rates in community populations. 2. Individuals who had experienced traumatic events and who were identified by research interviews as meeting criteria for PTSD would utilize more mental health services, yet would rate such services as less effective than would their counterparts. 3. Because other research because research led us to expect that men and women might differ both in PTSD diagnosis and service use/satisfaction, men and women were compared on all key domains. 	<p>Composite International Diagnostic Interview (CIDI; Kessler, 1994)</p> <p>If the respondent reported multiple traumatic experiences, the interviewer asked them to select the one that was most upsetting, and subsequent questioning pertaining to the PTSD symptomatology focused on this event.</p>	<p>Composite International Diagnostic Interview Ince provides a list of a wider range of traumatic events</p> <p>[Utilisation of community mental health and social services was assessed using the Service Utilization Assessment from the National Comorbidity Study (NCS; Kessler, 1994)]</p>	<p>Not assessed</p>	<p>Non-PTSD trauma group (n=11, 67%); 36% reported childhood sexual assault 18% reported adult sexual assault.</p> <p>PTSD vs non-PTSD group: Greater number of clients in non-PTSD group had diagnosis of schizophrenia.</p>	<p>PTSD = 7/16 Bipolar Affective Disorder = 0/3 = 0% Trauma but no PTSD = 2/3</p> <p>Whole sample: 42% with PTSD 12-month PTSD diagnostic criteria</p> <p>Of the 170 clients who had experienced at least one major lifetime trauma, 69% met lifetime PTSD diagnostic criteria</p> <p>Clients diagnosed with PTSD via clinical interview were less likely to have schizophrenic disorders than were non-PTSD clients, 13% vs. 31%; $\chi^2 (1, N = 181) = 7.7, p < 0.01$</p> <p>Forty-eight percent of the sample met DSM-IV criteria for PTSD.</p>
<p>Strauss, Calhoun, Marx, Steuchak, Odone, Swartz & Butterfield,</p>	<p>2006</p>	<p>US</p>	<p>165</p>	<p>165 male veterans with schizophrenia and schizoaffective disorder. This sample includes the subset of patients diagnosed with schizophrenia or schizoaffective disorder that participated in a larger study (N = 399) examining infectious disease among patients with SMI (Butterfield et al, 2004).</p>	<p>Those with comorbid PTSD would report higher rates of suicidal ideation and suicidal behaviors than those with schizophrenia spectrum disorders alone</p>	<p>Comorbid PTSD was diagnosed by applying DSM-IV decision rules to responses on the PTSD Checklist (PCL; Blanchard et al, 1996).</p>	<p>Not assessed</p>	<p>Not assessed</p>	<p>Not assessed</p>	

