VOLUME 1

THE RELATIONSHIP BETWEEN POSITIVE SCHIZOTYPY AND INTRUSIONS EXPERIENCED AFTER A DISTRESSING EVENT

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OVERVIEW

This thesis describes an investigation into the relationship between positive schizotypy and the intrusions experienced after a distressing or traumatic event.

Part I is a review of the literature linking together trauma, intrusions, and psychosis. It outlines the psychological consequences of trauma, focussing particularly on intrusions and psychological models of PTSD. Psychosis, schizophrenia and schizotypy are introduced, and the research supporting a link between trauma and psychosis is reviewed. Differing explanations for this putative relationship are considered, and areas for further research proposed.

Part II is a report of an empirical study testing the hypothesis that people who score high on a measure of positive schizotypy are more vulnerable to experiencing intrusions after trauma. Thirty seven people who were seeking psychological help after experiencing a distressing event completed measures of positive schizotypy, PTSD symptomatology, peritraumatic dissociation, and mood. Positive schizotypy was significantly related to frequency of intrusions and PTSD symptomatology. The findings are discussed in terms of information-processing approaches, and the clinical implications are considered.

Part III is a critical appraisal of this thesis. The discussion of the findings of the empirical study is extended. Further methodological issues are considered, and the clinical implications are expanded upon. A personal reflection is offered before the thesis is briefly summarised and final conclusions drawn.

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PART I

REVIEW PAPER

THE LINK BETWEEN TRAUMA, INTRUSIONS AND PSYCHOSIS

1.0. ABSTRACT

This review aims to explore evidence linking trauma and its psychological consequences to psychosis. In the first section, trauma is defined and common psychological consequences to trauma (intrusions, posttraumatic stress disorder and dissociation) are discussed. The second section focuses on schizophrenia, psychosis and schizotypy, before reviewing evidence for a link between the experience of trauma and the development and maintenance of serious mental illness. The third section outlines several explanations for the evidence reviewed in section two, before proposing some future directions for research.

1.1. THE PSYCHOLOGICAL CONSEQUENCES OF TRAUMA

1.1.1. Traumatic Events

Traumatic events have been defined in many ways, ranging from Freud's (1920/1955) idea that a trauma is an event that breaches a person's protective mental barrier and resists organisation in their mind, to Janoff-Bulman's view that a traumatic event shatters someone's assumptions about the world (Janoff-Bulman, 1992). More recently, The Diagnostic and Statistical Manual – Fourth Edition (DSM-IV, American Psychiatric Association [APA], 1994) has defined a trauma in terms of the type of event ("that involved actual or threatened death or serious injury, or a threat to the physical integrity of the self or others") as well as by the psychological consequence for the individual ("the person's response involved intense fear, helplessness, or horror"). The word 'trauma' in this review will primarily refer to a trauma as defined by the APA (1994).

Although most of us view trauma as an abnormal event, studies have shown that up to 70% of the general population will experience a trauma in their lifetime (Breslau, Davis, Andreski & Peterson, 1991; Norris, 1992). The experience of trauma has been implicated in the development of a wide range of psychological disorders, including depression (Zoltnick, Warshaw, Shea, & Keller, 1997), substance abuse (Duncan, Saunders, Kilpatrick, Hanson & Resnick, 1996), panic disorder (Faravelli, Ambonetti, Fonneu & Sessarego, 1985), obsessive compulsive disorder (Saunders, Villeponteaux, Lipovsky, Kilpatrick, & Vernon, 1992), psychosis (Zubin & Spring, 1977) and posttraumatic stress disorder (PTSD; APA, 1994).

1.1.2. Intrusions

In the PTSD literature, intrusions are commonly defined as unwanted and uncontrollable thoughts, images, memories and impulses that in some way involve re-experiencing the traumatic event (Falsetti, Monnier, Davis & Resnick, 2002). Ehlers, Hackmann, and Michael (2004) argue that the term 'intrusive thoughts' is misleading for intrusions experienced after trauma, as they are rarely pure lexical cognitions but more commonly are brief sensory fragments of the traumatic experience. They suggest that intrusions can have a sensory quality (usually visual) and a lack of time perspective; (i.e. people feel as though they are reliving the trauma when they are experienced). They are difficult to change even when contradictory information is known, are triggered by a wide-range of stimuli, are unwanted (i.e. unintentionally retrieved) and often involve themes of physical and psychological threat.

Ehlers et al. (2002) asked people who had experienced trauma to describe the contents and quality of their intrusive memories. They found that people mostly only reported a small number of intrusions repeated over and over again, and that these mainly seemed to reflect stimuli that were present just before the moments with the largest emotional impact. They argued that this might be because these stimuli had become temporally associated with the traumatic event (i.e. they occurred just before the event or just before the event worsens) and thus were "warning signals" for danger. This might explain why re-experiencing these intrusions might lead to a sense of threat. However, evidence for this view is preliminary and at present there is only one paper to support this hypothesis (Ehlers et al., 2002).

Another view is that intrusions after trauma may represent "hot spots", i.e. elements of the traumatic memory that are associated with high levels of distress (Richards & Lovell, 1999). Grey, Holmes and Brewin (2001) identified hot spots in 8 patients who had been referred for treatment of PTSD. They found that all of the patients in their study described hot spots associated with high levels of distress and a range of negative emotions (including fear, anger, sadness, humiliation, helplessness, shame, horror and embarrassment). Interestingly, every patient reported episodes of reliving (i.e. intrusive memories) of these hot spots.

In a study of hot spots in 32 people in treatment for PTSD, all patients were able to identify several hot spots in their trauma memories (Holmes, Grey & Young, 2005). These were associated with a wide range of negative emotions. The patients reported that over three quarters of their intrusive memories were of a hot spot. This study provides additional evidence for the view that many of the intrusions experienced by people with PTSD represent points of a traumatic experience that are associated with extreme negative emotion.

In conclusion, intrusions are a core feature of PTSD. They seem to be part of the trauma memory although they are not always faithful representations (Frankel, 1994). They have a sensory, here-and-now quality. They are not fully integrated into a historical perspective (i.e. the memory might feel like it is happening in the present and it is difficult to update the memory with new information). They might represent warning signals or moments of extreme emotional distress, or even both, as these accounts are not necessarily incompatible. Certain aspects of intrusions have been

found to predict future PTSD severity (distress, lack of time perspective, and lack of context; Michael, 2000, cited in Ehlers et al., 2004). The next section outlines several theoretical models which aim to explain why people experience intrusions after trauma, and why these may become pathological in those who go on to develop PTSD.

1.1.3. Posttraumatic Stress Disorder

PTSD was formally recognised as a psychological disorder in the third edition of the DSM series (APA, 1980). In the current DSM-IV diagnosis a person needs to have experienced or witnessed a trauma involving actual or threatened death, serious injury or threat to integrity of the self or others, leading to a reaction involving fear, helplessness or horror. The diagnosis is defined in terms of specific symptom criteria, namely the re-experiencing of the trauma, intense distress or physiological reactivity at reminders of the event, emotional numbing, a lack of interest in normal activities and persistent symptoms of increased arousal The symptoms must last over one month and the impairment in function must be clinically significant.

The US Epidemiological Catchment Area study (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995) estimated a PTSD prevalence of 1%, but other studies have suggested higher figures (e.g. 10%, Breslau, Davis, & Andreski, 1998). In samples that have been exposed to trauma (e.g. after combat or disasters) the prevalence can be as high as 50% (Boyle et al., 1995; Foy, 1992). Perhaps unsurprisingly when we consider that trauma is implicated in the development of many psychological disorders, PTSD is frequently comorbid with depression (North, Smith & Spitznagel,

1994), substance abuse (Solomon, Mikulincer & Kotler, 1987), and is also common in people with psychosis (Mueser et al., 1998).

1.1.3.1. Psychological Models of PTSD

Three main theories dominate this field (Brewin & Holmes, 2003). Firstly, Foa (e.g. Foa, Steketee, & Rothbaum, 1989) drew on Lang's (1979) work on fear networks, which proposed that a memory of a frightening experience consists of a network of nodes representing different stimulus information about the event, the meaning of the event, and responses to it. The fear network can be activated by an event that bears a resemblance to a node in this memory network. Foa et al., (1989) argued that a traumatic memory leads to a memory representation with a strong associative structure. They suggested that the violation of basic concepts of safety in traumatic memory produces much stronger links with behavioural and physiological responses than other less extreme events. Attempts to suppress these responses lead to avoidance. Moreover, information from the activated trauma memory enters consciousness, explaining the intrusions experienced after trauma.

In her later revision, Foa (Foa & Riggs, 1993; Foa & Rothbaum, 1998) proposed that individuals with more rigid views about the self (either as very incompetent or competent) and the world (either as very safe or very dangerous) would be more vulnerable to PTSD, as these would either be dramatically contradicted or confirmed by a traumatic experience. She also suggested that a negative appraisal of a person's responses to the event and their subsequent symptoms could serve to increase feelings of incompetence and therefore they would feel less able to cope in a

dangerous world. Foa's emotional processing theory has been very influential. Several elements (e.g. the importance of pre-trauma risk factors) have been supported by empirical evidence, and it is associated with a highly effective treatment (reliving) (Brewin & Holmes, 2003). However, fear networks with one level of representation for all knowledge seem too simplistic to explain our complicated memory systems (Teasdale & Barnard, 1993). It is difficult to explain the somewhat fragmented nature of a trauma memory and why initial amnesia might resolve after the trauma within this framework (Brewin & Holmes, 2003).

Dual representation theory has been put forward by Chris Brewin and his colleagues (Brewin, 2001; Brewin, Dalgleish & Joseph, 1996). Brewin et al. (1996) evoke findings from neurocognitive psychology to argue that there are two parallel memory systems: (1) a perceptual memory system that receives little conscious attention and that is based primarily in the amygdala; and (2) a declarative memory system that is more available to conscious alteration or recollection, and is processed largely in the hippocampus. The hippocampal memory system produces "verbally accessible memories" (VAMs) which are ordinary autobiographical memories that can be accessed and altered at any time using deliberate retrieval processes. As these are consciously available, they can be edited and are seen in the context of a person's historical life story. VAMs can be associated with emotions felt at the time of the trauma (labelled "primary" emotions) as well as emotions generated by retrospective appraisals of the event ("secondary" emotions). The perceptual memory system produces "situationally accessible memories" (SAMs) that contain information about the lower level perceptual properties of a situation (e.g. the sights, sounds and smells) and a person's response to an event (e.g. physiological changes such as heart

rate) which are recorded without much conscious attention. Unlike VAMs, SAMs are not accessible through conscious retrieval systems and do not become updated or integrated into a person's life story. Thus they are only associated with "primary" emotions felt at the time of trauma.

When people experience very high levels of stress it is suggested that the function of the hippocampus is impaired, so the declarative memory system will not function optimally in recording VAMs. However, the amygdala seems to function more optimally at high levels of stress and so SAMs will continue to be recorded at a high level (Metcalfe and Jacobs, 1998). Very traumatic events, remembered primarily at the SAM level, allow swift processing of salient information (including the immediate source of threat). These memories are not consciously accessible but are triggered by stimuli that are similar to those associated with the original event. They are not fully integrated into a person's life story, consist of sensory information and physiological responses, and will be associated with "primary" emotions felt at the time of the trauma. It is not easy to update these memories with new information. If we compare the qualities of these SAMs with what we know about intrusions after trauma (sensory, here-and-now quality, not updated or integrated, associated with extreme distress) we can see that they share many similarities. Thus Brewin et al.'s (1996) dual representation theory provides a convincing framework to explain the nature of intrusions experienced after a traumatic event. Moreover, there is preliminary evidence, in both the general population and in people with PTSD, in support of these two different memory systems (e.g. Hellawell & Brewin, 2002) Additionally, there is experimental evidence to support the link between the two memory systems and intrusions. Holmes, Brewin and Hennessy (2004) attempted to

block the VAM system by asking participants to complete a verbal task while watching a stressful film, and found a subsequent increase in the number of intrusions experienced later. In contrast, blocking the SAM system using a spatial task decreases the number of later intrusions

The third model outlined here is Ehlers and Clark (2000)'s cognitive model. This proposes that the paradoxical sense of current threat felt about a past event by people with PTSD can be explained by two processes: (1) negative appraisal of the trauma or its sequelae, and (2) the nature of the trauma memory. Threat is activated when negative appraisals of the event involve the likelihood of future traumatic events (e.g. "the world is dangerous" or "bad things always happen to me"). Threat can also be felt due to appraisals of the sequelae of trauma (i.e. the interpretation of PTSD symptomatology, other people's reactions to the event, and the consequences of the trauma on other areas of life). These negative appraisals of the trauma and its sequelae are associated with related emotional responses such as fear, guilt, shame, and sadness.

Ehlers and Clark (2000) also argue that a trauma memory is poorly elaborated (not fully integrated into a historical or spatio-temporal perspective). They suggest that strong classical conditioning associations recorded in memory at the time of trauma can be unconsciously triggered by stimuli similar to those associated with the event, which leads to a sense of current threat. They argue that for recovery to occur, the trauma memory must be elaborated and thus inhibit the more direct unconscious retrieval route. Ehlers and Clark (2000) draw on findings in cognitive psychology to propose that at the time of trauma two different types of processing occur: data

driven (focussing on sensory impressions) and conceptual (focussing on the context and meaning of the situation). Data-driven processing leads to the less integrated and more sensory, here-and-now memories that are unconsciously triggered. People who engage in more data-driven processing at the time of their trauma are more likely to experience intrusions.

A number of other factors can affect the development and maintenance of PTSD. These include maladaptive behavioural and cognitive strategies (including avoidance, safety behaviours, rumination, and thought suppression) which serve to influence appraisals, increase symptoms of PTSD, or prevent change in the trauma memory (Ehlers & Clark, 2000). In terms of empirical support, there is good evidence for many aspects of the model, particularly the role of negative appraisals (e.g. Dunmore, Clark, & Ehlers, 1997) and cognitive coping factors (e.g. Clohessy & Ehlers, 1999). However it has proved more difficult to find a way to empirically investigate the roles of data driven versus conceptual processing mechanisms (see Brewin & Holmes [2003] for a review).

In summary, these three influential models all provide interesting accounts of many of the processes observed in PTSD and have some level of empirical support. In terms of explaining the intrusions experienced after trauma, Brewin et al. (1996) and Ehlers and Clark (2000) both offer explanations that are very similar. Both focus on the type of processing that occurs at the time of trauma and how this affects the memories that are laid down.

1.1.4. Dissociation

Pierre Janet (1889) first defined dissociation as a discontinuity in awareness, and more recently it has been defined as an incapacity to integrate thoughts, feelings and experiences into present consciousness (Bernstein & Putnam, 1986). It is thought to occur on a continuum ranging from normal dissociative states (e.g. day-dreaming) to more pathological phenomena (e.g. having no memory of where one has been or what one has done; Waller, Putnam & Carlson, 1996). Dissociation has been considered as a defensive response to a traumatic event, allowing the individual to have a psychological escape from an intensely stressful experience, particular if the trauma is prolonged such as in childhood abuse (van der Kolk, van Hart & Marmar, 1996). However, dissociation at the time of trauma (labelled "peritraumatic dissociation") actually predicts later PTSD symptomatology (e.g. Ehlers, Mayou & Bryant, 1998; Murray, Ehlers & Mayou, 2002) indicating that it may not be always be a helpful long-term response.

Peritraumatic dissociation is implicated in later PTSD symptomatology in general, including intrusions (Birmes et al. 2003). Halligan, Michael, Clark and Ehlers (2003) found significant relationships between peritraumatic dissociation and intrusive qualities of trauma memories, both in a retrospective and a prospective study. There are differing explanations for why this might be the case. Halligan et al. (2003) draw on Ehlers and Clark's (2000) model of PTSD to argue that dissociation is a type of data-driven processing that involves superficial processing of the trauma, and thus less elaborated trauma memories. Brewin et al.'s (1996) dual representation theory suggests that peritraumatic dissociation blocks the laying down of VAMs, but allows

encoding of SAMs which require less conscious processing. The increase in SAMs compared with VAMs would lead to an increase in intrusions after trauma.

1.1.5. Summary

This section has reviewed evidence for traumatic events leading to the development of intrusive memories. These intrusions have been proposed to be stimuli that were 'warning signals' and so were strongly associated with the trauma (Ehlers et al., 2002). However there has been more support for the view that intrusions are often of 'hot spots', i.e. the most distressing parts of the traumatic experience (Grey et al., 2001; Holmes et al., 2005). Finally, dissociation is a common reaction to trauma, and evidence linking this to intrusions and PTSD was examined.

1.2. THE LINK BETWEEN PSYCHOSIS AND TRAUMA

This section reviews the nature of schizophrenia, psychosis and schizotypy, and looks at the evidence for trauma playing a role in the development or maintenance of serious mental illness.

1.2.1. Psychosis and Schizophrenia

Psychosis refers to a psychological state in which "thinking and emotion are so impaired that the individual is seriously out of contact with reality" (Davidson & Neale, 1998, p. G-19). It is usually associated with severe mental illness such schizophrenia or bipolar disorder. Although DSM-IV proposes a number of specific diagnostic criteria for schizophrenia (APA, 1994), in reality people with schizophrenia have very diverse presentations, and they often meet the criteria for other psychological disorders such as PTSD (Meuser et al., 1998), anxiety disorders (Cosoff & Hafner, 1998), bipolar disorder and depression (Strawkowski et al., 1995). This has led some psychologists to dispute the DSM-IV definition and argue that it is better to focus on particular symptoms rather than invalid diagnostic categories (e.g. Bentall, 2003). Symptoms in schizophrenia have often been grouped together as 'positive' (e.g. hallucinations, thought disorder, and delusions) and 'negative' (e.g. flattened affect and lack of motivation; Crow, 1980). It is the positive symptoms that are more characteristic of a psychotic state.