Frueh, Knapp, Cusack, Grubaugh, Sauvageot, Cousins, Yin, Robbins, Monnier, Hiers, (2005).	2002-2004	US	142	Participants were 142 randomly selected adult psychiatric patients who were recruited through a day hospital program. A computer-generated simple random sampling procedure was used. All participants signed informed consent documents before study participation and were paid \$25 for their participation.	Examine the interrelationships of and subjective reactions to potentially traumatic or harmful experiences that occurred in psychiatric settings and the self-report ratings of subsequent involvement in psychiatric care.	PTSD Checklist (PCL; Weathers et al, 1993). The PCL is a 17-item self-report measure of PTSD symptoms that is based on DSM-IV criteria. Scores on the PCL range from 17 to 85, with scores of 50 or higher indicating that the patient has probable PTSD.	Psychiatric Experiences Questionnaire (PEQ): assess for a wide range of traumatic and harmful experiences that may occur within psychiatric settings. Assess whether the event was experienced, the level of distress one week after the event, and the level of distress since the event. Distress items were included about general perceptions of personal safety, fear, helplessness, and distress. Compliance with psychiatric recommendations was assessed by asking the participant "In general, how well have you followed specific psychiatric recommendations (for example, medications and therapy)?" Scores range from 1 to 5, with higher scores indicating more compliance. Trauma Assessment for Adults-Self-Report Version (TAA). Widely used in research on trauma exposure among adults. Archival data records of a subset of 15 patients revealed that the TAA detected all stressor events noted in the mental health records of these individuals and other stressor events that were not in the records.	(PEQ): Twenty-six items on the PEQ list possible experiences (for example, being strip-searched). (TAA): This 17-item instrument assesses for lifetime history of traumatic events (for example, sexual assault)	Current PTSD symptom levels were high, and 27 respondents (19 percent) met criteria for probable PTSD
Kilcommons & Morrison (2005)	Not stated	UK	32	Convenience sample, recruited through care coordinators in community mental health teams. Range of DSM-IV schizophrenia spectrum disorders (16 of which had a diagnosis of schizophrenia)	This study aims to examine whether cognitive factors (such as negative appraisals resulting from traumatic experience) and responses to trauma (such as dissociation) could be implicated in the development of PTSD and positive psychotic symptoms. It is hypothesized that: 1. Severity of trauma will be associated with increased severity of psychotic symptoms and PTSD symptoms 2. Negative beliefs and a dissociative response to trauma will be associated with psychotic experiences (and predict hallucinations after controlling	DSM-IV-R; Post-traumatic Stress Disorder Symptom Scale - Self-Report (Foa et al., 1993); contains 17 items that diagnose PTSD. Participants were also considered to suffer from PTSD if they met DSM-IV criteria for PTSD and scored at least 18 on the PSS-SR. Exposure to events that involved more than one type of trauma was coded for the single type of trauma most likely to result in PTSD: sexual assault traumas first, followed by physical assault, followed by witnessing.	The Trauma History Questionnaire (THQ) was used to measure history of exposure to potentially traumatic events that may meet the A, (stressor) criterion for DSM PTSD. The 36-item Post-Traumatic Cognitions Inventory (PTCI): a measure of trauma-related thoughts and beliefs, whose items were used to test current theories and theories of post-trauma psychopathology. The	THQ: Exposure to traumatic events was recorded separately for childhood (occurring before the age of 16) and for adulthood, and for single and multiple instances. Traumatic events were grouped into the following categories: sexual assault (unwanted sexual contact or for children under 13, who was at least 5 years older), physical attack (without a weapon), physical attack with a weapon, witnessing trauma (killing or serious injury) of another, car or work accident, man-made or natural disaster, other situation suffered physical damage, other situation feared death of serious injury, having a close friend or relative either	The rate of current PTSD in this sample of individuals with a primary diagnosis of psychosis, was 53.1%.

Appendix 4.1: Guidelines for submission to Acta Psychiatrica Scandanavica

Manuscripts

Consult a current issue of the Journal for style and format. The text should be in double-spacing with broad margins. Review articles/meta-analysis, clinical overview articles, original articles and brief communications all follow the same concept:

- Page 1 should contain a concise, informative title, the authors' names, the names in English of departments and institutions to be attributed, and their city and country of location. If the title exceeds 40 characters (letters and spaces) a brief running head should be included. Name, telephone number, fax number, e-mail address and full postal address of the corresponding author should be stated.
- Page 2 should contain:
 - Abstract not exceeding 150 words with the following structure: Introduction, Method, Results, and Conclusion.
 - Indication of 3 - 5 keywords in strict accordance with Medical Subject Headings.
- For original articles specifically: **Significant Outcomes**. Provide up to 3 Significant Outcomes encapsulating the 'take-home messages' of the article, and identify the main issues addressed, with particular emphasis on clinical and/or scientific significance. The Significant Outcomes should be presented succinctly (1 max 2 sentences each), in tabulated form, and logically emerge from the conclusions of the paper (without repeating). However, they must not be dogmatic, raise new issues or pose further questions.
In addition, each original article must cite 3 noteworthy **Limitations**. These should inform the reader about potential weaknesses, for instance in aspects of study design, methodology, analyses, the wider generalizability, or the wider application of findings.
The **Significant Outcomes** and the **Limitations** should be placed immediately below the Abstract/Keywords.
- For review articles specifically: **Summations**. Provide up to 3 significant Summations encapsulating the 'take-home messages' of the paper, and identify the main issues addressed, with particular emphasis on their clinical and/or scientific significance. The Summations should be presented succinctly (max 2 sentences each), in tabulated form, and logically emerge from the conclusions of the paper (without repeating). However, they must not be dogmatic, raise new issues or pose further questions, and authors should avoid jumping to conclusions.
In addition, each review article must cite up to 3 noteworthy **Considerations** in which authors essentially criticise the summations and include any caveats or limitations either of the review process or its conclusions.
The **Summations** and **Considerations** should be placed immediately below the Abstract/Keywords.
- For *clinical overview articles* specifically: **Clinical Recommendations**. Provide up to 5 significant Clinical Recommendations. Present them succinctly (max 2 sentences each), in tabulated form, and so as to emerge logically from the conclusions of the article (without repeating). However, they must not be dogmatic, raise new issues or pose further questions, and authors should avoid jumping to conclusions.
In addition, each clinical overview article must provide up to 3 **Additional Comments** in which authors cite caveats/limitations and attempt to balance their recommendations by including for instance alternative contemporary views/recommendations.
The **Clinical Recommendations** and **Additional Comments** should be placed immediately below the Abstract/Keywords.
- **Introduction**. One to two pages concluded by Aims of the study (3 to 5 lines without literature references).
- A thorough **Material and methods** section. It should be possible to read every article by itself. The author cannot simply refer to design, method and material described in previously published articles.
- **Results**.
- **Discussion**. *Acta Psychiatrica Scandinavica* articles do not have a conclusion section. If the authors find it necessary, they may include a concluding remark of maximum 5 lines as the final part of the Discussion.
- **Acknowledgements** should include grants, sponsorships and other support to the study. Some authors may wish to thank other collaborators apart from the authors. It is stressed that only a very few people should be listed. It is the responsibility of the author to obtain written permission from the persons on the list.
- A **Declaration of Interest** must be given if the study in any way involves pharmaceutical companies or other private enterprises. If the study in any way investigates pharmaceutical compounds, the **Declaration of Interest** must contain information about by whom and which institutions the statistical analyses were performed and an e-mail address where to obtain the protocol.
- **Reference list** (Vancouver system). We recommend the use of a tool such as [EndNote](http://www.endnote.com/support/enstyles.asp) or [Reference Manager](http://www.refman.com/support/rmstyles.asp) for reference management and formatting. EndNote reference styles can be searched for here: <http://www.endnote.com/support/enstyles.asp>. Reference Manager reference styles can be searched for here: <http://www.refman.com/support/rmstyles.asp>
- **Tables and figures** including legends.

Appendix 4.2: Case Vignette of a Patient with Post-psychotic PTSD

Ahmed is an 18 year old male. His first psychotic episode occurred in the context of a number of chronic and continuing life problems. There was continuing family disharmony and arguments. When he went to college at 16, Ahmed continued to have a number of problems in terms of drug use, difficulties in making friends and arguments with his mother. His first episode had a relatively rapid onset of two weeks, followed by a four-week hospital admission. Ahmed experienced persecutory paranoia, thought broadcasting, thought insertion and was also very conceptually disorganised. However, he made a very quick recovery in terms of his psychotic experiences but was referred for cognitive therapy due to increased depressed mood following remission. In particular, he was distressed regarding his future with respect to the impact of his drug-using lifestyle and psychosis on his future education and employment. Ahmed was unable to tolerate his anti-psychotic medication and gradually discontinued this with the help of his psychiatrist.

Over a 9-month period he made an excellent recovery in terms of his social and emotional well-being. He made new friends, started college, and had successfully reconciled his differences with his mother and father. Ahmed's father then left the UK to work abroad. Within two weeks of his departure, Ahmed was admitted following a second episode of psychosis for a period of 5 weeks.