1.2.2.1. Schizotypy

Rado (1953, cited in Millon, 1981) noticed that some individuals seemed to have similar traits to people diagnosed with schizophrenia, yet never seem to exhibit these in such an extreme way to become diagnosed themselves. He proposed that these people might have elements of schizophrenia but to a lesser degree, and he labelled this constellation of traits the "schizotypal personality". More recently, the schizotypal personality has been characterised by "persistent and prominent eccentricities of behavior, thought and perception" (Millon, 1981, p.400). Its features are similar to those found in clinical schizophrenia, but differ in severity or peculiarity. Previously, researchers have argued that schizotypy is taxonomic (e.g. Lenzenweger & Moldin, 1990), so that an individual either has a schizotypal personality or does not. Other researchers have argued that schizotypy might be dimensional, with psychotic personality traits being found to differing degrees within the normal population (Claridge, 1997). The approach taken by this review is that of Haslam (2003) who suggests that even if a schizotypal personality taxon exists, people who do not fall into this category will still vary in their scores on schizotypal traits. The word "schizotypy" will be used in this review to refer to the schizotypal trait dimensions on which everyone has a score rather than to someone who would meet the criteria for a "schizotypal personality" category.

Claridge and Broks (1984) developed the Schizotypal Trait Questionnaire (STQ) incorporating a measure of borderline personality (STB) as well as schizotypy (STA). However, the STA is based on DSM-III (APA, 1980) criteria for schizotypal personality and so does not include traits that are not included in this definition (e.g.

anhedonia). More recently, Mason, Claridge and Jackson (1995) combined many previous questionnaire measures of schizotypal traits into a new questionnaire for use within a normal population (the Oxford-Liverpool Inventory of Feelings and Experiences [O-LIFE]).

Several factor analytic studies on questionnaire measures of schizotypy have suggested that schizotypy is not unidimensional. The most recent factor analysis suggested that the STA consists of 4 factors: (1) magical thinking, (2) paranoid suspiciousness and isolation, (3) unusual perceptual experiences, and (4) social anxiety (Rawlings, Claridge & Freeman, 2001). Claridge et al. (1996) conducted a large factor analysis on 14 different trait measures of schizotypy and identified four factors: (1) unusual perceptual experiences, (2) cognitive disorganisation, (3) anhedonia, and (4) antisocial behaviour. It is notable that whilst there are some differences in the factors identified from these studies (partly due to the differences in questionnaire design), they each include a factor related to unusual perceptual experiences. The unusual perceptual experiences factor alongside with magical thinking (which is at times included within the unusual perceptual experiences factor) is sometimes labelled 'positive schizotypy' as it is most like the positive symptoms of schizophrenia.

1.2.1.1. Cognitive Models of Psychosis

Although there have been many attempts to explain schizophrenia and/or psychosis, this review will concentrate on two influential accounts that seek to explain psychosis in terms of psychological processes. The first, proposed by David Hemsley

(1993), suggests that people with acute schizophrenia are not able to make use of temporal and spatial redundancy to reduce demands on information-processing, and that they do not create appropriate response biases. They have an elevated demand on their information-processing systems, they are not able to ignore relatively unimportant stimuli and focus their attention on new or salient stimuli. In addition, the relatively unstructured sensory input is likely to leave the person vulnerable to experiencing intrusions from long-term memory stores.

Hemsley (1993) provides evidence for his theory from laboratory experiments. Firstly, he reported experiments based on 'latent inhibition', which is found in both people and animals when learning new associations. Latent inhibition refers to the phenomenon by which if people are shown a stimulus (stimulus A) on its own a number of times, and then are shown it with another stimulus (stimulus B), they learn the association between stimuli A and B much more slowly than if they had never experienced stimulus A alone beforehand. It has been proposed that this is because we have already learned that stimulus A is redundant. It therefore takes us much longer to learn that stimulus A predicts stimulus B. Interestingly, people with schizophrenia do not demonstrate normal latent inhibition when they are acutely ill, but do show it after 6-7 weeks of antipsychotic medication (Baruch, Hemsley & Gray, 1988).

Secondly, people and animals also show 'blocking', which occurs when an association is learned between two stimuli (C and D). Stimulus C is then put together with another stimulus (E). The compound stimulus CE is then presented with stimulus D (CE and D). People who have learned the association C and D do not

learn the association between E and D as well as people who have not previously learned that C predicts D. It is argued that this is because the association between E and D is redundant information if E is always presented with C, and we already have learned that C predicts D. Blocking is reduced in people with acute schizophrenia (Jones, Gray & Hemlsey, 1992).

Thirdly, people are affected by the context in which stimuli are presented. In a 'flanking task' (Miller, 1987), participants are shown stimuli that they have to respond to (F or G) surrounded by two flanking stimuli (e.g. XFX or YGY). Every so often, the flanking stimuli would be swapped so that F was presented flanked with Y (YFY) and vice versa (XGX). People in the general population showed a slowed reaction time when these flanking stimuli were swapped, suggested that they have learned the regularity that F is usually presented flanked by X, and G is usually presented flanked by Y. People with acute schizophrenia do not show this effect (Jones, Hemsley & Gray, 1991).

In the studies using the latent inhibition and blocking paradigms, Hemsley and colleagues showed that people with schizophrenia are not able to ignore the redundant information. In the flanking study, people with schizophrenia have not learned the regularity from previous exposures and created a 'response bias' for future presentations. Thus Hemsley (1993) provides evidence for his proposal that people with acute schizophrenia have difficulty ignoring irrelevant information and using previous experience to predict what will happen next in their environment. In addition, several studies found the same information-processing biases in samples of people scoring high on schizotypal traits (Broks, 1984; Bullen & Hemsley, 1984;

Steel, Hemsley & Jones, 1996; Steel, Hemsley & Pickering, 2002). This suggests that Hemsley's theory might also be relevant for people who do not meet a diagnosis of schizophrenia but display similar traits to a lesser extent.

The second model has been proposed by Tony Morrison (2001) and focuses on the positive symptoms of hallucinations and delusions rather than schizophrenia as a whole. Morrison argues that auditory hallucinations (e.g. hearing voices) can be conceptualised as intrusions that interrupt consciousness. While in the general population intrusive thoughts are very common and are usually interpreted benignly (Rachman & de Silva, 1978), in people with psychosis these are often seen as being threatening and are attributed to an external source. Morrison (2001) argues this is a result of a person's beliefs and previous experience. For example in psychosis, auditory intrusions might be interpreted as thoughts inserted by aliens or voices of religious figures, and impulses as evidence of alien control over the body. A key element of these interpretations is that they are culturally unacceptable, leading to society labelling them as 'delusions'.

The misinterpretations of these intrusions are maintained by a number of factors including: (1) an inflation of negative mood and physiological arousal in response to the perceived threat (which has been found to increase frequency of intrusions); (2) safety behaviours (so that the interpretations are never disconfirmed by contradictory evidence); (3) information-processing biases (such as selective attention to threatening stimuli); (4) attempts to control thoughts (which leads to an inflation in intrusions); and (5) cognitive biases (such as jumping to conclusions on little evidence).

Support for the existence of intrusions in people with hallucinations was provided by Morrison and Baker (2000). They used a questionnaire study to show that people with a diagnosis of schizophrenia who are hearing voices experience more general intrusions (i.e. distressing thoughts and images that are not necessarily related to a trauma) than people who have schizophrenia but do not hear voices, and a non-patient control group matched on age and IQ. The group who were hearing voices also found these intrusive thoughts more distressing, difficult to control, and more unacceptable. Morrison et al. (2002), in a study of 35 patients who were experiencing hallucinations and or/delusions, found that almost 75% reported experiencing intrusive images. Interestingly, about 70% of these images were associated with a memory of a past event. Morrison et al. (2002) propose that these images might be similar to the intrusions experienced after trauma in people who are diagnosed with PTSD.

Many other elements of Morrison's model have been supported by empirical evidence (see Morrison [2001] for a comprehensive review). For example, studies have shown that a large minority of the general population have experienced verbal hallucinations (Slade & Bentall, 1988), suggesting that the hallucination itself may not be pathological. This provides support for Morrison's (2001) claim that the appraisal of the intrusion is key in determining whether a person would be seen as psychotic or not. Furthermore, Peters, Joseph and Garety (1999) found that the content of people's beliefs did not distinguish between patients on a psychiatric ward and people in the general population, but that patients were more convinced of their beliefs, and more preoccupied and distressed by them. This provides support for the view that the patient's interpretation of their thoughts was more important than the

content of their beliefs. Morrison (2001) also provides evidence for many of the proposed maintenance factors including mood and arousal (Allen & Argus, 1968; Slade, 1972), safety behaviours (Nothard, Morrison & Wells, 2000), and information-processing and cognitive biases (Bentall & Young, 1996; Garety, Hemsley & Wessely, 1991).

In summary, two models of schizophrenia, or symptoms of schizophrenia, have been outlined. Hemsley's (1993) model makes less reference to intrusive phenomena, but he does suggest that deficits in information-processing might lead to intrusions from long-term memory stores. Morrison's (2001) model is based on the view that people experiencing hallucinations are actually experiencing intrusions, which they misinterpret as originating from an external source. Both of these models will be important when we consider how trauma might be implicated in the development of symptoms of psychosis.

1.2.2. Evidence for a link between Trauma and Psychosis

1.2.2.1. Trauma Prevalence and PTSD in People with Psychosis

There are now increasing numbers of studies reporting an elevated prevalence of trauma in people with severe mental illness or psychosis (Fowler et al., 2004; Goff, Brotman, Kindler & Waites, 1991; Masters, 1995; Mueser et al., 1998; Neria, Bromet, Sievers, Lavelle & Fochtmann, 2002). There is particularly strong evidence to suggest that the prevalence of childhood sexual abuse is elevated in samples of people with psychosis, with up to 50% of patients reporting this (Darvez-Bamez,

Lempiere, Degiovanni & Gaillard, 1995; Goff et al., 1991; Ross, Anderson & Clark, 1994). Goodman, Rosenberg, Mueser and Drake (1997) reviewed 13 studies of women with serious mental illness and found rates of child sexual or physical abuse from 45% to 92%. It is important to compare the rates found in populations with SMI to those found in the general population. A large (N=1442) postal questionnaire study in the USA found that 14.2% of males and 32.3% of females reported childhood sexual abuse (Briere & Elliot, 2003). A review of prevalence studies conducted within Europe put rates of childhood sexual abuse in girls ranging from 3-36% and in boys from 1-15% (Lampe, 2002). So although childhood sexual abuse in the general population is also fairly widespread (especially in females) it does seem as though the rate is elevated in populations with SMI.

There is also evidence to suggest that people with psychosis are more likely to have experienced other kinds of trauma, with Mueser et al. (1998) reporting that 98% of their large sample (N=275) of people with severe mental illness had experienced at least one traumatic event. Neria et al. (2002) interviewed another large sample (N=426) of people with first episode psychosis and found that 68.5% reported having experienced a trauma in their lifetime, with 49% indicating that this trauma was life-threatening. More recently, Fowler et al. (2004) interviewed 100 people with psychosis and found that 76% of these had experienced a Criterion A traumatic event as defined by DSM-IV (APA, 1994). As discussed in section 1.1.1, studies have shown that the rates of trauma within the general population are also high. An American study of 1,000 adults (Norris, 1992) and a review paper (Solomon & Davidson, 1997) both reported rates of approximately 70% within the general public. Therefore caution is needed before some of these studies are cited as evidence for

elevated rates within a population with SMI (e.g. Fowler et al., 2004; Neria et al., 2002).

Mueser et al. (1998) found that 43% of their sample of people with psychosis would meet a diagnosis of PTSD, yet less than 1% actually had been diagnosed. Neria et al. (2002) found that 14.3% of their sample met criteria for PTSD and this rate increased to 26.5% when looking at the 68.5% that had experienced a trauma. Rates of PTSD within the general population are lower – the National Comorbidity Study involving over 8,000 participants found a lifetime prevalence of 9.2% (Kessler et al., 1995). Therefore there is limited evidence that suggests that there are higher rates of trauma and PTSD in people with psychosis than are found in the normal population.

1.2.2.2. Psychotic Symptoms in People Who Have Experienced Trauma

There is evidence suggesting that people who have experienced a trauma and/or meet criteria for PTSD can experience psychotic symptoms such as hallucinations and delusions. Butler, Mueser, Sprock and Braff (1996) compared Vietnam veterans with PTSD to veterans who did not meet PTSD diagnosis and found that those with PTSD displayed more hallucinations, delusions and bizarre behaviour (although there were no differences on levels of thought disorder, mania or inertia). Lindley, Carlson and Sheikh (2000) also studied combat veterans and found that 30-40% reported hallucinations and/or delusions. Investigators of concentration camp survivors have suggested that schizophrenia might be elevated in this population due to the prolonged trauma that they have suffered (Beebe, 1975; Eitenger, 1964, 1967). So

there is preliminary evidence to suggest that psychotic symptoms might occur as a response to trauma.

1.2.2.3. Trauma and the Content of Hallucinations

Several studies have suggested that the hallucinations experienced by people with psychosis might be related to the traumatic events that they have experienced. Read and Argyle (1999) examined the records of 22 patients admitted as inpatients who had experienced physical or sexual childhood abuse. They found that 17 of these were experiencing hallucinations, delusions or thought disorder. Moreover, they judged half of the recorded symptoms to be related to the abuse. Read, Perry, Moskowitz and Connelly (2003), in their study of medical records from psychiatric patients at a community health centre, found that hallucinations (but not delusions) were significantly more common in a group that reported abuse. Moreover, there were links between the types of abuse and the types of hallucinations experienced. Visual hallucinations, olfactory hallucinations, voices commenting, and command hallucinations to harm or kill oneself were far more frequent in the group that had suffered abuse as both a child and an adult compared with the non-abuse group. Read et al. (2003) suggest that the content of hallucinations might reflect the content of intrusive memories of early abuse for which some limited support can be found (see Morrison, Frame & Larkin, 2003).

1.2.2.4. Similarities between the Symptoms of PTSD and Schizophrenia

In both PTSD and schizophrenia symptoms have been categorised into positive and negative groups. Among the positive symptoms the DSM-IV diagnostic criteria for PTSD includes re-experiencing symptoms that have an intrusive nature and are often accompanied by high affect (Grey et al., 2001). In schizophrenia hallucinations are experienced as involuntary intrusions linked with intense emotions. So there are similarities in the intrusive nature of some symptoms of both disorders and the high affect associated with these symptoms.

Paranoid Schizophrenia is one of the five main subtypes of schizophrenia as defined by DSM-IV (APA, 1994). The term 'paranoia' is now often used in discussions on schizophrenia to refer to persecutory delusions where others are seen as threatening to the self (Bentall, 2003). Although paranoia has been observed in people with PTSD (Kimble, 2000), it is not seen as a key feature of the disorder. However, hypervigilance (an exaggerated startle response and restlessness) is a symptom of PTSD (APA, 1994). When a person becomes hyperaroused they begin to see a wide range of stimuli as threatening and the world seems increasingly unsafe (van der Kolk & McFarlane, 1996). So both paranoia and hypervigilance can be seen as extensions of functional responses to threat that when overgeneralised can lead to a very distressing and anxiety-evoking worldview.

Negative symptoms of schizophrenia (DSM-IV Criterion A; APA, 1994) have been grouped into four broad categories (Tandon & Jibson, 2002): (1) affective (blunted affect which includes a dearth of facial expression, eye contact, gestures, voice

pattern, and anhedonia); (2) communicative (poverty of speech and poverty of content of speech); (3) conational (a lack of drive of goal-directed behaviour); and (4) relational (lack of interest in social activities and relationships). The PTSD diagnosis (APA, 1994) also includes negative symptoms in the form of avoidance of stimuli that are reminiscent of the trauma and a numbing of general responsiveness. Whilst at first glance the negative symptoms of schizophrenia might seem much more extreme, there are some similarities. Both involve withdrawal from or avoidance of many aspects of life. The numbing of responsiveness that is found in PTSD has similarities with the blunted affect that is a key negative symptom of schizophrenia. Moreover, both sets of negative symptoms can be viewed as a way to cope with the very difficult positive symptoms (e.g. paranoia and hypervigilance).

1.2.2.5. Summary

This section has reviewed evidence for a role for trauma in the development of psychosis in the form of elevated trauma rates in populations with severe mental illness. Furthermore, there is increasing evidence that a significant number of people with a psychotic presentation actually meet the diagnosis of PTSD, but that this is often overlooked. From the other direction, there is preliminary evidence that people can experience psychotic symptoms (i.e. hallucinations and delusions) after experiencing a trauma. When the symptoms of PTSD and schizophrenia are examined together, there are some similarities in both positive symptoms (intrusive symptoms associated with high affect, paranoia and hypervigilance) and negative symptoms (avoidance and affective numbing) although these should not be overstated. Thus there is beginning to be a body of evidence suggesting that there

might be similarities between the psychological processes underlying psychosis and responses to trauma. In the next section, possible explanations for the link between trauma, PTSD and psychosis will be examined.

1.3. EXPLANATIONS FOR THE INTERACTION BETWEEN TRAUMATIC PROCESSES AND PSYCHOSIS

1.3.1. Psychosis Causes PTSD

One explanation of the high rates of PTSD in psychosis is that the experience of psychosis is a traumatic experience in itself. First-person accounts of a psychotic episode have described the experience of terror, re-experiencing symptoms of the episode, and avoidance of reminders of it (Bayley, 1996; Davidson & Strauss, 1992) just as with other types of trauma. Traditionally researchers have focussed on external traumas when thinking about PTSD (Lundy, 1992); it may be that internal stressors have been largely ignored as a source of trauma. Currently the DSM-IV (APA, 1994) definition of a traumatic event involves actual or threat of death, serious injury or threat to physical integrity. However if the threat is a subjective experience defined by the individual then it is possible that an episode of psychosis can be seen as a traumatic event (Morrison et al., 2003).