Ahmed's psychotic experiences remitted rapidly. However at his first appointment following discharge from hospital, there was a marked change in his affect. Ahmed's psychiatrist was concerned regarding a different presentation on this occasion. He felt that there were strong negative symptoms and asked for further psychological assessment of these. At this assessment, Ahmed's conversation was slow and stilted. He avoided eye contact. He described being unable to have positive feelings, that his emotions were numb. That it was like he didn't care anymore. He felt guilty and ashamed. In relation to this he specifically remembered being admitted to hospital and being asked if he had been drinking alcohol. He realised at that point that he had been drinking heavily and thought, 'It's my fault that I'm back here again'. At times Ahmed's description of events was marked by fragmentation and very general semantic descriptions of his experience, for example, 'You know it all happened so quickly, one minute I was in hospital, the next I was out', or 'Yeah, it was fine in hospital, nothing really happened'.

The therapist was struck by the apparent dissymmetry between Ahmed's self-reported affect and the vague descriptions of his experience of his second episode. In further sessions this became a focus for further exploration. The therapist began to focus on more specific autobiographical details in the weeks prior to and during the second episode. It became apparent that Ahmed had been experiencing recurring and intrusive recollections of his psychosis. In particular, he reported specific memories of falling out with his friends due to arguments arising from delusional ideas, which included being a famous rock star and songwriter. These memories were associated with intense feelings of shame and embarrassment. In relation to this he experienced a vivid visual image of his friends huddled in the classroom, laughing and joking about his misfortune. Associated with these memories, Ahmed experienced overwhelming feelings of entrapment and loss.

(Extracted from Gumley & Schwannauer, 2006)

Appendix 4.3: Research Referral Form



An Investigation into the Phenomenology and Treatment of Post-Psychotic PTSD

Referral Form

Researcher: <i>(please return form to researcher when completed)</i>	Dr Ross White Trainee Clinical Psychologist CHCP East Anvil Center Parkhead Glasgow Email: Ross.White@glacomen.scot.nhs.uk			Phone: 0141 2118480
Patient name:	Patient Address:	DOB:		
	Contact Telephone:			
CPN/Base:		Consultant Psychiatrist:		
Name of referrer:		Date of referral:		
Patient has a primary diagnosis of schizophrenia?	Yes / No			
Has patient consented to referral?	Yes / No			

For Official Use Only:

Stage	Date
Consultant Psychiatrist agreed to research involvement?	
Location of 1 st appointment:	
Patient agreed to participate: Yes/ No	
Informed consent obtained: Yes / No	
Three assessment sessions completed: Yes / No	
Group that patient was assigned to: PP-PTSD / Control	
Assessment report completed and sent to CMHT: Yes / No	
Patient consented to treatment for PP-PTSD: Yes / No	

Appendix 4.4: Participant Information Sheet

Participant Information Sheet A (Version 1; 27th March 2006)

Study Title:

A study of personal experiences of distress in psychosis

Dear [*Insert name of participant*]

I would like to invite you to take part in a research study. My name is Ross White and I am a trainee Clinical Psychologist. I am interested in learning about people's personal experience of how distressing it can be to have psychosis. [*Insert name of referrer*] suggested that you may be able to help me in this study. Before you decide if you would like to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and if you wish to discuss it with somebody.

Please ask me any questions. You can phone and speak to me on the following number [*Insert Clinical Base Number*] or you can leave a message with my secretary and I will get back to you as soon as possible. The best time to get me is a Tuesday, Wednesday or Thursday.

What is psychosis?

'Psychosis' is an umbrella term used to describe unusual perceptual experiences (e.g. hearing voices) or unusual beliefs that most other people do not hold. People with psychosis may experience extreme emotions such as depression, elation, or even both at the same time. At times some people with psychosis may feel listless or unmotivated.

What is the research about?

For some people, having psychosis can be very frightening. Research suggests that psychotic experiences (hearing voices, having paranoid beliefs etc) may be so distressing that people find it difficult to put the memories of these experiences out of their head.

In this study I am trying to better understand just how distressing having psychosis can be. I am interested in knowing what aspects people find particularly distressing and how these might continue to cause you problems now.

This kind of research may help develop new psychological therapies aimed at helping people cope with emotional distress.

Why have I been asked to take part?

We are asking people who have experienced psychosis in the past to take part in this study.