If psychosis itself can be a trauma then there is no reason why a person could not develop PTSD following an episode of psychosis. There is evidence that many psychiatric inpatients would meet a diagnosis of PTSD, some of which was discussed earlier in section 1.2.2.1 (Meuser et al., 1998; Neria et al., 2002). Stronger evidence comes from studies investigating whether people develop PTSD focussing on their psychotic episode. Shaw, McFarlane and Bookless (1997) gave 45 patients recovering from a psychotic episode questionnaires to measure PTSD

symptomatology related to their psychosis. They found that 22 met the criteria for postpsychotic PTSD (i.e. PTSD with a psychotic episode as the index trauma) and all participants were experiencing current PTSD symptoms. Shaw, McFarlane, Bookless and Air (2002) conducted a similar study but used interview-based methodology rather than self-report measures. They found that of 42 people recovering from a psychotic episode, 22 (52.3%) met the criteria for postpsychotic PTSD, and 11 people had PTSD which was unrelated to their psychosis. Many people who did not meet the criteria for postpsychotic PTSD did have intrusive symptoms in relation to their psychotic episode. Frame and Morrison (2001) conducted a study with a larger sample of patients with schizophrenia spectrum disorders (N=60). Using self-report measures, they found that rates of PTSD in patients were 67% at discharge and 50% at 4-6 month follow-up. Moreover, they found that psychotic experiences accounted for 52% of the variance in PTSD scores, suggesting that their psychosis might be influential in the development of their PTSD.

Another explanation for the comorbidity between psychosis and PTSD is that the experience of being admitted to psychiatric services is a traumatic one (McGorry et al., 1991). Certainly, authors have suggested that compulsory admission procedures can lead to the experience of fear, helplessness and horror (e.g. Beveridge, 1998). Morrison, Bowe, Larkin and Nothard (1999) found a 44% prevalence rate for PTSD in 34 patients admitted to a psychiatric ward. Priebe, Broker and Gunkel (1998) found a 52% rate of PTSD linked to experience of treatment in a large community sample. However, this study did not find that the number of hospital admissions was related to the rate of PTSD. Similarly, Frame and Morrison (2001) found that

hospital admissions accounted for a small amount of the variance of PTSD rates, and that compulsory admissions were unrelated to PTSD scores.

In summary, there is some limited evidence suggesting that PTSD can develop as a response both to psychotic experiences and to the trauma of being hospitalised. One explanation of the high levels of PTSD in populations with psychosis is that some people develop posttraumatic reactions to the trauma of their psychotic experiences and possibly to their subsequent treatment. However, this explanation cannot be the full picture as it does not explain the higher rates of other trauma (including childhood trauma) in people with psychosis. It cannot explain why some people who have experienced trauma go on to have psychotic symptoms. It is also unable to clarify why the symptoms of PTSD and psychosis might have some similarities.

1.3.2. Effects of Trauma on the Neural Network

A neurobiological explanation for the high rates of childhood trauma in people with psychotic illnesses has been suggested by several authors (Seedat, Stein, Oosthuizen & Emsley, 2003; Read et al., 2001). Bremner and Vermetten (2001) suggested that early trauma might lead to a vulnerability for both PTSD and psychosis. This view is supported by evidence from both human and animal research which has found that early trauma can have negative effects on neural structures and stress response systems (Seedat et al., 2003). Read et al. (2001) describe a traumagenic neurodevelopmental model of schizophrenia which draws similarities between the effects of trauma on the developing brain and the biological abnormalities found in people with schizophrenia. These include structural brain changes such as damage to

the hippocampus, cerebral atrophy, enlargement of the ventricles and reversed cerebral asymmetry. Other similarities include overactivity of the hypothalamic-pituitary-adrenal axis, and abnormalities in neurotransmitters such as dopamine, serotonin, and norepinephrine. Their position is that the neural effects of early trauma alters the developing brain so that it becomes more vulnerable to symptoms of schizophrenia such as oversensitivity to stress, cognitive impairment, and positive and negative symptoms.

Read et al.'s (2001) model, while important, concentrates on the neural level of description. It cannot give us much insight into what might be happening on a more psychological level. Moreover, it does not offer an explanation for the role of trauma experienced later in life in psychosis.

1.3.3. PTSD Exacerbates Psychosis

Mueser, Rosenberg, Goodman and Trumbette (2002) have proposed a model to explain the interaction between trauma, PTSD and serious mental illness (SMI). Their model is an extension of the stress-vulnerability model (Zubin & Spring, 1977) which argues that people with SMI have a genetic and biological vulnerability to developing SMI, and that stress (including trauma and hostile or difficult environments) combines with this vulnerability to precipitate psychotic episodes or relapses. Coping resources (including individual skills or social support) can have a buffering effect against the effect of stress on a vulnerable individual.

Mueser et al. (2002) suggest that PTSD mediates the effects of trauma on SMI (particularly schizophrenia) both directly and indirectly. The direct route involves three types of PTSD symptoms affecting the course of SMI. The first is avoidance of trauma-related stimuli. They argue that since most of the violence experienced by people with SMI is interpersonal (Mueser et al., 1998), avoidance would mean a reduction in social contact and increased isolation. Social support is a crucial coping resource and lack of social interaction has been found to predict symptom relapse and hospitalization in people with SMI (e.g. Avison & Speechley, 1987). Moreover, reduced contact with others decreases the chance of reality testing beliefs or having meaningful stimulation (e.g. work).

Secondly, Mueser et al. (2002) propose that re-experiencing symptoms act as intermittent or chronic stressors. Certainly there is evidence that these symptoms can be extremely distressing (Kinzie et al., 1984) and that chronic stress is implicated in relapse and hospitalisation (e.g. Bebbington & Kuipers, 1992; Butlaff & Hooley, 1998). Mueser et al. (2002) also draw attention to the fact that re-experiencing symptoms can have a delusional intensity in individuals vulnerable to psychosis (Hamner, 1997; Sautter, Brailey, Uddo, Hamilton, Beard & Borges, 1999). Thirdly, Mueser et al. (2002) suggest that chronic autonomic arousal is associated with poor prognosis in people with SMI (e.g. Dawson & Nuechterlaein, 1994; Straube & Ohman, 1990). So Mueser and colleagues argue that the three important symptom clusters found in people with PTSD are likely to exacerbate the course of SMI in vulnerable individuals.

Mueser et al. (2002) propose that PTSD also has indirect effects on people with SMI. The first indirect route is via substance abuse, which is very common in both conditions (e.g. Deering, Glover, Ready, Eddleman & Alarcon, 1996; Duncan, Saunders, Kilpatrick, Hanson & Resnick, 1996; Mueser et al., 1990). The second indirect route is via retraumatization. Research has shown that early traumatic experiences increase the risk of later trauma and PTSD (e.g. Burnham et al., 1988). One explanation for this is that people with a history of interpersonal risk might be poorer at recognising and leaving risky situations than those without and this might be further elevated by having SMI (Gearon & Bellack, 1999; Penn, Corrigan, Bentall, Racenstein & Newman, 1997). Thus exposure to trauma (and PTSD) might increase the likelihood of further stressors which may lead to relapse in people with SMI. Finally, Mueser et al. (2002) suggest that people who have developed PTSD might have more problems developing a therapeutic alliance with healthcare professionals due to their PTSD symptoms and the affect on their interpersonal trust. A poor alliance has been found to affect symptom severity and hospitalisation in people with SMI (e.g. Gehrs & Goering, 1994).

Mueser et al. (2002) have presented a plausible model involving direct and indirect ways that PTSD can exacerbate the course of SMI in vulnerable individuals. However, it is problematic in that it is based on the assumption that PTSD and schizophrenia (or other SMIs) are mutually exclusive, valid diagnostic categories. Bentall (2003) has presented convincing evidence to show that often these diagnostic categories are not reliable or valid. He suggests that it is more helpful to examine the symptoms and try and clarify the psychological processes that underlie these, and which are common across disorders. The next three explanations take this approach.

1.3.4. Trauma Creates Negative Beliefs about the Self

Fowler (2000) has argued that experiencing interpersonal trauma might lead an individual to develop negative beliefs about themselves and about other people. These beliefs might in turn lead an individual to withdraw from the world and avoid other people. As already discussed, a lack of social contact and support can have a negative effect on the course of SMI (e.g. Avison & Speechley, 1987). Moreover, negative beliefs about others and their threat are likely to lead to an increase in anxiety and hypervigilance.

Negative beliefs about the self and others might also be implicated in the development of symptoms of psychosis directly. Garety, Kuipers, Fowler, Freeman and Bebbington (2001) propose that early adverse experience leads to the development of negative schemas about the self and the world, including schemas of the self as vulnerable to threat and others as dangerous. These schemas mean that the individual is more likely to interpret anomalous perceptual experiences or triggering events in line with these schemas (e.g. voices might be attributed to a malevolent external force, losing one's job might be attributed to a conspiracy against oneself). Garety et al. (2001) argue that these external attributions for unusual experiences determine whether a person will develop psychosis when under stress and experiencing unusual perceptions. Social isolation also contributes in that these psychotic appraisals are less likely to be compared with more normalising explanations of events or perceptions. Preliminary evidence for the role of negative self-schemas comes from a study by Van Os (2000; cited in Garety et al., 2001) who

followed up a cohort of 7000 people for 3 years and found that people with low self-esteem and depressive schemas were more likely to develop psychosis.

Negative schemas – e.g. threat-related beliefs - could be the basis for paranoia (Freeman, Garety, Kuipers, Fowler & Bebbington, 2002). Paranoia or grandiose delusions may also serve to maintain a more positive self image (e.g. 'I am important and people want to get me') in the face of the experience of being treated as though your life is very inconsequential (e.g. through abuse or interpersonal violence; Bentall & Kinderman, 1996).

So trauma could lead to negative beliefs being formed (particularly if the trauma occurred during childhood) which could in turn lead to avoidance, anxiety, hypervigilance, external threatening attributions for experience, paranoia and possibly grandiose delusions. All of these elements can be found in schizophrenia (APA, 1994). This approach does help to explain some of the mechanisms by which early trauma might lead to some of the symptoms of schizophrenia (such as delusions and avoidance). However, it cannot so easily explain the presence of positive symptoms such as hallucinations. It also has little to say about why some people with these beliefs develop psychosis, and yet others go on to develop other psychiatric disorders such as PTSD.

1.3.5. Posttraumatic Intrusions as Hallucinations

Morrison's (2001) cognitive model of psychosis suggests that hallucinations might be conceptually the same as the intrusions that people experience after a traumatic

event. People with psychosis appraise these hallucinations as being from an external source (e.g. voices of religious figures). The key quality of these interpretations is that they are culturally unacceptable so that society labels these thoughts as delusions and the person as 'mad'. In Morrison's (2001) model the reason that some people might develop a more psychotic presentation could be due to their pre-existing beliefs and experience (for example if they believed very strongly in religion or in aliens they would be more likely to attribute their intrusions to these culturally unacceptable sources).

This model is influential among CBT therapists and can provide a good explanation for why some people develop psychosis after experiencing trauma. However Morrison (2001) seems to be proposing that all people experience similar intrusions after trauma but appraise them in a different way. This may indeed be the case but the account below allows for the fact that vulnerable individuals may actually experience different levels of intrusions after trauma, which would make them more likely to interpret them in a more threatening way.

1.3.6. An Information-Processing Account

Steel, Fowler and Holmes (2005) argue that certain people are more vulnerable to intrusions due to differences in their information-processing systems, and that this vulnerability might be part of the explanation as to why some people go on to develop more psychotic symptoms after trauma. Broadbent (1977) proposed that when processing information in a normal (i.e. not traumatic) situation we engage in two processes: (1) the integration of the current sensory input with past experience of

similar contexts, and (2) the development of individual potential responses based on how we have processed initial information. The first process (which Steel et al. [2005] label 'contextual integration') is key in this model. They define contextual integration as "the processing and storing of incoming information within a meaningful spatial and temporal context" (p.6). It is important because it allows us to recognise similarities between our current situation and previous experiences we have had, and thus voluntarily recall memories of these and understand these in historical order.

Two of the theories of PTSD discussed in section 1.1.3.1 have implications for contextual integration at the time of a trauma. Both Brewin et al. (1996) and Ehlers and Clark (2000) have argued that processing changes when a person is undergoing an extremely stressful event. Brewin (2001) proposes that during trauma the more contextual processing via the hippocampus is disrupted and information is more immediately processed through the amygdala in order to facilitate faster emotional processing and responses to stress. Ehlers and Clark (2000) argue that during trauma some people shift from conceptual processing (i.e. focusing on context and the meaning of the situation) to data-driven processing (i.e. focusing on sensory impressions). In either model, the shift to either data-driven or to amygdala-centred processing means that the event is not fully contextually integrated. This can lead to the re-experiencing symptoms of PTSD as the 'poorly elaborated' (Ehlers and Clark, 2000) or 'situationally accessible' (Brewin et al., 1996) memories are fragmented, sensory, involuntarily recalled, and difficult to assimilate into a person's life story. It is these memories that are re-experienced as intrusive memories.

Contextual integration has also been implicated in psychosis. Hemsley (1993) has suggested that people with schizophrenia find it difficult to ignore redundant information and do not seem to learn regularities from past experience to create appropriate 'response biases' when faced with similar situations (Baruch et al., 1988; Jones et al., 1991, 1992). Similar biases have been found in people who do not have schizophrenia but who score high on measures of positive schizotypal traits (Broks, 1984; Bullen & Hemsley, 1984; Steel et al., 1996, 2002).

By definition, people scoring high on measures of schizotypy experience psychotic-like symptoms that occur on a continuum, with people with acute psychosis representing the top level of this scale. Steel et al. (2005) hypothesise that people with high schizotypy scores or acute psychosis also have similar underlying information-processing styles that occur on a continuum that is concerned with the ability to contextually integrate information. We know from theories of PTSD (Brewin et al., 1996; Ehlers & Clark, 2000) that when an extremely stressful event occurs, people tend to be weaker at contextual integration than normal. It is at times when they are using more amygdala-centred processing and less hippocampal processing that they are laying down the memories that subsequently enter consciousness as intrusive memories.

Evidence has suggested that people with schizotypal traits are further up the continuum of contextual integration. Thus, people who are already relatively weak at contextually integrating information would become even weaker at the time of a trauma and stress. Moreover, they may be processing information in such a way so that they are more vulnerable to intrusions when they experience a less severe

stressful event (Steel et al., 2005). Preliminary evidence for this model has been found by Holmes and Steel (2004). They asked a non clinical sample (N=42) to complete some personality measures (including measures of schizotypy and trait dissociation) and then watch a stressful film of the aftermath of road traffic accidents. Over the following week, the participants were asked to complete a diary of any spontaneously occurring intrusions of the video. They found that people high on a measure of positive symptom schizotypy reported more frequent intrusions than people who scored lower on this scale. The zero order correlation between the unusual experiences scale and the number of intrusions was moderately large ($r = .50$, $p < .001$).

The model described by Steel et al. (2005) above could be criticised for confounding schizotypy with dissociation. It is well known that peritraumatic dissociation is a common reaction to trauma and that it can be predictive of later PTSD symptomatology (e.g. Ozer et al., 2003). There is also evidence that scores on measures of positive schizotypal traits and dissociation are correlated even when items that overlap on the two scales are removed (Startup, 1999). So the findings of Holmes and Steel (2004) could be explained by the fact that people who are high on schizotypal traits are high on trait dissociation, hence may be more likely to dissociate at times of stress, and thus experience more intrusions after the stressful film. Pre-empting this criticism, Holmes and Steel (2004) repeated the analyses using modified scales with the overlapping items removed. Furthermore, they conducted a multiple regression analysis where they included measures of trait and peritraumatic dissociation as well as positive schizotypy as the predictors and number of intrusions as the dependent variable. They found that the positive schizotypy scale was the only

independent predictor (although trait dissociation also had a zero-order correlation). So it does not seem as though the relationship between positive schizotypy and intrusions can be explained by dissociation.

The model described by Steel et al. (2005) is a persuasive one as it takes into account evidential findings from both the PTSD and the psychosis literature that implicate a similar underlying process (contextual integration). Although very preliminary, there is evidence in support of the hypothesis that people who score high on a measure of positive schizotypy experience more intrusions than low scorers (Holmes & Steel, 2004). Steel et al. (2005) acknowledge that their model is not the definitive explanation for the link between trauma, PTSD and psychosis, but that it is likely to be one of the common underling information processing mechanisms found in psychosis and PTSD.

1.3.7. Summary

All of the above models require further research. In fact, many of the explanations considered in this section are not mutually exclusive and could be amalgamated to elucidate different aspects of the relationship between trauma processes and psychotic symptoms. For example, it is certainly possible that in some cases people do develop PTSD focussing on their traumatic experience of psychosis and/or hospitalisation (see section 1.3.1). Furthermore, there are likely to be posttraumatic symptoms that exacerbate the course of SMI (Mueser et al., 2002). On a cognitive level, it is plausible that having experienced trauma as a child would affect the beliefs that you would hold about yourself and others. This in turn might lead to

paranoia and grandiose delusions, and subsequent avoidance of social contact (Bentall & Kinderman, 1996; Freeman et al., 2002). The experience of trauma and subsequent intrusions might be misinterpreted by individuals who have certain beliefs (for example in the supernatural), particularly if they have grown up to see many things as threatening due to the trauma they have experienced (Morrison, 2001). The frequency of these intrusions might be affected by individual differences in information-processing styles that are associated with high levels of schizotypy (Steel et al., 2005). Many of these psychological effects may also be described on a neural level (Read et al., 2001).

1.4. SUMMARY, CONCLUSIONS, AND FURTHER RESEARCH

In section 1, this review discussed common psychological responses to trauma, including intrusions, PTSD and dissociation. In section 2, two cognitive models of psychosis and schizophrenia were outlined before the evidence for a link between trauma and psychosis was considered. In section 3, differing explanations for the link between trauma, psychosis and PTSD were considered. No explanation on its own was broad enough to account for all of the evidence reviewed in section 2. However, when considered together it is clear that much progress has been made into understanding why trauma processes seem to link to psychosis. There appear to be many different ways to approach this issue, but cognitive approaches have isolated appraisals and underlying beliefs as being important in the development of psychotic symptoms after trauma. More recently, Steel et al. (2005) have suggested that underlying information processing styles might also be implicated in the aetiology of traumatic psychosis.

It is clear that a great deal of further research is needed in this relatively new area of scientific study, and it is beyond the scope of this review to discuss all the potential avenues here. Instead, this discussion will centre on ways to further test the hypotheses stated by Steel et al. (2005) in section 1.3.6. One of their main hypotheses is that people who score high on a measure of positive schizotypy experience more intrusions after experiencing trauma. Holmes and Steel (2004) have provided preliminary evidence for this from a study using a stressful film as an analogue for a real-life trauma. To extend this evidence, it would be important to find out whether people show a similar effect after a real trauma.

This hypothesis could be tested using a questionnaire study conducted on the general population. This would need to include a measure of positive schizotypy, a measure of trauma exposure and subsequent PTSD symptomatology, and a measure of intrusions.

A similar study to test this hypothesis could be conducted within a clinical population that had experienced trauma. For example, conducting a comparable questionnaire study within a population who had been referred for treatment of PTSD would allow this hypothesis to be tested with a population who will be experiencing clinical levels of PTSD symptomatology (including intrusions).

Of further interest would be to try and examine the appraisals of the intrusions experienced by both the clinical and clinical populations in these studies. This would focus more on testing ideas from Morrison (2001) to see if people who are high on positive schizotypy appraise their intrusions as being less related to the trauma they have experienced, and whether they cause them greater distress.

In conclusion, this fairly recent research area has highlighted previously under-investigated links between trauma, PTSD and psychosis. Explanations for this link are in infancy at present, but there are several promising accounts which all require further research before any more definite conclusions can be drawn.

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PART II

EMPIRICAL PAPER

THE RELATIONSHIP BETWEEN POSITIVE SCHIZOTYPY AND INTRUSIONS EXPERIENCED AFTER A DISTRESSING EVENT

2.0. ABSTRACT

Trauma has been implicated in the aetiology of a range of psychological problems, including posttraumatic stress disorder (PTSD) and psychosis. Intrusions are a common response to a traumatic event and have been reported to occur within both PTSD and psychosis. This study was designed to test the hypothesis that people who score high on a measure of positive schizotypy are more vulnerable to experiencing intrusions after trauma. Thirty seven people who were seeking psychological help after experiencing a distressing event completed measures of positive schizotypy, PTSD symptomatology, peritraumatic dissociation, and mood. Positive schizotypy was significantly related to frequency of intrusions and PTSD symptomatology. The findings are discussed in terms of information-processing approaches, and the clinical implications are considered.

2.1. INTRODUCTION

Up to seventy percent of the general population will experience a traumatic event in their lifetime (e.g. Norris, 1992). The American Psychiatric Association (APA, 1994) has defined a trauma as an event in which the physical safety or integrity of the self or others is threatened. The experience of trauma has been implicated in a variety of psychological disorders ranging from depression (Zoltnick, Warshaw, Shea & Keller, 1997) to obsessive compulsive disorder (Saunders, Villeponteaux, Lipovsky, Kilpatrick & Vernon, 1992). Moreover, the experience of stressful life events (which would include but are not limited to traumatic events) has also been implicated in the aetiology of psychosis (Zubin & Spring, 1977). The experience of a trauma is a criterion for diagnosis of posttraumatic stress disorder (PTSD), along with the response of fear, helplessness or horror (APA, 1994). Other symptoms of PTSD include avoidance of reminders of the event, increased arousal, a general emotional numbing, and intrusive re-experiencing of the trauma memory (APA, 1994).

A number of common psychological reactions to trauma have been identified, including the experience of dissociation during the event and the subsequent experience of intrusions. Dissociation is a psychological response that has been defined as an incapacity to integrate thoughts, feeling and experiences into present consciousness (Bernstein & Putnam, 1986). It has been described as a defensive response to trauma, allowing the individual to psychologically escape from a distressing experience (van der Kolk, van Hart, & Marmar, 1996). However, a recent meta-analysis found that peritraumatic dissociation (i.e. dissociation which occurs at

the time of trauma) was a consistent predictor of subsequent PTSD symptomatology (Ozer, Best, Lipsey & Weiss, 2003) suggesting that it may contribute to negative psychological consequences in the longer term.

Intrusions commonly occur in the aftermath of a traumatic life event (Durham, McCammon & Allison, 1985). Intrusions have been defined as unwanted and uncontrollable thoughts, images, memories and impulses that in some way involve re-experiencing a traumatic event (Falsetti, Monnier, Davis & Resnick, 2002). Research has suggested that intrusions often represent 'hot spots' – i.e. moments of the trauma when the individual felt particularly high levels of negative emotions (Grey, Holmes & Brewin, 2001; Holmes, Grey & Young, 2005). For example, someone who had been in a road traffic accident might have an intrusion of the other car racing towards them, as this is the point when they had the thought "I am going to die" and felt high levels of fear. Intrusions are a frequent response to a traumatic event, and are associated with high levels of distress (Kinzie, Fredrickson, Ben, Fleck, & Karls, 1984). Intrusions are a key feature of PTSD if they persist for more than one month post-trauma (APA, 1994).

2.1.1. The Experience of Trauma in Psychosis

The experience of trauma or stress has long been postulated as a trigger for psychosis for people who may be biologically vulnerable (e.g. Zubin & Spring, 1977). Key symptoms associated with a psychotic presentation are hallucinations and delusions, and these are also key symptoms of a common form of psychotic disorder, i.e. schizophrenia (APA, 1994). Symptoms of schizophrenia have been grouped together

as 'positive' symptoms (e.g. delusions, hallucinations and thought disorder) and 'negative' symptoms (e.g. flattened affect and lack of motivation; Crow, 1980).

A recent challenge to the traditional medical model of schizophrenia is the view that mild forms of the schizophrenic experience exist on a continuum within the general population. It is argued that it is only extreme forms of these experiences which are associated with psychotic disorder (Millon, 1981). This approach is supported by the development of questionnaire measures of schizotypal personality traits within the general population. For example, Claridge & Broks (1984) developed the Schizotypal Trait Questionnaire (STQ) incorporating a measure of borderline personality (STB) as well as schizotypy (STA). The STA has been frequently used in research (see Claridge, 1997) and has been found to be both reliable and valid (Claridge & Jackson, 1991). Other researchers have argued that schizotypy is taxonomic (e.g. Lenzenweger & Moldin, 1990) but even if this is the case, people who do not fall into a schizotypal taxon will nonetheless vary on dimensional measures of schizotypal traits (Haslam, 2003).

There are increasing numbers of studies reporting that the prevalence of trauma is elevated in people with severe mental illness (SMI) or psychosis (Fowler et al., 2004; Goff, Brotman, Kindler & Waites, 1991; Masters, 1995; Mueser et al., 1998; Neria, Bromet, Sievers, Lavellle & Fochtmann, 2002). Although some of these studies actually report a prevalence rate that is similar to that found in the general population (e.g. Fowler et al., 2004; Neria et al., 2002) others do report higher levels. For example, there is mounting evidence that levels of sexual abuse are elevated in people with SMI compared with the general population (Darvez-Bamez, Lempiere,

Degiovanni & Gaillard, 1995; Goff et al., 1991; Ross, Anderson & Clark, 1994). Mueser et al. (1998) conducted a large study on people with SMI and found that 98% of them had reported a traumatic event and that 43% would meet diagnostic criteria for PTSD, but less than 1% had a recorded diagnosis of PTSD.

2.1.2. Intrusions as a Link between Trauma and Psychosis

Intrusions have been implicated in two cognitive models of psychosis (Hemsley, 1993; Morrison, 2001). Hemsley's (1993) model has focused on information-processing mechanisms and why someone with psychosis might experience intrusions, whilst Morrison's (2001) model has focused on how these intrusions may be subsequently appraised. Hemsley's (1993) model is based on experimental findings that have demonstrated information-processing deficits in people with acute schizophrenia (Baruch, Hemsley & Gray, 1988; Jones, Hemsley & Gray, 1991; Jones, Gray & Hemlsey, 1992). Hemsley (1993) argues that people with acute schizophrenia have a weakened ability to integrate information within a temporal and spatial context. He proposes that for any given task, this weakened ability to process information within a meaningful context can lead to an individual having difficulty distinguishing relevant information from redundant information. In other words, they find it more difficult to ignore irrelevant aspects of their environment and focus on what is important for their current activity.

Hemlsey (1993) proposes that a weakened ability to distinguish relevant from irrelevant stimuli is likely to lead to increased demand on information-processing systems, as people struggle to process the wide range of stimuli in their environment.

This increased demand and the weakened integration with contextual information may lead to a decreased continuity of perception and the reduction in the stream-like nature of consciousness that has been reported in people with schizophrenia. In addition, the relatively unstructured sensory input is likely to leave the person vulnerable to experiencing intrusions from long-term memory stores. Memories may be triggered by stimuli in the current environment that perceptually match the stored information. The triggered memories are then experienced without a sense of their belonging to a different time or place. This means that people with acute schizophrenia may not have a clear sense of continuity in their experience of the world due to frequent intrusions from long-term memory.

Morrison's (2001) cognitive model of psychosis does not discuss how intrusions are generated, but instead focuses on how these intrusions may be appraised. Morrison (2001) proposes that if individuals interpret an intrusion as coming from an external source, and if this interpretation is culturally unacceptable, then the person may engender a diagnosis of schizophrenia. So for example, if an individual has an intrusion of a negative voice and appraises this voice as being a direct communication from the devil, then in Western culture this may be unacceptable and the person may become labelled as psychotic.

Recently, Steel, Holmes and Fowler (2005) have used elements of Hemsley's (1993) approach to postulate why some people might be more vulnerable to psychosis after experiencing trauma. They draw on research that shows that people who score high on measures of positive schizotypy (i.e. schizotypal traits that are mild forms of the 'positive' symptoms of schizophrenia) have similar information-processing styles to

those demonstrated by Hemsley and colleagues in people with acute schizophrenia (e.g. Steel et al., 2002). Broks (1984), Bullen and Helmsley (1984) and Steel et al. (1996, 2002) have all provided evidence to suggest that there are weakened levels of 'contextual integration' (the ability to process and store incoming information within a meaningful spatial and temporal context) in people who score high on positive schizotypy.

Although the terminology is slightly different, contextual integration has also been implicated in theories of PTSD. Brewin, Dalgleish and Joseph (1996) propose that during trauma, processing that contains contextual information (situated in the hippocampus) is disrupted and information is more directly processed (by the amygdala) in order to facilitate faster emotional processing and responses to stress. In a similar vein, Ehlers and Clark (2000) propose that during trauma some people shift from 'conceptual' processing (which focuses on the context or the meaning of the situation) to 'data-driven' processing (which focuses on sensory impressions). Thus both influential theories of PTSD emphasise a shift from processing where the ability to integrate with contextual information is strong, to processing in which this ability is weakened during times of trauma. Both theories also suggest that memories which contain little contextual information can be triggered by stimuli in the current environment that perceptually match the stored information in some way. When triggered, they are not remembered in the context of the prior event but are experienced on a more sensory level, and can feel as though they are happening in the here-and-now. So the change in processing at the time of trauma is proposed to lead to the formation of memories that are later experienced as intrusions.

Steel et al. (2005) hypothesise that the ability to contextually integrate information occurs on a continuum, in which the strength of contextual integration is associated with levels of schizotypy. At the bottom end of this continuum would be people who have very low levels of trait positive schizotypy. People who have more positive schizotypal traits would be further up the continuum, and at the top end would be people with acute psychosis. PTSD theories (Brewin et al., 1996; Ehlers & Clark, 2000) have informed us that during traumatic experiences people tend to be weaker at contextual integration, and that this can lead to intrusive memories. Steel et al. (2005) propose that people who are normally not strong at integrating contextual information would be even weaker at the time of trauma. Thus, we might expect someone high in positive schizotypy to experience more intrusions after a traumatic event.

Holmes and Steel (2004) have provided evidence for the hypothesis that people high on positive schizotypy experience greater frequency of intrusions. They asked a non-clinical sample to complete some personality measures (including measures of schizotypy and trait dissociation) and then watch a stressful film of the aftermath of road traffic accidents. Participants were asked to keep a diary of film-related intrusions for the following week. Holmes and Steel (2004) found that people scoring higher on a measure of positive schizotypy reported more intrusions than low scorers. Furthermore, positive schizotypy was shown to be a stronger predictor of intrusions than trait or peritraumatic dissociation. Holmes and Steel (2004) also reported an interesting relationship between high positive schizotypy and the number of traumatic events people reported having experienced.

2.1.3. The Present Study

This study was designed to investigate the hypothesis that levels of positive schizotypy are related to the frequency of intrusions experienced after a traumatic or distressing event. Holmes and Steel (2004) have provided preliminary evidence for this within an analogue population, but no studies so far have tested this on a sample of people who have experienced a real life traumatic or distressing event. Therefore this study was conducted on a sample of people seeking psychological help after they had experienced a distressing life event. Participants awaiting psychological assessment or treatment were asked to complete a set of questionnaires including measures of positive schizotypy, posttraumatic symptomatology, posttraumatic intrusions (designed specifically for this study), and depressed and anxious mood. A measure of peritraumatic dissociation was also included because this has been found to be a robust predictor of PTSD symptomatology (Ozer et al., 2003) and posttraumatic intrusions (Birmes et al., 2003).

The main hypothesis was: (1) High levels of positive schizotypy will be related to increased frequency of intrusions experienced after a distressing event. Subsidiary hypotheses were: (2) High levels of positive schizotypy will be related to high levels of posttraumatic symptomatology. (3) Peritraumatic dissociation will be related to high levels of PTSD symptomatology, including frequency of intrusions after trauma. (4) Peritraumatic dissociation will not be related to positive schizotypy. (5) High levels of positive schizotypy will be related to increased number of reported distressing events. (6) People high in positive schizotypy will be less likely to make a link between their intrusions and the distressing event they have experienced.

(7) People high in positive schizotypy will experience more seemingly unrelated intrusions. (8) People high in positive schizotypy will have more different kinds of intrusions. (9) People high in positive schizotypy will have less intrusions that are obviously triggered by reminders of the distressing event. (10) People high in positive schizotypy will experience more intrusions that seem as though the distressing event is occurring in the present.

2.2. METHOD

2.2.1. Design

The study followed a correlational design.

2.2.2. Participants

Participants were recruited from the waiting lists for assessment or treatment at four specialist outpatient trauma services and one general adult psychology service. Participants were selected if they were fluent English speakers referred for psychological help after experiencing a distressing life event. Exclusion criteria were a head injury at time of the event or current psychotic illness. Thirty seven of 160 people returned completed questionnaires giving a 23.1% respondent rate. The group who completed the study and the group who declined to take part were compared on gender and age. A chi-square test showed no significant difference in gender: χ^2 (1) = .077, p = .782. An independent samples t-test showed no significant difference in age (data was only available for 79.7% of those who decided not to participate): t(133) = -.487, p = .627. Of the respondents, 17 were male and 20 were female. Age ranged from 21 to 56 (mean = 37.35). Participants described themselves as white British (n=19), white Irish (n=3), white other (n=2), black African (n=1), black other (n=1), Asian Indian (n=1) and other ethnic background (n=4). Ethnicity data was not available for 6 participants.

2.2.3. Materials

Schizotypal Personality Scale (STA, Claridge & Broks, 1984; see Appendix I.i). The STA is a measure of schizotypal personality consisting of 37 forced-choice items. A recent factor analysis of the scale (Rawlings, Claridge & Freeman, 2001) suggested that the STA consists of 4 factors: (1) Magical Thinking (e.g. belief in psychic phenomena), (2) Paranoid Suspiciousness and Isolation (e.g. feelings of loneliness), (3) Unusual Perceptual Experiences, and (4) Social Anxiety. The STA has been found to have good internal consistency (alpha = .85; Rawlings et al., 2001). To avoid causing upset to participants, the title "Schizotypal Personality Scale" was replaced with the title "Beliefs and Experiences Scale".

State Dissociation Questionnaire (SDQ, Murray, Ehlers & Mayou, 2002; see Appendix I.ii). The SDQ is a 9-item questionnaire measuring peritraumatic dissociation. It has been shown to have good internal consistency (alpha = .91; Halligan et al., 2003), and good reliability and validity (Murray et al., 2002).

Trauma Intrusion Questionnaire (TIQ, see Appendix I.iii). The TIQ was developed in order to measure the frequency, intensity and type of intrusions that participants were currently experiencing, as well as their ability to link the intrusion to distressing or traumatic events. Section 1 included 7 questions in which respondents were asked to make a rating on verbally anchored Likert scales ranging from 1-5. Question 1 asked about frequency. Question 2 asked about the link to a traumatic event. Question 3 asked about the re-experiencing nature of these intrusions. Question 4 asked about whether the intrusions are triggered. Question 5 asked about how much distress the

intrusions cause. Question 6 asked about the number of different types of intrusions. Question 7 asked about intrusions that are not clearly related to the traumatic event. Section 2 asked respondents to estimate how many intrusions they experience in a day. Further questions in section 2 had a more qualitative leaning and were not analysed for this study.

Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995). This 49-item self-report questionnaire was developed from DSM-IV criteria for PTSD (APA, 1994). Part 1 is a checklist of traumatic events. In part 2 respondents are asked to select the most traumatic event from part 1 and briefly describe it and answer some questions about it. Part 3 assesses re-experiencing, avoidance, and arousal symptoms, and yields a total symptom severity score. Part 4 assesses impairment in functioning. The symptom severity scale (part 3) has been shown to have good internal consistency (alpha = .91) and good test-retest reliability (r = .74; Foa, Riggs, Dancu & Rothbaum, 1997). Moreover, Foa et al. (1997) found that the PDS correctly identified the PTSD status of 86% people who were also assessed using the Structured Clinical Interview for PTSD based on DSM-III-R criteria (SCID; Spitzer, Williams & Gibbon, 1987).

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh 1961; see Appendix I.v). This 21-item self-report questionnaire measures depressive symptomatology. It has been found to have good internal consistency (.73-.92; Beck, Steer & Garbin, 1988).

Beck Anxiety Inventory (BAI; Beck & Steer, 1990; see Appendix I.vi). This self-report questionnaire measures physical and cognitive symptoms of anxiety. It has been found to have good test-retest reliability (r = .75; Beck, Brown, Epstein, & Steer, 1988).

2.2.4. Procedure

An optional questionnaire pack was sent to people who were on waiting lists for psychological therapy after they had experienced a distressing or traumatic event. The pack included an invitation letter (see Appendix II.i) information sheet (see Appendix II.ii) consent form (see Appendix II.iii), the Schizotypal Personality Scale (STA), the State Dissociation Questionnaire (SDQ), and the Trauma Intrusion Questionnaire (TIQ). Three questionnaires from an unrelated study were also within the pack. If the service did not routinely send out the Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), and the Posttraumatic Stress Diagnostic Scale (PDS) then these were also included in the research pack. If services routinely sent out their own copies of the PDS, BAI and BDI then for some participants there was a time difference between the completion of the PDS, BDI, BAI and the rest of the research pack (mean time difference = 6.3 weeks; range = 0 to 43.8 weeks).

Participants were offered payment of £6.00 for their time. To increase respondent rate, some potential participants were followed up with a phone call. Participants were not telephoned if they returned a sheet opting out of the study, or if their clinician deemed a phone call inappropriate.

2.2.5. Ethical Approval

Ethical approval was received from Camden and Islington Community Health Services, Oxfordshire, and Hertfordshire Local Research Ethics Committees (see Appendix III).

2.3. RESULTS

Not all participants completed all questionnaire measures (see table 2.2 for details).

2.3.1. Description of Distressing Events and PTSD Symptomatology

Participants reported a range of distressing events (see table 2.1). Seven participants had not completed the checklist of traumatic events on the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995) so their index event was collected from their clinic file. Participants who had completed the checklist of events had experienced a mean of 2.5 distressing events each. Six people did not report how much time had elapsed since they had experienced their index distressing event, others reported it occurred 1-3 months ago (n=1), 3-6 months ago (n=4), 6 months -3 years ago (n=11), 3-5 years ago (n=6), or more than 5 years ago (n=9). Seventeen of the 21 people who provided enough data on the PDS met DSM-IV (APA, 1994) criteria for PTSD. However, discussions with the clinicians involved with the participants suggested that 34 people actually met DSM-IV (APA, 1994) criteria for PTSD. All 35 respondents who completed the PDS reported re-experiencing symptoms, and the mean PDS severity score (32.61, SD=11.89) was similar to that found in Foa et al.'s (1997) original PTSD sample (33.59, SD=9.96). Two people were rated as falling into Foa et al.'s (1997) category of mild PTSD, 3 had moderate PTSD, 13 had moderate to severe PTSD, and 17 had severe PTSD, and 2 did not provide enough data (note that membership of these categories does not mean that people met DSM-IV criteria for PTSD). Five of the sample can be described as having acute

posttraumatic symptomatology, while 30 had chronic PTSD symptoms (over 3 months duration; 2 did not provide enough data).

TABLE 2.1. INDEX DISTRESSING EVENTS (FROM PDS OR CLINIC FILES) AND SELF-REPORTS OF OTHER DISTRESSING EVENTS (FROM PDS).

Type of Event	**Index Event (N=37)**	**Listed as Experienced (N=30)**
Serious accident, fire or explosion	14	12
Natural Disaster	0	0
Non sexual assault – known assailant	0	7
Non sexual assault - unknown assailant	5	16
Sexual assault - known assailant	6	9
Sexual assault - unknown assailant	2	3
Military Combat or War Zone	0	2
Sexual contact under 18 with person 5 years older	4	8
Imprisonment	1	2
Torture	0	4
Life Threatening Illness	1	3
Other traumatic event	4	9
Total	**37**	**75**

2.3.2. Statistical Analyses

Data was examined for normality and outliers using histograms, skewness and kurtosis statistics, and box plots. Question 8 on the Trauma Intrusion Questionnaire (TIQ) was positively skewed and was subjected to a logarithmic transformation. One outlier was removed from question 7 on the TIQ, and one from the trauma history variable (calculated as the sum the number of distressing events reported). As all data

were now of a near normal distribution then parametric tests, including Pearson correlations, were used to examine the relationship between variables. Table 2.2 displays the number of respondents, means, standard deviations, and range for the questionnaires used in the study. Means, standard deviations and ranges for each of the questions from the Trauma Intrusion Questionnaire (TIQ) are reported in table 2.3. On questions TIQ1, TIQ3, TIQ4, and TIQ6 respondents used the full range of the likert scale. On questions TIQ2, TIQ5, TIQ7 and TIQ8 the full range was not used which may have limited the psychometric properties of these questions.

TABLE 2.2. DESCRIPTIVE STATISTICS FOR THE MEASURES OF POSITIVE SCHIZOTYPY, PERITRAUMATIC DISSOCIATION, PTSD SYMPTOMATOLOGY, INTRUSIONS, AND ANXIOUS AND DEPRESSED MOOD.

Questionnaire	**N**	**Mean**	**SD**	**Range**
Schizotypal Personality Scale (STA)	37	20.78	7.61	3 - 35
State Dissociation Questionnaire (SDQ)	35	23.07	9.45	0 - 36
Posttraumatic Stress Diagnostic Scale (PDS)	35	32.61	11.89	9 - 51
Beck Depression Inventory (BDI)	36	27.18	10.27	5.25 - 45.32
Beck Anxiety Inventory (BAI)	36	26.32	13.75	6 – 54.16
Trauma Intrusion Questionnaire (TIQ)	37	N/A	N/A	N/A

TABLE 2.3. DESCRIPTIVE STATISTICS FOR THE QUESTIONS FROM THE TRAUMA INTRUSION QUESTIONNAIRE (TIQ)

Question from the TIQ	N	Mean	SD	Range
TIQ1 (Frequency of intrusions)	37	3.49	.90	1-5
TIQ2 (Link to distressing event)	35	3.74	1.03	2-5
TIQ3 (Re-experiencing nature)	34	3.32	1.25	1-5
TIQ4 (Triggered intrusions)	33	3.55	1.18	1-5
TIQ5 (Distress from intrusions)	35	4.14	.94	2-5
TIQ6 (Different kinds of intrusions)	34	2.66	1.19	1-5
TIQ7 (Intrusions unrelated to event)	33	2.06	.69	1-3
TIQ8 (Number of intrusions per day)	31	10.48	11.77	0-50

2.3.3. The Relationships between Positive Schizotypy, Frequency of Intrusions, and PTSD Symptomatology

A significant positive relationship was found between the Schizotypal Personality Scale (STA) and question 1 from the Trauma Intrusion Questionnaire (TIQ1: "How often do you experience intrusions?"): $r(36) = .408$, $p = .012$. A significant positive relationship was also found between the STA and the Posttraumatic Stress Diagnostic Scale: $r(34) = .554$, $p = .001$.

2.3.4. The Role of Peritraumatic Dissociation

The State Dissociation Questionnaire (SDQ) was not significantly associated with the Schizotypal Personality Scale ($r[34] = .290$, $p = .091$) or the Posttraumatic Stress Diagnostic Scale ($r[32] = .297$, $p = .093$). A significant relationship was found

between the SDQ and the question about intrusion frequency from the Trauma Intrusion Questionnaire (TIQ1: $r[34] = .391$, $p = .020$).

2.3.5. The Relationship between Positive Schizotypy and Trauma History

The sums of events checked on the trauma checklist from the Posttraumatic Stress Diagnostic Scale were calculated for the 30 participants who had completed this. A significant relationship was found between the Schizotypy Personality Scale and this trauma history variable ($r[28] = .373$, $p = .046$).

2.3.6. The Relationship between Schizotypy and Other Aspects of Intrusions

Tests of the final five hypotheses are reported in table 2.4. There was a significant relationship between the question designed to assess the amount of distress experienced ("Sometimes intrusions can be upsetting for people. How much distress do your intrusions cause you?") and the Schizotypal Personality Scale. There were no other significant relationships.

TABLE 2.4. PEARSON CORRELATIONS BETWEEN THE STA AND QUESTIONS FROM THE TIQ

	Schizotypy (STA)
Replication of trauma (TIQ2)	r (34) = .261, p = .130
Re-experiencing of intrusions (TIQ3)	r (33) = .246, p = .161
Triggered intrusions (TIQ4)	r (32) = .105, p = .560
Distress from intrusions (TIQ5)	r (34) = .421, p = .012
Different kinds of intrusions (TIQ6)	r (34) = .127, p = .468
Unrelated intrusions (TIQ7)	r (33) = .316, p = .069
Number of intrusions per day (TIQ8)	r (32) = .254, p = .161

2.3.7. Relationships between Schizotypy Subscales, Frequency of Intrusions, and PTSD Symptomatology

Further analyses were conducted using the subscales of the STA (magical thinking, unusual perceptual experiences, social anxiety and paranoid suspiciousness), and the measures of frequency of intrusions (TIQ1) and PTSD symptomatology (PDS). As these analyses were exploratory, it was necessary to control for Type I error. A Bonferroni correction would reduce alpha to a very low level, so alpha was instead reduced to .01 in line with Wright (2002). The magical thinking subscale was significantly associated with both frequency of intrusions and PTSD symptomatology. The relationships between the unusual perceptual experiences subscale and both frequency of intrusions and PTSD symptomatology were not significant with the reduced alpha level. The paranoid suspiciousness subscale was significantly associated with PTSD symptomatology but not with frequency of

intrusions. The social anxiety subscale was not significantly associated with frequency of intrusions or PTSD symptomatology (see table 2.5).

TABLE 2.5. PEARSON CORRELATIONS BETWEEN THE SUBSCALES OF THE SCHIZOTYPAL PERSONALITY SCALE, FREQUENCY OF INTRUSIONS, AND PTSD SYMPTOMATOLOGY

STA Subscale	Frequency of Intrusions (TIQ1)	PTSD Symptoms (PDS)
Magical Thinking	r (36) = .444, p = .002	r (34) = .627, p < .001
Unusual Perceptual Experiences	r (36) = .331, p = .045	r (34) = .375, p = .027
Social Anxiety	r (36) = .048, p = .778	r (34) = .263, p = .128
Paranoid Suspiciousness	r (36) = .325, p = .050	r (34) = .458, p = .006

2.3.8. The Relationships between Mood, Posttraumatic Symptomatology and Schizotypy

As these analyses were exploratory, a Bonferroni correlation reduced alpha to .01 (see Wright, 2002) to reduce Type I error. Significant relationships were found between the Posttraumatic Stress Diagnostic Scale (PDS) and the Beck Depression Inventory (BDI; r [34] = .853, p < .001) as well as the PDS and the Beck Anxiety Inventory (BAI; r [34] = .714, p < .001). A significant relationship was also found between the Schizotypal Personality Scale (STA) and the BDI (r[34) = .583, p = .001). The relationship between the STA and the BAI (r[34] = 383, p = .021) was not significant with the corrected alpha level.

2.4. DISCUSSION

This study was the first to examine the relationship between positive schizotypy and the intrusions experienced by people seeking psychological help after a traumatic or stressful event. The main finding was that high levels of positive schizotypy were significantly related to an increased frequency of self-reported intrusions.

This finding is in line with Holmes and Steel's (2004) analogue study, and has extended their findings to a clinical population. Both this study and Holmes and Steel (2004) are consistent with the theoretical approach outlined by Steel et al. (2005). The theory proposes that the ability to 'contextually integrate' information (i.e. to process and store information within its spatial and temporal context) is weakened within high scoring positive schizotypes. Also, it proposes that the ability to contextually integrate information is further weakened during times of stress, and so leads to increased intrusive memories of these stressful events (Brewin et al., 1996; Ehlers & Clark, 2000). Thus Steel et al. (2005) would propose that weakened contextual integration can explain the relationship between high positive schizotypy and increased vulnerability to more frequent intrusions of stressful events.

Further findings of interest are the significant relationships between higher levels of positive schizotypy and distress experienced as a result of intrusions, depressed mood post-trauma, and wider PTSD symptomatology (i.e. avoidance and hypervigilance as measured on the Posttraumatic Stress Diagnostic Scale; Foa, 1995). These findings suggest that high positive schizotypy might make an individual vulnerable to wider psychopathology after a distressing event. This result

is very significant considering that relatively little is known about vulnerability to intrusions and PTSD. One explanation for this finding is that experiencing increased numbers of intrusions is more distressing and leads to increased PTSD symptoms (such as hypervigilance and avoidance) and negative mood. A further issue is that people with high schizotypy may have a general response style characterised by negative emotional reactions. Support for this view comes from studies showing that neuroticism is significantly correlated with schizotypy (Claridge et al., 1996; Ettinger et al., 2005; Eysenck & Barrett, 1993; Lipp, Arnold & Siddle, 1994), and one study reporting correlations between schizotypy and depression and anxiety in adolescents (Wolfradt & Straube, 1998).

This study did not find a significant relationship between positive schizotypy and peritraumatic dissociation, which is in line with Holmes and Steel (2004). However, there was a significant relationship between peritraumatic dissociation and frequency of intrusions, although the relationship between peritraumatic dissociation and wider PTSD symptomatology did not reach significance. Thus there is partial support for the previous findings (see Ozer et al., 2003) of peritraumatic dissociation as a predictor of PTSD. The current relatively small sample size may have contributed to the non-significant relationship between peritraumatic dissociation and PTSD symptomatology. Moreover, seventy three percent of the sample were rating levels of peritraumatic dissociation for an event that occurred at least six months prior to taking part in the study. Marshall and Schell (2002) provide evidence that reports of peritraumatic dissociation made at six and twelve months after the event differ markedly from ratings made at a few days post-trauma, suggesting that it is difficult to accurately remember the extent of peritraumatic dissociation at a later time point.

A relationship was found between positive schizotypy and the number of reported distressing events prior to the index event, which is also consistent with Holmes and Steel (2004). Similarly, Berenbaum, Valera, and Kerns (2003) found a significant relationship between the Schizotypal Personality Questionnaire (Raine, 1991) and psychological trauma measured on the checklist from the Posttraumatic Stress Diagnostic Scale (Foa, 1995).

Analyses of the subscales of the Schizotypal Personality Scale (STA; Claridge & Broks, 1984) yielded the interesting finding that the magical thinking subscale was the strongest predictor of frequency of intrusions and PTSD symptomatology. This finding is somewhat unexpected, as from Steel et al. (2005) we would expect someone high on positive schizotypy to be weaker at contextually integrating information and so be more vulnerable to more intrusions from stressful events. Thus we would expect them to report more unusual perceptual experiences. However, magical thinking may develop as a way of making sense of unusual perceptual experiences and so this would explain an underlying relationship to contextual integration. Additionally, measuring magical thinking involves asking questions about beliefs, which could potentially be easier to measure than a person's internal perceptual world (i.e. their unusual perceptual experiences).

This study has added to the previous evidence (Holmes & Steel, 2004) for positive schizotypy being a vulnerability factor for intrusions of stressful and traumatic events. One putative explanation for these findings was that people high on positive schizotypy would be likely to dissociate more at the time of the event, and would

therefore experience more intrusions. However, as neither this study nor Holmes and Steel (2004) found a significant relationship between schizotypy and peritraumatic dissociation, this explanation is not convincing. Instead, Steel et al. (2005) propose that weakened contextual integration is the key mechanism linking schizotypy and intrusions. This study has highlighted the need for further research into positive schizotypy and the information-processing styles affecting intrusions experienced after distressing events.

As previously stated, positive schizotypy has been found to be related to increased intrusions, PTSD symptomatology, distress, and depressed mood after a distressing event. This is clinically important as although some risk factors have been identified for people vulnerable to PTSD (see Brewin, Andrews & Valentine [2000] for a meta-analysis) there is still a need to identify which individuals are vulnerable to PTSD and other pathological responses to trauma. Moreover, positive schizotypy is an easily measurable concept when compared to some other risk factors (e.g. childhood abuse or low intelligence; Brewin et al., 2000) and thus may be of more practical use clinically.

The finding that people with high positive schizotypy experience more intrusions may have implications for the understanding of the development of psychosis as well as PTSD. Steel et al. (2005) propose that increased intrusions may lead individuals to become confused as to the origins of their symptoms, so they make sense of these perceptual experiences within their current belief systems. If they appraise their intrusions as threatening and from an external source (Morrison, 2001) they may end up with a diagnosis of psychosis. It is proposed that people may be more likely to

make sense of their intrusions in terms of an external source if they hold some common schizotypal beliefs (e.g. in telepathy).

This study has highlighted a potential route by which individuals high in positive schizotypy might be vulnerable to psychosis after a distressing event. One implication of this is that clinicians should be aware of the importance of the experience of trauma in a proportion of people with psychosis. Moreover, clinicians may be able to use elements of cognitive behavioural therapy for PTSD in patients with psychosis (e.g. Callcott, Standart & Turkington, 2004). This study also highlights the importance of working with intrusions in both PTSD and psychotic disorders.