Do I have to take part?

No, you do not have to take part in this study. It is up to you to decide whether or not to take part. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. The consent form is a way of making sure you know what you have agreed to. If you decide to take part you are still free to withdraw at any time and you do not have to give a reason.

What will happen next?

If you decide to take part you can contact me and we can meet to have an initial chat. You can decide where we should meet. You are welcome to meet me first with a friend, family member or your key-worker. I will give you at least 24 hours to think over whether you want to take part. If you still want to participate, you and I will make arrangements to meet up again.

What do I have to do?

If you would like to take part please tell the person who give you this information sheet and I will get in contact. Alternatively, you are welcome to contact me directly on the number on page 1.

At our first meeting I will answer any questions or concerns you may have. I will then arrange to meet with you on 3 further separate occasions for approximately one hour, but this is flexible, depending on how you find the experience.

During these meetings I will ask you to complete questionnaires about your experience of psychosis. Importantly, there are no right or wrong answers. It is your perspective that I am interested in.

What is the down side of taking part?

It is possible that our meeting(s) may cover topics that are difficult or distressing for you to talk about. However, if you do not want to continue you can end the interview at anytime.

I would like to meet at a time when your key-worker is available, so afterwards if you can speak with someone who knows you about our meeting.

What are the possible benefits of taking part?

There are no direct benefits to you of taking part. However, the information we learn from this study will help us plan future research and develop new psychological therapies to help reduce the emotional distress caused by mental illness.

Will my taking part in this study be kept confidential?

The information that you provide me with will be treated confidentially. Your name or other identifying information will not appear in any reports.

If information that you share with me leads me to believe that you might be putting the safety of yourself or others at risk, I may be required to tell other people involved in your care (Psychiatrist, Psychologist, CPN etc). I will always notify you if I am going to do this, and explain the reasons why I feel it is important to share this information.

What will happen to the results of the research study?

I will provide you with a summary of the results of the study. The final results and conclusions of the study will be published in a scientific journal and will form part of my qualification in Clinical Psychology. As stated above, your identification will not be included in any publication.

Who is organising and funding the research?

The University of Glasgow

Who has reviewed the study?

The study has been reviewed by the department of Psychological Medicine to ensure that it meets important standards of scientific conduct and has been reviewed by Greater Glasgow Mental Health Division Research Ethics Committee to ensure that it meets important standards of ethical conduct.

Thank you very much for reading this and for any further involvement you may take in this study.

Consent Form A: Version 1, 27th March 2006

Title of Project: A study of personal experiences of distress in psychosis

Name of researcher: Dr Ross White

Please initial box

I confirm that I have read and understand the information sheet dated 27th March 2006 (version 1) for the above study and have had the opportunity to ask questions.

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

I understand that I will be required to meet with the researcher on 3 separate occasions for approximately 1 hour.

I agree to participate in the above study

Name of participant

Date

Signature

Name of person taking consent
(if different from researcher)

Date

Signature

Researcher

Date

Signature

Thank you, for taking part in this study

Appendix 4.5: Letter from Greater Glasgow and Clyde Research Ethics
Committee

Primary Care Division

Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
Tel: 0141 211 3600
www.nhsgg.org.uk



Dr. Ross White
Trainee Clinical Psychologist
University of Glasgow
Psychological Medicine
Gartnavel Royal Hospital
1055 Great Western Road, Glasgow
G12 0XH

Date 18 April 2006
Your Ref
Our Ref
Direct line 0141 211 3824
Fax 0141 211 3814
E-mail anne.mcmahon@gartnavel.gla.ac.uk

Dear Dr. White

Full title of study: A pilot investigation into the phenomenology and treatment of Post Psychotic Post Traumatic Stress Disorder
REC reference number: 06/S0701/29

The Research Ethics Committee reviewed the above application at the meeting held on 13 April 2006.

Ethical opinion

Committee agreed that an outright favourable ethical opinion be granted

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation.