Limitations of this study include a relatively small sample size, which reflects the difficulty recruiting participants from this population. Use of self-report methodology is problematic as it can be difficult for participants to accurately report internal psychic events. Moreover, self-report measures are subject to response biases which may elevate correlations between two questionnaires (e.g. Spector & Brannick, 1995). Further problems can occur if two self-report measures contain items that measure similar constructs. As measures of schizotypy do include questions about unusual perceptual experiences, it could be argued that some items on the Schizotypal Personality Scale (STA; Claridge & Broks, 1984) might measure intrusive phenomena. However it is unlikely that the relationship between positive schizotypy and intrusion frequency can be wholly explained by overlapping items as only a few items on the STA refer to perceptual experiences. Furthermore the largest predictor of intrusion frequency was the magical thinking subscale of the STA

(which does not contain any items that could overlap with the intrusion measure) and not the unusual perceptual experiences subscale.

There are also disadvantages with using retrospective measures, particularly of peritraumatic dissociation, as this has been suggested to have difficulties (Marshall and Schell, 2002). A further limitation is the time difference that was present for some participants between when they completed the posttraumatic stress diagnostic scale (PDS; Foa, 1995) and mood measures, and when they completed the other questionnaires. Unfortunately, this was unavoidable due to the needs of the services involved.

Designing a new questionnaire to investigate different aspects of intrusions was unavoidable as pre-existing measures did not tap into the aspects of intrusions relevant to the hypotheses. However the use of a new measure (the Trauma Intrusion Questionnaire [TIQ]) has limitations as it does not have proven reliability and validity. Due to the need to keep the TIQ short and user-friendly, each hypothesis was tested using an individual question on the TIQ which means that each construct was only tapped with one item. It would clearly be better for each construct to be tested with multiple items thus allowing for tests of internal consistency and a better understanding of measurement error. Furthermore, the question may not have adequately tapped into the construct for some respondents. Thus some caution is necessary with the main finding of this thesis as the intrusion frequency measure is based on a single item.

As this study has a correlational design it is not possible to infer causality. Furthermore, as the correlation between positive schizotypy and intrusion frequency is relatively small then only a small amount of the variance (approximately 16%) in intrusion frequency can be explained by positive schizotypy. Thus we cannot argue that positive schizotypy is the only or main direct cause of intrusion frequency. Other variables are also likely to be important in determining frequency of intrusions after a distressing event.

In conclusion, this study has found a significant relationship between high levels of positive schizotypy and increased frequency of intrusions experienced after a distressing or traumatic event. It is proposed that this finding can be understood in terms of weakened contextual integration, and that this may be important in understanding how traumatic events might be involved in the development of some psychotic symptoms (Steel et al., 2005). These encouraging results suggest that further research in this area is warranted to broaden understanding of the links between trauma and psychosis.

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PART III

CRITICAL APPRAISAL

3.0. OVERVIEW

This critical appraisal begins with an extended discussion of some of the findings from the study presented in Part II. The relationship between trauma history and schizotypy is discussed. These findings are then considered with reference to the literature outlined in Part I, and a speculative model is proposed. Further areas for research are then suggested. The second section discusses methodological issues that are relevant to this thesis. Issues to do with the use of a clinical population are examined, followed by issues to do with measurement. The third section expands on the clinical implications of this study. The fourth section is a personal reflection on the research process. The last section is a brief summary of this thesis and the final conclusions.

3.1. EXTENDED DISCUSSION

3.1.1. Trauma History and Schizotypy

This study found that high levels of positive schizotypy were associated with high levels of reported traumatic events preceding the index event. This finding is consistent with Holmes and Steel (2004) and Berenbaum, Valera and Kerns (2003). Moreover, Yen et al. (2002) found a high rate of trauma in people who were diagnosed with schizotypal personality disorder (SPD). Studies have also found a relationship between childhood trauma and schizotypy or SPD. Irwin (2001) found a relationship between self-reports of childhood trauma and positive schizotypy. Johnson, Cohen, Brown, Smailes and Bernstein (1999) found that state records of child maltreatment and abuse were associated with a higher risk of personality disorders (including SPD) when the children became young adults. Thus there is growing evidence that high levels of schizotypy are related to trauma history, and that people with SPD have an elevated history of traumatic events.

One explanation for these findings is that people who score high on measures of schizotypy have a tendency to over-report traumatic events. This might be because high scoring positive schizotypes have higher levels of negative emotions that lead them to remember more negative experiences, as supported by the relationship between schizotypy and neuroticism (Claridge et al., 1996; Ettinger et al., 2005; Eysenck & Barrett, 1993; Lipp, Arnold & Siddle, 1994). Furthermore, people with high levels of positive schizotypy have, by definition, elevated levels of paranoia; so they may view ambiguous social situations more negatively. However, this

explanation does not really explain elevated levels of reported *traumatic* events, as these are usually extremely distressing and fairly unambiguous in their threatening nature. Additionally, they are unlikely to be the kind of situations that are otherwise forgotten unless in a negative mood.

In fact, research has actually shown that people tend to under report traumatic events. For example, Williams (1994) found that over one third of people who have documented evidence of childhood sexual abuse in their past did not report it when interviewed as adults. Further evidence against the idea that people are over-reporting events comes from Johnson et al. (1999), who used state records rather than self-reports to measure childhood maltreatment. They found that incidents of maltreatment were elevated in people with SPD, suggesting that this relationship cannot be wholly attributed to over-reporting on self-report measures.

A different explanation for the relationship between schizotypy and trauma is that childhood trauma is implicated in the development of schizotypal personality traits. Berenbaum et al. (2003) identified childhood neglect as the strongest predictor of schizotypal traits when compared with physical and sexual abuse. Johnson et al. (1999) also found that childhood neglect was elevated in people with SPD, even when age, parental education, and parental psychiatric disorders were controlled for. So it is possible that certain forms of child maltreatment increase the likelihood of developing schizotypal personality traits or, in extreme cases, SPD. It is beyond the scope of this thesis to discuss fully the mechanisms by which maltreatment might lead to schizotypal traits. However, two possible mechanisms are worth briefly mentioning. Firstly, there is evidence that suggests parents of people with high

schizotypy also have a predisposition to high schizotypal traits or even schizophrenia (Lenzenweger & Loranger, 1989). Parents with high levels of positive schizotypy or schizophrenia may not be able to provide consistently good parenting and thus maltreatment would be more common. Hence the neglect may be a consequence of parental schizotypal traits that are passed on genetically to the child, rather than a cause of the child's personality. The second explanation is that inadequate care giving affects the child's attachment processes (e.g. Bowlby, 1988), leading to a personality structure that is understandably more paranoid and suspicious.

The link between increased reports of trauma and schizotypy could also be because people with high levels of schizotypy are more vulnerable to traumatic events. This fits in with findings that show people with high schizotypy or SPD report a range of traumas, not only childhood abuse or maltreatment (this study; Holmes & Steel, 2004; Yen et al., 2002). Furthermore, Yen et al. (2002) reported that over half of people with SPD reported being attacked with the intent to kill or injure. Therefore it is possible that people with high levels of schizotypal traits are more vulnerable to repeated traumatic experiences, particularly interpersonal violence.

Studies have shown that people who have experienced childhood abuse or neglect are more likely to experience trauma as an adult (e.g. Cloitre, Scarvalone & Difede, 1997; Cloitre, Tardiff, Marzuk, Leon & Portera, 1996; Spertus, Yehuda, Wong, Halligan & Seremetis, 2003). The factors related to revictimization have been subject to a great deal of research, which will not be discussed at length here. Messman-Moore and Long (2003) reviewed revictimization findings in relation to sexual abuse and adult sexual trauma, and proposed two underlying mechanisms that may extend

to non-sexual revictimization. These are: (1) factors that serve to increase contact with potential perpetrators, and (2) factors that increase psychological and social vulnerability within the victim that perpetrators identify and act upon. It is proposed that high levels of schizotypy or SPD might increase psychological vulnerability to further victimization, although clearly further research is needed to support this hypothesis.

3.1.2. Suggested Links between Trauma, Schizotypy, and Psychopathology

This section will attempt to draw together some of the research outlined in Part I of this thesis, the results of the empirical paper outlined in Part II, and the above discussion. A provisional model is described below (see figure 3.1). As this research area is still in its infancy, most of the relationships are speculative and it is designed primarily to highlight where further research would be useful.

Research has suggested that childhood maltreatment (particularly neglect) is related to increased levels of schizotypy (Irwin, 2001) and SPD (Johnson et al., 1999). The mechanisms of this relationship are as yet uncertain. It is proposed here that there may be a genetic link, as parents of people with SPD have increased levels of schizophrenia and schizotypal traits (Lenzenweger & Loranger, 1989). Additionally, childhood maltreatment leads to a disordered attachment in the child (e.g. Bowlby, 1988). In cognitive terms, the child is likely to develop negative schemas about the self and others. This is similar to Fowler's (2000) proposal that interpersonal trauma leads to negative beliefs about the self and other, and so the individual withdraws from the world (see section 1.3.4). These negative beliefs and social withdrawal

could be consistent with the paranoia and social anxiety that make up part of a schizotypal belief structure.

The study reported in Part II has supported previous evidence showing that people high in schizotypy report more traumatic events (Holmes & Steel, 2004; Berenbaum et al., 2003). It is possible that this relationship is an artefact of the relationship between childhood and adult trauma. However, it is also possible that high levels of schizotypy might make an individual at risk of revictimization. It is proposed that high levels of schizotypy may make someone more psychologically vulnerable to potential perpetrators (see Messman-Moore & Long, 2003) and thus further trauma.

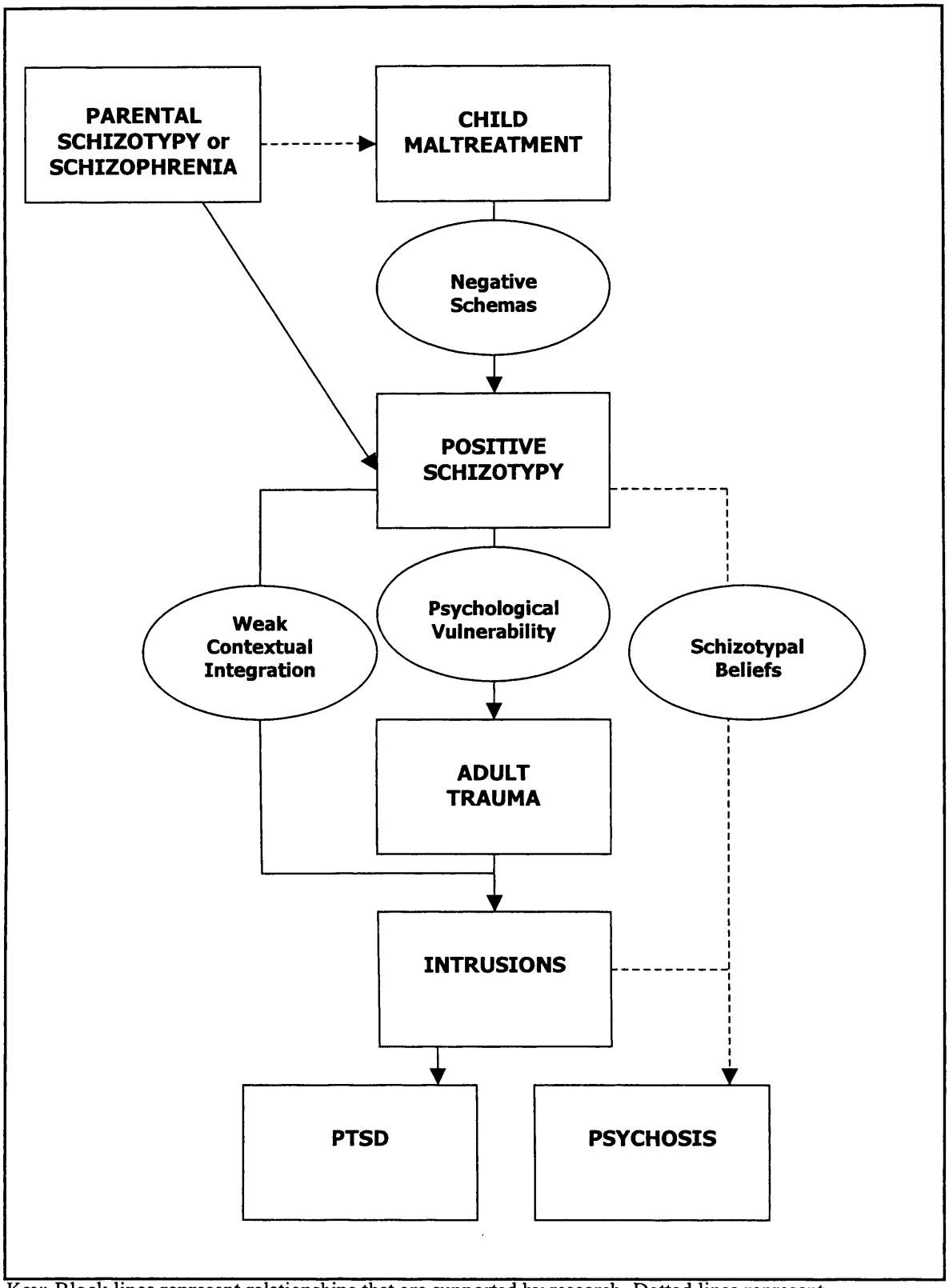
This study and Holmes and Steel (2004) have found that people with high levels of positive schizotypy experience more intrusions after a distressing event. Steel et al. (2005) propose that this relationship can be explained by people with high positive schizotypy having weakened contextual integration, which makes them more vulnerable to intrusions after a distressing event. This study also found that people with high schizotypy had increased levels of distress, PTSD symptomatology, and depressed mood after a distressing event. So high positive schizotypy seems to be related to a range of negative outcomes after a distressing event.

Steel et al. (2005) also propose that high levels of positive schizotypy may cause an individual to be vulnerable to a diagnosis of psychosis after a distressing event. They suggest that experiencing a high number of varied intrusions might make it difficult for these individuals to directly link their intrusions to their origin (i.e. a distressing event). Thus they may make sense of these intrusions in light of their own beliefs and

experiences (Morrison, 2001). Someone with a high positive schizotypy may be more likely to appraise their intrusions in light of their schizotypal beliefs (e.g. magical ideation), therefore their explanations are likely to be culturally unacceptable and hence they may engender a psychotic diagnosis (Morrison, 2001).

There are of course limitations of this model, most obviously that it concentrates on positive schizotypy, and there are likely to be many other variables involved. However, the model is merely a tentative explanation of some of the findings reported in this thesis, and is in no way intended to be a finished and complete theory.

FIGURE 3.1. DIAGRAMMATIC REPRESENTATION OF THE PROVISIONAL MODEL.



Key: Block lines represent relationships that are supported by research. Dotted lines represent hypothesised relationships. Boxes represent measured variables. Ellipses represent hypothesised underlying mechanisms.

3.1.3. Areas for Further Research

As stated above, much of this model is speculative but it does suggest areas that warrant further research. Investigations into the underlying interpersonal schemas found in people with high levels of schizotypy would help to clarify whether these are indeed negative, and whether they might help to explain the link between childhood maltreatment and levels of schizotypy. The view that schizotypal traits might make an individual psychologically vulnerable to revictimization is clinically important and it would be beneficial to investigate this. With relation to Steel et al.'s (2005) approach, it would be interesting to attempt to measure contextual integration, in response to a real or analogue distressing event, to test whether it is related to increased intrusions. It would also be interesting to measure people's appraisals of intrusions after a distressing event, and investigate if these are related to schizotypal beliefs. Finally, research thus far has been conducted on analogue populations or people with PTSD symptomatology. Further research into Steel et al.'s (2005) theory is warranted within populations with psychosis, to clarify whether the proposed links with trauma, contextual integration and psychosis are justified.

3.2. METHODOLOGICAL ISSUES

3.2.1. Sampling Issues

This study used a clinical population of people seeking psychological help after experiencing a distressing event. A clinical population was chosen as a study had already successfully tested similar hypotheses on an analogue population (Holmes & Steel, 2004). The use of a population with a real life distressing or traumatic event and subsequent psychological distress is a strength as it provides evidence that the hypotheses are relevant to the populations the theory is designed for. However, using a clinical population does have its limitations. Firstly, it was extremely difficult to collect enough data and hence this study does have limited power. People with PTSD symptomatology are by nature avoidant of their problems (APA, 1994) and completing questionnaires about an extremely stressful event must have been very hard for them to do. Secondly, most clinical populations have relatively high levels of comorbidity. In this study, levels of depression and anxiety were high. Although there were no measures to explicitly examine this, it is likely that some participants met criteria for other Axis I disorders. However this issue is not particularly problematic for this study, as a "pure" PTSD population was not needed.

3.2.2. Measurement Issues

This study was intended for a clinical population and so it was designed to be as user-friendly as possible. Thus it was decided that it would be a questionnaire study in order to try and decrease the burden on participants. It may be that an interview

study would have elicited more information (for example, a more in depth exploration of the types of intrusions experienced). However the benefits of a questionnaire study include an increased level of anonymity, as participants can report their experiences without having to be concerned about the researcher's face-to-face reaction. This may be particularly important within a population where levels of shame and avoidance are likely to be high (Andrews, Brewin, Rose & Kirk, 2000; APA, 1994).

Due to the need to increase the likelihood of people responding, it was decided to take measures at one time point. This means that people were asked to make a judgement about their frequency of their intrusions, rather than complete an ongoing measure such as an intrusion diary (e.g. Holmes & Steel, 2004). A one-off judgment could be less accurate than a daily measure, but the fact that the results are similar to those found by Holmes and Steel (2004) suggests that people were able to make a good estimate of their intrusions. A further downside of taking measures at one time point meant that peritraumatic dissociation was measured retrospectively. As discussed in Part II, the retrospective measurement of dissociation may not be veridical (Marshall & Schell, 2002). It would clearly be better to conduct a prospective study, ideally measuring positive schizotypy before a distressing event had occurred, peritraumatic dissociation a few days after the event, and intrusions and PTSD symptomatology at a later date. However this study would be extremely difficult to implement. It would very difficult to identify who may experience a traumatic event beforehand, although it may be more straightforward with certain at risk populations (e.g. people in the armed forces). Asking people to complete measures at more than one time-point means that the drop-out rate is likely to

increase and finding participants will be even more problematic. A prospective study would be valuable, but would be unlikely to centre on a clinical population such as this one. Therefore it would be complementary to this study rather than an alternative.

This study used self-report techniques, which have limitations. It is always difficult to be sure that people can accurately report the phenomena under investigation. People may have trouble remembering the phenomena, or they may have little access to their internal world. Moreover, people may be subject to demand effects, and might have other reasons for over- or under-reporting their experiences (e.g. because they need help or because they are ashamed). Despite these issues, self-report is at present the only way to measure internal psychic phenomena such as intrusions. Moreover, the hypotheses of this study were not communicated to participants to reduce demand effects as much as possible.

Finally, the main hypothesis was tested using a questionnaire designed for this study. There are of course problems with using an unstandardised measure which does not have demonstrated reliability and validity. Although a search of the literature found a variety of intrusion measures (Berntsen, Willert & Rubin, 2003; Clark & de Silva, 1985; Clohessey & Ehlers, 1999; Dougall, Craig & Baum, 1999; Rassin, Merckelbach & Muris, 2001; Rubin, Feldman & Beckham, 2004) none of these were adequate for this study's hypotheses. Thus it was necessary to design a questionnaire for this purpose.

3.3. CLINICAL IMPLICATIONS

Some of the clinical implications of this study have been discussed in Part II of this thesis. This section will expand on some of these issues and discuss several more clinical implications of this study's findings.

This study has provided evidence suggesting that positive schizotypy is a vulnerability factor for intrusions and wider psychopathology after a traumatic or distressing event. The first implication of these findings is that a measure of positive schizotypy could be used with people who have been through a traumatic event in order to identify those most at risk. Brewin (2003) proposes a "screen and treat" approach to helping people who have experienced a trauma. He suggests that people should be allowed to employ their own coping resources after a stressful event, but that careful monitoring of their symptoms is advised to identify those people who are not recovering naturally. Brewin et al. (2002) outline a simple screening questionnaire (measuring re-experiencing and arousal symptoms) for this task. Whilst this is undoubtedly clinically very useful, this study also suggests that a measure of positive schizotypy given in the days after a traumatic event might also help to identify those most at risk of negative outcomes. Further research would be needed to clarify whether a schizotypal questionnaire adds any useful information to that gleaned using Brewin et al's (2002) screening questionnaire.

A benefit of using a measure of positive schizotypy rather than a screening questionnaire is that it can theoretically be used to identify vulnerable people *before* they are exposed to trauma. This could provide useful information for groups of

people where there is a high risk of traumatic exposure. For example, using a measure of positive schizotypy to screen individuals who are in the army or the police force might mean that people are already flagged as vulnerable to posttraumatic symptoms. Of course there are important ethical issues with using a schizotypal questionnaire in this way. There could be moral problems if measures were used to select out people who are deemed vulnerable, particularly as there is not a one-to-one relationship between positive schizotypy and PTSD symptomatology. Therefore although this a potential useful function of positive schizotypy, careful thought needs to be given before it is utilised in this fashion.

This study has implications for therapeutic work conducted with people with psychosis. Firstly, it is important to assess an individual's traumatic history and potentially include this information in the formulation developed with the patient. Secondly, it may be useful to assess the presence of trauma-related intrusions, even though the individual may not make the link between their intrusions and the traumatic event(s) that they have experienced. Exploration of this potential link may provide an important intervention point. If the individual is able to understand the link between their internal experience and a past event, they may be less likely to attribute their experience to an external source, which Morrison (2001) argues is a key feature of psychosis. Thirdly, Steel et al. (2005) propose that a weakened ability to contextually integrate information might mean that an individual who is high on positive schizotypy is vulnerable to experiencing intrusions after daily stressors (e.g. an argument). Therefore it may be important for a clinician to be aware of intrusions related to stressful, but not necessarily traumatic, events. Fourthly, effective psychological approaches from the PTSD literature may have a use in people with

psychosis. In a clinical example of this approach, Callcott, Standart and Turkington (2004) effectively used PTSD techniques, including reliving and exposure to flashbacks, with two patients with psychosis.

Finally, a wider implication is that both clinically and empirically it may be more useful to move away from research and treatment based within diagnostic categories (e.g. PTSD and schizophrenia) and work instead with common psychological processes or mechanisms (e.g. intrusions).

3.4. PERSONAL REFLECTION

Although I have a strong research background, this study was the first that I had conducted with a clinical population. I was struck by the amount of difficulties that have to be overcome when attempting to carry out a study with the National Health Service. The ethical process is extremely time-consuming and there is a great deal of bureaucracy. Whilst I understand the need for a thorough ethical review, it seems to me that the current system only serves to stop busy clinicians conducting their own research, and thus has a negative impact on the progress of psychological understanding.

Despite much forewarning, I was not prepared for the difficulty in recruiting participants from this population. I often found myself feeling frustrated and wondering why people were not willing to take the time to complete a few questionnaires. However, when someone did complete the study and I came into contact with the enormous difficulties they had faced, I found myself amazed at the fact that people under this much strain still had the desire and ability to take time out to help with the research. I think it is all too easy to forget what people have been through when you are bogged down with the day-to-day grind of trying to recruit participants, and I am extremely grateful to all the people who considered taking part or did take part at this hugely stressful time in their lives.

As the numbers of participants crept up I began to regain my interested in the hypotheses. Conducting the analyses was exciting and I was very pleased to find that the main hypothesis was supported. I think that this research area is extremely

exciting and I am particularly pleased that we are beginning to understand some of the mechanisms that might be involved in people's responses to a traumatic event. I personally find it a challenge to try and tease out which variables are very important for this response and which are simply associated with other variables. However, I believe that taking a mechanistic approach can help us to do just that.

Overall, the research process was extremely demanding, particularly when combined with the other requirements of clinical training. However, I am very pleased with the findings of this study, and I feel that it has added to our understanding of responses to distressing events.

3.5. SUMMARY AND FINAL CONCLUSIONS

This thesis has outlined the literature on responses to traumatic life events, and the potential link between trauma and psychosis. The empirical study has found a significant relationship between high positive schizotypy and the frequency of intrusions experienced by people seeking psychological help after a distressing life event. This finding is important as it can help to identify which individuals might be vulnerable to negative outcomes after a traumatic event. Moreover, it may help to explain why some people engender a psychotic diagnosis after a trauma, and it suggests several psychological interventions that could be useful for people with psychosis.

3.6. REFERENCES

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APPENDIX I. MEASURES

I.i. Schizotypal Personality Scale (Claridge & Broks, 1984)

I.ii. State Dissociation Questionnaire (Murray et al., 2002)

I.iii. Trauma Intrusion Questionnaire (developed for this study)

I.iv. Beck Depression Inventory (Beck et al., 1961)

I.v. Beck Anxiety Inventory (Beck & Steer, 1990)

Beliefs and Experiences Scale

This questionnaire contains questions that may relate to your thoughts, feelings, experiences and preferences. There are no right or wrong answers or trick questions so please be as honest as possible. Please circle "yes" or "no" in response to the following questions. Do not spend too much time deliberating any question but put the answer closest to your own.

1. Do you believe in telepathy?	YES	NO
2. Do you often feel that other people have it in for you?	YES	NO
3. When in the dark do you often see shapes or forms even though there is nothing there?	YES	NO
4. Does your own voice ever seem distant, faraway?	YES	NO
5. Does it often happen that almost every thought immediately and automatically suggests a large number of ideas?	YES	NO
6. Do you ever become oversensitive to light or noise?	YES	NO
7. Do you often have vivid dreams that disturb your sleep?	YES	NO
8. When you are worried or anxious do you have trouble with your bowels?	YES	NO
9. Have you ever felt when you looked in a mirror that your face seemed different?	YES	NO
10. Do you ever feel it is safer to trust nobody?	YES	NO
11. Do things sometimes feel as if they were not real?	YES	NO
12. Do you feel lonely most of the time even when you're with people?	YES	NO
13. Do everyday things sometimes seem unusually large or small?	YES	NO
14. Are you often bothered by the feeling that people are watching you?	YES	NO
15. Do you feel that you cannot get 'close' to other people?	YES	NO
16. Do you dread going into a room by yourself when other people have already gathered and are talking?	YES	NO
17. Does your sense of smell sometimes become unusually strong?	YES	NO
18. Are you sometimes sure that other people can tell what you are thinking?	YES	NO
19. Have you ever had the sensation of your body or part of it changing shape?	YES	NO
20. Do you ever feel sure that something is about to happen even though there doesn't seem to be any reason for thinking that?	YES	NO
21. Do you ever suddenly feel distracted by distant sounds that you are not normally aware of?	YES	NO
22. Do you ever have a sense of vague danger or sudden dread for reasons that you do not understand?	YES	NO
23. Have you ever thought you heard someone talking only to discover that it was in fact some nondescript noise?	YES	NO
24. Do your thoughts ever stop suddenly causing you to interrupt what you are saying?	YES	NO
25. Do you feel that you have to be on guard even with your friends?	YES	NO
26. Do you feel that your thoughts don't belong to you?	YES	NO
27. When in a crowded room do you often have difficulty in following a conversation?	YES	NO
28. Do you sometimes feel that your accidents are caused by mysterious forces?	YES	NO
29. Do you feel at times that people are talking about you?	YES	NO
30. Do you believe that dreams can come true?	YES	NO
31. Do you ever feel that your speech is difficult to understand because the words are all mixed up or don't make sense?	YES	NO
32. Are your thoughts sometimes so strong that you can almost here them?	YES	NO
33. When coming into a new situation, have you ever felt strongly that it was a repeat of something that happened before?	YES	NO
34. Have you ever felt that you were communicating with another person telepathically?	YES	NO
35. Are you easily distracted from work by daydreams?	YES	NO
36. Are you very hurt by criticism?	YES	NO
37. Do you ever get nervous when someone is walking behind you?	YES	NO

Dissociation Questionnaire

In this questionnaire, we are interested in WHAT WENT THROUGH YOUR MIND during the traumatic event. Please indicate the extent to which the following statements applied to you DURING THE TRAUMATIC EVENT.

DURING THE TRAUMATIC EVENT....

		This applied to me				
		Not at all	A Little	Moderately	Strongly	Very strongly
1.	I felt dazed, unable to take in what was happening.	0	1	2	3	4
2.	The world around me seemed strange or unreal.	0	1	2	3	4
3.	My body felt as if it was not really mine.	0	1	2	3	4
4.	I felt emotionally numb.	0	1	2	3	4
5.	I felt as if I was separate to my body and was watching from outside.	0	1	2	3	4
6.	I felt as if time was going faster or slower than it really was.	0	1	2	3	4
7.	I felt as if I was living in a dream of a film, rather than in real life.	0	1	2	3	4
8.	Things around me seemed too big or too small, or distorted in shape.	0	1	2	3	4
9.	I felt distant from my emotions.	0	1	2	3	4

Trauma Intrusion Questionnaire

Intrusions are unwanted images and thoughts that can pop into our minds without warning. They often occur after we have experienced a traumatic or stressful event, and can feel as though the trauma is happening again in the present. Intrusions happen spontaneously, and are not a result of deliberate attempts to recall particular memories. They can occur in the form of visual images, sounds, a sense of touch, or a combination of these. Intrusions can sometimes cause distress.

This questionnaire is interested in the intrusions that you may currently be experiencing following the trauma you have experienced. For section 1, please circle a number of the scales from 1-5 indicating your answer. For section 2, please write an answer in the space provided. Thank you for your time.

Section 1

1. How often do you experience intrusions?

1	2	3	4	5
Never	Hardly ever	Sometimes	Most of the time	All of the time

If your answer to this question is "never" then you do not need to fill in the rest of the questionnaire. Thank you for your time.

2. Some people find that their intrusions are a direct replaying of part or all of the stressful or traumatic experience. How many of your intrusions are a clear repeat of some of the stressful or traumatic event that you have experienced?

1	2	3	4	5
None	A few	About half	Most	All

3. Sometimes intrusions can be thoughts or memories of events and can feel very real, as though the event is occurring in the present. Do your intrusions ever feel as if the images or thoughts are happening right now?

1	2	3	4	5
Not at all	Hardly ever	Somewhat	Mostly	Always

4. Some intrusions can occur without warning but sometimes people find that their intrusions can be triggered by certain things (e.g. reminders of the stressful or traumatic event that you have experienced). How many of your intrusions are triggered by something you notice in particular?

1	2	3	4	5
None	A few	About half	Most	All

Can you give some examples of things that trigger your intrusions?

1)_____
2)_____
3)_____
4)_____
5)_____

5. Sometimes intrusions can be upsetting for people. How much distress do your intrusions cause you?

1	2	3	4	5
None	A little distress	Some Distress	Moderate distress	Extreme distress

6. Some people have a small number of intrusions that they experience over and over again, and some people have lots of different kinds of intrusions. How many different kinds of intrusions do you have?

1	2	3	4	5
1 type	2-3 types	4-5 types	6-7 types	8+ types

7. Some people also have intrusions that are not clearly related to the stressful or traumatic event that they have experienced. How many of your intrusions are not obviously connected to the trauma that you gone through?

1	2	3	4	5
None	A few	About half	Most	All

Section 2

8. On average, about how many intrusions do you experience per day (please circle a number)?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20...25...30...35...40...45...50...60...70...80...90...100+

9. Please complete the following statements:

My intrusions feel like _____

_____

_____

Having these intrusions means that I _____

_____

_____

I am experiencing intrusions because _____

_____

_____

9. Please give us a few examples of your intrusions

1) _____

_____

2) _____

_____

3) _____

_____

4) _____

_____

5) _____

_____

B.D.I.

Name: _____ Date: _____

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group that best describes the way you have been feeling in the PAST WEEK, INCLUDING TODAY: Circle the number beside the statement you picked. If several statement sin the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. 0. I do not feel sad
   1. I feel sad
   2. I am sad all the time and can't snap out of it
   3. I am so sad or unhappy that I cannot stand it

2. 0. I am not particularly discouraged by the future
   1. I feel discouraged about the future
   2. I feel I have nothing to look forward to
   3. I feel that the future is hopeless and that things cannot improve

3. 0. I do not feel like a failure
   1. I feel I have failed more than the average person
   2. As I look back on my life, all I can see is a lot of failures
   3. I feel I am a complete failure as a person

4. 0. I get as much pleasure out of things as I used to
   1. I don't enjoy things the way I used to
   2. I don't get real satisfaction out of anything anymore
   3. I am dissatisfied or bored with everything

5. 0. I don't feel particularly guilty
   1. I feel guilty a good part of the time
   2. I feel quite guilty most of the time
   3. I feel guilty all of the time

6. 0. I don't feel I am being punished
   1. I feel I may be punished
   2. I expect to be punished
   3. I feel I am being punished

7. 0. I don't feel disappointed in myself
   1. I am disappointed in myself
   2. I am disgusted with myself
   3. I hate myself

8. 0. I don't feel I am worse than anybody else
   1. I am critical of myself for my weaknesses or mistakes
   2. I blame myself all the time for my faults
   3. I blame myself for everything bad that happens

9. 0. I don't have any thoughts of killing myself
   1. I have thoughts of killing myself but would not carry them out
   2. I would like to kill myself
   3. I would kill myself if I had the chance

10. 0. I don't cry any more than usual
    1. I cry more now than I used to
    2. I cry all the time now
    3. I used to be able to cry, but now I can't cry even though I want to

11. 0. I am no more irritated now than I ever am
    1. I get annoyed or irritated more easily than I used to
    2. I feel irritated all the time now
    3. I don't get irritated at all by the things that used to irritate me

12. 0. I have not lost interest in other people
    1. I am less interested in other people than I used to be
    2. I have lost most of my interest in other people
    3. I have lost all of my interest in other people

13. 0. I make decisions about as well as I ever could
    1. I put off making decisions more than I used to
    2. I have greater difficulty in making decisions than before
    3. I can't make decisions at all anymore

14. 0. I don't feel I look any worse than I used to
    1. I am worried that I am looking old or unattractive
    2. I feel that there are permanent changes in my appearance that make me look unattractive
    3. I believe that I look ugly

15. 0. I can work about as well as before
    1. It takes an extra effort to get started at doing something
    2. I have to push myself very hard to do anything
    3. I can't do any work at all

16. 0. I can sleep as well as usual
    1. I don't sleep as well as I used to
    2. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep
    3. I wake up several hours earlier than I used to and find it hard to get back to sleep

17. 0. I don't get more tired than usual
    1. I get tired more easily than I used to
    2. I get tired from doing almost anything
    3. I am too tired to do anything

18. 0. My appetite is no worse than usual
    1. My appetite is not as good as it used to be
    2. My appetite is much worse now
    3. I have no appetite at all anymore

19. 0. I haven't lost much weight, if any, lately
    1. I have lost more than 5 pounds
    2. I have lost more than 10 pounds
    3. I have lost more than 15 pounds

    I am purposely trying to by eating less
    _____ *YES*

20. 0. I am no more worried about my health than usual
    1. I am worried about physical problems such as aches and pains: or upset stomach: or constipation
    2. I am very worried about physical problems and it's hard to think of much else
    3. I am so worried about my physical problems that I cannot think about anything else

21. 0. I have not noticed any recent change in my interest in sex
    1. I am less interested in sex than I used to be
    2. I am much less interested in sex than I used to be
    3. I have lost interest in sex completely

B.A.I. Questionnaire

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an X in the corresponding space in the column next to each symptom.