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

The documents reviewed and approved at the meeting were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Application		27 March 2006
Investigator CV		27 March 2006
Protocol		27 March 2006
Advertisement		27 March 2006
Letter of invitation to participant		27 March 2006
Participant Information Sheet		27 March 2006



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Participant Consent Form	27 March 2006
Supervisor CV	27 March 2006

Research governance approval

The study should not commence at any NHS site until the local Principal Investigator has obtained final research governance approval from the R&D Department for the relevant NHS care organisation.

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

06/S0701/29	Please quote this number on all correspondence
-------------	--

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

Yours sincerely



A W McMahon
Research Ethics Co-ordinator (Manager) on behalf of Dr Paul Fleming, Chair

Email: Anne.McMahon@gartnavel.gla.comen.scot.nhs.uk

Enclosures: *List of names and professions of members who were present at the meeting and those who submitted written comments*
Standard approval conditions
Site approval form (SF1)

Copy to: *Greater Glasgow Mental Health Division Research and Development Department*
NHS Greater Glasgow Primary Care Division
Gartnavel Royal Hospital,
1055 Gt. Western Road, Glasgow
[R&D Department for NHS care organisation at lead site]

Appendix 4.6: Letter from Greater Glasgow and Clyde Research Ethics
and Development Directorate

Primary Care Division

Research & Development Directorate



Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
Tel: 0141 211 3600
www.nhsgg.org.uk

Dr Ross White
Trainee Clinical Psychologist
University of Glasgow
Department of Psychological Medicine
Gartnavel Royal Hospital
1055 Great Western Road, Glasgow
G12 0XH

Date 02 May 2006
Your Ref
Our Ref BR/AW/approve

Direct Line 0141 211 3661
Fax 0141 211 3814
Email [annette.watt@](mailto:annette.watt@gartnavel.gla.ac.uk)
gartnavel.gla.ac.uk

Dear Dr White

Project Reference Number: PN06CP007
Project Title: A Pilot Investigation into the Phenomenology and Treatment of Post Psychotic Stress Disorder

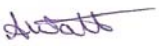
Thank you for completing the Research & Development (R&D) Management Approval Application for the above study. I am pleased to inform you that R&D management approval has been granted by Greater Glasgow Primary Care Division subject to the following requirements:

- You should notify me of any changes to the original submission and send regular, brief, interim reports including recruitment numbers where applicable.
- Your research must be conducted in accordance with the National Research Governance standards. (see CSO website: www.show.scot.nhs.uk/cso) Local Research Governance monitoring requirements are presently being developed. This may involve audit of your research at some time in the future.
- You must comply with any regulations regarding data handling (Data Protection Act).
- Brief details of your study will be entered on the National Research Register (NRR). You will be notified prior to the next submission date and asked to check the details being submitted.
- A final report, with an abstract which can be disseminated widely within the NHS, should be submitted when the project has been completed.

Do not hesitate to contact the R & D office if you need any assistance.

Thank you again for your co-operation.

Yours sincerely


B.R.
Brian Rae
Research Manager



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Appendix 4.7: ROC Analysis Results

Coordinates of the Curve

Test Result Variable(s): Fear of Recurrence: Total Score

Positive if Greater Than or Equal To(a)	Sensitivity	1 - Specificity
29.0000	1.000	1.000
32.0000	1.000	.941
35.5000	1.000	.882
38.0000	1.000	.824
39.5000	1.000	.765
40.5000	.900	.765
42.0000	.900	.706
44.0000	.900	.647
45.5000	.900	.588
46.5000	.900	.529
47.5000	.900	.471
49.0000	.900	.294
52.0000	.800	.294
55.0000	.800	.235
56.5000	.800	.176
60.5000	.700	.059
64.5000	.700	.000
68.0000	.600	.000
71.5000	.400	.000
72.5000	.300	.000
78.0000	.200	.000
87.0000	.100	.000
92.0000	.000	.000

The test result variable(s): Fear of Recurrence: Total Score has at least one tie between the positive actual state group and the negative actual state group.

a The smallest cutoff value is the minimum observed test value minus 1, and the largest cutoff value is the maximum observed test value plus 1. All the other cutoff values are the averages of two consecutive ordered observed test values.