		NOT AT ALL	MILDLY It did not bother me too much	MODERATELY It was very unpleasant but I could stand it	SEVERELY I could barely stand it
1	Numbness or tingling				
2	Feeling hot				
3	Wobbliness in legs				
4	Unable to relax				
5	Fear of the worst happening				
6	Dizzy or light-headed				
7	Heart pounding or racing				
8	Unsteady				
9	Terrified				
10	Nervous				
11	Feelings of choking				
12	Hands trembling				
13	Shaky				
14	Fear of losing control				
15	Difficulty breathing				
16	Fear of dying				
17	Scared				
18	Indigestion or discomfort in abdomen				
19	Faint				
20	Face flushed				
21.	Sweating (not due to heat)				

APPENDIX II. SAMPLE SHEETS FOR PARTICIPANTS

II.i. Invitation letter

II.ii. Information sheet

III.iii. Consent form

Camden and Islington NHS
Mental Health and Social Care Trust

Dear Patient,

This envelope contains two research studies that are being conducted at the Traumatic Stress Clinic. It is hoped that the results of these studies will help us to understand people's reactions to trauma better. Better understanding should allow us to develop more advanced treatments in the future.

We would be very grateful if you could take the time to complete these two studies. Completing both studies should only take 25-30 minutes. You would simply need to read the information sheet, sign the consent form, and complete the questionnaires. You could then post the questionnaires and consent form back in the stamped addressed envelope (included) or bring them to your first appointment at the Traumatic Stress Clinic and give them to your clinician. Full instructions can be found in the information sheets.

*** If you decide to take part we will send you a payment of £6.00 in the post when we have received your completed pack ***

You do not have to take part in these studies. Your decision whether to take part of not will not affect your care and management in any way. Some of the questionnaires could cause some distress. If you do feel distressed please contact Dr (Consultant Clinical Psychologist) on and she will be happy to talk through these issues with you.

Thank you very much for your help!

Sarah and Rachel

If you do not wish to take part in this research, please fill this slip in and bring to your clinician at the clinic or post it back to us in the stamped addressed envelope.

I do not wish to take part in this research

Signed: _____ Print Name: _____

Version 4 – 21.1.2005

Camden and Islington NHS
Mental Health and Social Care Trust

INFORMATION SHEET

Dear Patient,

Studies: "Unwanted Thoughts and Images" and "Shame, Negative Thinking and Positive Thinking in Posttraumatic Stress Disorder"
Researchers: Dr Sarah Marzillier and Rachel Harman (Trainee Clinical Psychologists)
Supervisors: Dr Craig Steel and Dr Peter Scragg;
Hospital: The Traumatic Stress Clinic

You are being invited to take part in two research studies. Before you decide it is important for you to understand why the research is being done and what it will involve. We are two Trainee Clinical Psychologists conducting studies as part of our training. Both studies have been combined into one questionnaire pack. One study is investigating whether some elements of a person's personality and beliefs can affect the intrusions (i.e. unwanted thoughts and images) that they experience after trauma. If we can understand why some people might experience more intrusions than others, then we might be able to understand why some people have a more disturbing reaction to trauma than others. The other study is investigating the feeling of shame in relation to PTSD and particularly how negative thinking and positive thinking may be related to this. It is hoped that the information gained from these studies may help us to treat future patients with PTSD better.

What will I have to do?
If you decide to take part in these studies, you will be asked to fill out some questionnaires. Some of these will be part of the standard assessment procedure at the Traumatic Stress Clinic, while others will be specific to this research. Filling out the questionnaires will take approximately 25-30 minutes. To take part in both studies (which have been combined into one questionnaire pack) you would simply need to:

1. Read this information sheet.
2. Read and sign the consent form.
3. Complete the 6 questionnaires included in this envelope. These may be in a random order and are called:
   - Trauma Intrusion Questionnaire
   - Beliefs and Experiences Scale
   - Dissociation Questionnaire
   - FSCS Scale
   - SASR
   - ESS
4. Put the completed consent form and questionnaires into the envelope provided. You can then put them in the post (postage has been prepaid) or bring them to your assessment appointment and give the envelope to your clinician along with the other questionnaires you have been asked to complete. All information that you give will remain *confidential* at all times.

Some details (e.g. date of trauma, gender, age, ethnicity) will also be collected from your files at the Clinic. We may also put the questionnaires that you complete back into your file at the clinic for your clinician to see (in order for them to have more information about you that may be helpful for you). Please let us know on the consent form if you do not wish us to do this.

Will I be paid for my time?
If you decide to take part, you will be paid **£6.00** for your time. A postal order will sent to your address when we have received the completed questionnaire pack.

Version 4 – 21.1.2005

Will you contact me?
If we have not already received your completed questionnaire pack, we may telephone you within a few weeks of you receiving this optional research pack. This is to make sure that you have received the pack, to find out whether or not you wish to take part in the research, and to offer you assistance in completing the pack (if you wish to do so). Please feel free to let us know that you do not wish to take part in the research when we call you. The decision is entirely yours and we will not pressure you in any way to take part in these studies. ***If you do not wish us to telephone you, please let us know by completing the "opt-out" form on the bottom of the cover letter that you received with this pack and posting it back to us in the envelope provided.***

You do not have to take part in this study if you do not want to. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether to take part of not will not affect your care and management in any way. Please be warned that some of the questionnaires relate to what may be upsetting and sensitive experiences.

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by Camden and Islington Community Health Services Local Research Ethics Committee. If you have any questions or concerns about the study, please feel free to contact us. You can contact us at:

Sub-Department of Clinical Health Psychology
University College London
T
Tel.
Email:

Thank you very much for your time and assistance with this study.

Yours sincerely,

Dr Sarah Marzillier
Trainee Clinical Psychologist

Rachel Harman
Trainee Clinical Psychologist

Camden and Islington NHS
Mental Health and Social Care Trust

CONSENT FORM

Study: "Unwanted Thoughts and Images" and "Shame, Negative Thinking and Positive Thinking in Posttraumatic Stress Disorder"
Researchers: Dr Sarah Marzillier and Rachel Harman
Hospital: The Traumatic Stress Clinic, 73 Charlotte Street, London W1T 4PL.

To be completed by the patient. Please delete as necessary:

1. I have read the information sheet about these studies YES/NO
2. I have a contact address if I wish to ask questions and discuss these studies YES/NO
3. I have received sufficient information about these studies YES/NO
4. I understand that I am free to withdraw from these studies
   - At any time
   - Without giving a reason for withdrawing YES/NO
   - Without affecting my future medical care
5. I am happy for my clinician to see my questionnaires YES/NO
6. I do/ do not* agree to take part in these studies (* please delete as appropriate)

Signed..... Date.....

Name in Block Letters

.....

If you would like to hear a summary of the results of these studies, please write your contact details below. These details will be kept separately from your questionnaires to make sure that your views are kept confidential.

There may also be the possibility of being involved in further research about this topic. If you are happy to be contacted about this, please indicate below.

6. I would like to receive a summary of the results of these studies YES/NO
7. I am happy to be contacted about further research into this area by this clinic YES/NO

Name:.....

Address:.....

.....

Postcode:.....

Tel:.....

Email:.....

APPENDIX III. ETHICAL APPROVAL

III.i. Ethical approval from Camden and Islington Community Health Services Local Research Ethics Committee (LREC)

III.ii. Ethical approval from Oxfordshire LREC

III.iii. Site specific approval from Oxfordshire LREC for Hertfordshire Site

III.iv. Change of study status to "no local investigator" by Oxfordshire LREC for further Oxfordshire Site

III.v. Site specific approval for extension to other sites from Camden and Islington LREC

Version 2

Camden & Islington Community Health Services Local Research Ethics Committee

LREC Ref: 03/89

PRIVATE AND CONFIDENTIAL
Dr S Marzillier
Sub-Department of Clinical Health Psychology
University College London

16 February 2004

Dear Dr Marzillier

Title: The effects of positive schizotypy on intrusions following trauma.

Thank you for your letter dated 3rd February 2004, which addressed the points raised by the Ethics Committee at their meeting on 26th January 2004. I am pleased to inform you that after careful consideration the Local Research Ethics Committee has no ethical objections to your project proceeding. This opinion has also been communicated to the North Central London Community Research Consortium.

PLEASE NOTE THAT THIS OPINION ALONE DOES NOT ENTITLE YOU TO BEGIN RESEARCH, YOU MUST RECEIVE AN APPROVAL FROM EACH NHS TRUST HOSTING YOUR RESEARCH.

Camden and Islington Community Health Service LREC considers the ethics of proposed research projects and provides advice to NHS bodies under the auspices of which the research is intended to take place. It is that NHS body which has the responsibility to decide whether or not the project should go ahead, taking into account the ethical advice of the LREC[1]. Where these procedures take place on NHS premises or using NHS patients, the researcher must obtain the agreement of local NHS management, who will need to be assured that the researcher holds an appropriate NHS contract, and that indemnity issues have been adequately addressed.

N.B. Camden and Islington Community Health Service LREC is an independent body providing advice to the North Central London Community Research Consortium. A favourable opinion from the LREC and approval from the Trust to commence research on Trust premises or patients are NOT one and the same. Trust approval is notified through the Research & Development Unit (please see attached flow chart).

The following conditions apply to this project:

- You must write and inform the Committee of the start date of your project. The Committee (via the Local Research Ethics Committee Administrator or the Chair at the above address) must also receive notification:

  a) when the study commences;
  b) when the study is complete;
  c) if it fails to start or is abandoned;
  d) if the investigator/s change and

[1] Governance Arrangements for NHS Research Ethics Committees, *July 2001 (known as GAFREC)*

e) if any amendments to the study are made.

- The Committee must receive immediate notification of any adverse or unforeseen circumstances arising out of the project.
- It is the responsibility of the investigators to ensure that all associated staff, including nursing staff, are informed of research projects and are told that they have the approval of the Ethics Committee and management approval from the body hosting the research.
- The Committee will require a copy of the report on completion of the project and may request details of the progress of the research project periodically (i.e. annually for longer projects).
- If data is to be stored on a computer in such a way as to make it possible to identify individuals, then the project must be registered under the Data Protection Act 1998. Please consult your department data protection officer for advice.
- Failure to adhere to these conditions set out above will result in the invalidation of this letter of no objection.

Please forward any additional information/amendments regarding your study to the Local Research Ethics Committee Administrator or the Chair at the above address.

Yours sincerely

LREC Chair

Email: (administrator)

Enc/s:

Copy to:

NHS

Oxfordshire REC C

20 May 2004

Dr Sarah Marzillier
Trainee Clinical Psychologist
Sub-Department of Clinical Healthy Psychology
Camden & Islington Mental Health & Social Care NHS Trust
University College London

Dear Dr Marzillier

Full title of study: The effect of positive schizotypy on intrusions following trauma.
REC reference number: 04/Q1606/1
Protocol number: n/a

Thank you for your letter of 14 April, responding to the Committee's request for further information on the above research and submitting revised documentation.

Please ensure that the date, REC reference number and version number is added to the revised consent form and invitation letter before distribution.

The further information was considered at the meeting of the Sub-Committee of the REC held on 19 May. A list of the members who were present at the meeting is attached.

Confirmation of ethical opinion

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

Single-site studies

The favourable opinion applies to the following research site:

Site: Warneford Hospital, Oxfordshire Mental Health NHS Trust
Principal Investigator: Dr Sarah Marzillier, Trainee Clinical Psychologist

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

Document Type: Application
Dated: 20/02/2004
Date Received: 26/02/2004

Document Type: Investigator CV (Sarah Louise Marzillier)
Version: 1
Dated: 5/02/2004
Date Received: 26/02/2004

Document Type: Protocol
Version: 1
Dated: 5/02/2004
Date Received: 26/02/2004

Document Type: Other (Covering Letter)
Dated: 19/02/2004
Date Received: 26/02/2004

Document Type: Other (CV of Peter Scragg)
Date Received: 26/02/2004

Document Type: Other (Research proposal review form – Reviewer:)
Dated: 2/02/2004
Date Received: 26/02/2004

Document Type: Other (Information Sheet)
Version: 2
Dated: 14.04.04
Date Received: 04.05.04

Document Type: Other (Consent Form)
Version: 2
Dated: 14.04.04
Date Received: 04.05.04

Document Type: Other (Beliefs and Experiences Scale)
Date Received: 26/02/2004

Document Type: Other (Trauma Intrusion Questionnaire)
Date Received: 26/02/2004

Document Type: Other (Dissociation Questionnaire)
Date Received: 26/02/2004

Document Type: Other (Hand-Scoring Answer Sheet)
Dated: 1995
Date Received: 26/02/2004

Document Type: Other (Camden & Islington LREC Approval Letter)
Dated: 16/02/04
Date received: 04/05/04

Document Type: Other (Invitation letter)
Dated: 14.04.04
Date received: 04.05.04

Document Type: Other (Response Covering letter)
Version:
Dated: 14/04/04
Date received: 04/05/04

Management approval

The study may not commence until final management approval has been confirmed by the organisation hosting the research.

Notification of other bodies

We shall notify the research sponsor, the host organisation that the study has a favourable ethical opinion.

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.

REC reference number: 04/Q1606/1	**Please quote this number on all correspondence**

Yours sincerely,

Vice Chair

Enclosures *Standard approval conditions*
List of names and professions of members who were present at the meeting.

List of names and professions of members who were present at the Sub Committee meeting on 19 May 2004

Member Name	Designation	Profession
	Vice Chair	Director - Physiotherapy
	Hospital Consultant	Consultant Medical Oncologist

NHS

Oxfordshire REC C

25 February 2005

Dr Sarah Marzilier
Trainee Clinical Psychologist
Sub-Department of Clinical Health Psychology
Camden & Islington Mental Health & Social Care NHS Trust
University College London

Dear Dr Marzilier

Study title: The effect of positive schizotypy on intrusions following trauma.
REC reference: 04/Q1606/1
Protocol number: n/a

The REC gave a favourable ethical opinion to this study on 20 May 2004.

Notification(s) have now been received from local site assessor(s), following site-specific assessment. On behalf of the Committee, I am pleased to confirm the extension of the favourable opinion to the sites listed on the attached form.

Management approval

The Chief Investigator or sponsor should inform the local Principal Investigator at each site of the favourable opinion by sending a copy of this letter and the attached form. The research should not commence at any NHS site until management approval from the relevant NHS care organisation has been confirmed.

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.

REC reference number:	04/Q1606/1	Please quote this number on all correspondence

Yours sincerely,

Administrator

Enclosure: *Site approval form (SF1)*

Oxfordshire REC C

LIST OF SITES WITH A FAVOURABLE ETHICAL OPINION

For all studies requiring site-specific assessment, this form is issued by the main REC to the Chief Investigator and spo opinion letter and following subsequent notifications from site assessors. For issue 2 onwards, all sites with a favourab new sites approved.

REC reference number:	04/Q1606/1	**Issue number:**	1	**Date of issu**
Chief Investigator:	Dr Sarah Marzillier			
Full title of study:	The Effects of Positive Schizotypy on Intrusions Following Trauma			

This study was given a favourable ethical opinion by Oxfordshire REC C on 01 January 0001. The favourable opinion i listed below. The research may commence at each NHS site when management approval from the relevant NHS care confirmed.

Principal Investigator	Post	Research site	Site assessor	Date of favourable opinion for this site	Notes [1]
Dr Sarah Marzilier	Trainee Clinical Psychologist	Oxfordshire Mental Health NHS Trust	Oxfordshire REC C	20 May 2004	04/Q1606/1
Dr Sarah Marzillier	**Trainee Clinical Psychologist**	**Watford General Hospital**	**Hertfordshire Local Research Ethics Committee**	**25/02/2005**	**04/Q0201/52**

Approved by the Chair on behalf of the REC:

. (Signature of ~~Chair~~/Administrator*)

(**delete as applicable)*

(Name)

[1] *The notes column may be used by the main REC to record the early closure or withdrawal of a site (where notified by the Chief Investigator or sponsor), the suspension of termination of the favourable opinion for an individual site, or any other relevant development. The date should be recorded.*

NHS

Oxfordshire REC C

9 March 2005

Dr Sarah Marzilier
Trainee Clinical Psychologist
Sub-Department of Clinical Health Psychology
University College London

Dear Dr Marzilier

05/Q1606/1: The effects of positive schizotypy on intrusions following trauma.

The designation of the above study was discussed at the Sub-Committee meeting on Tuesday 8 March.

It was decided that this study should be redesginated a "No Local Investigator" study. Therefore site specific assessments are not required for any further sites. However, before commencing recruitment at any new site, local management approval should be sought.

Yours sincerely

Administrator

Camden & Islington Community
Local Research Ethics Committee

10 November 2004

Dr S Marzillier
Sub-Department of Clinical Health Psychology
University College London

Dear Dr Marzillier

Full title of study: The effects of positive schizotypy on intrusions following trauma.
REC reference number: 03/89
Protocol number: N/A

Amendment number: 2
Amendment date: 8th November 2004

The above amendment was reviewed by the a Sub-Committee of the Research Ethics Committee.

Ethical opinion

The members of the Committee present gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document: Information Sheet
Date: 8/11/04
Version: 3

Document: Consent Form
Date: 8/11/04
Version: 3

Document: Cover letter
Date: 8/11/04
Version:

Document: Notice of Substantial Amendment Form
Date: 8/11/04
Version: 2

Membership of the Committee

The members of the Ethics Committee that sat on the Sub-Committee are listed below.

Management approval

Before implementing the amendment, you should check with the host organisation whether it affects their approval of the research.

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.

REC reference number: 03/89	**Please quote this number on all correspondence**

Yours sincerely,

Administrator

Copy to: R&D, North Central London Research Consortium

List of names of members that reviewed the amendment