

# **The Effects of Early Trauma on Metacognitive Functioning in Psychosis**

Thesis submitted in part completion of the degree of  
Doctorate in Clinical Psychology  
at the University of Edinburgh

Nicole Scherer-Dickson

June 2010

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## **Acknowledgements**

My gratitude goes to all participants and clinicians involved for their time and effort.

I very much appreciate their support.

I thank in particular my supervisors Dr Matthias Schwannauer, for coding all transcripts and general guidance, and Dr Emily Taylor for her support.

# Dedication

To Joshua and Clara

## **Abstract**

**Background:** Empirical evidence suggests a relationship between early trauma and psychosis. However, the underlying mechanisms for this relationship remain unclear. Research into metacognitive functioning in psychosis indicates higher levels of metacognitive dysfunctional beliefs within this patient group. The potential effects of early trauma on metacognitive functioning in psychosis has to date been scarcely researched. Reflective functioning (RF) is believed to be affected by early trauma and leading to psychopathology, particularly borderline personality disorder. However, to date no studies have investigated the effects of early trauma on RF within psychosis.

**Objectives:** The primary aim of this study was to establish core links between the effects of early trauma and metacognitive and reflective functioning in psychosis. A secondary aim was to test the clinical applicability of a brief, newly developed attachment-based measure for RF. Furthermore, the study aimed to explore potential overlaps between the concepts of metacognition and reflective functioning.

**Method:** A quantitative methodology was employed, using a combination of semi-structured interviews and self-report questionnaire, and group comparisons were conducted. Twenty-seven patients with psychosis or bipolar disorder were recruited. Participants were grouped into early trauma versus no early trauma; trauma versus no trauma; and in-patient versus out-patient, and exploratory analyses were completed.

**Results:** No significant effects were found for early trauma but for trauma in general, indicating higher level of dysfunctional beliefs in patients with trauma (early plus adult trauma) history. No significant effect between groups were found for RF. Inpatients, however, showed significantly lower levels of RF when compared with outpatients, and outpatients significantly higher levels of cognitive self-focus

(thinking about thoughts). Moreover, a modest positive correlation was found between both measures.

**Discussion:** The findings of the present study suggest core links between the effects of trauma on metacognitive functioning in psychosis. This highlights the importance of routine trauma assessment with psychotic patients. The limitations of the metacognitive model within psychosis are discussed. Further research is implicated to investigate any potential effects of early trauma on RF in psychosis. Low level of RF in in-patients highlights the importance to integrate therapeutic techniques to improve RF functioning in this patient group since high RF is associated with resilience and better therapy outcome. The correlation between metacognition and RF measure indicates construct-validity for the RF measure. The differences between both concepts are considered. Furthermore, the limitations of this study and clinical utility are discussed along with suggestions for future research.

# 1 Rationale for Thesis

## 1.1 *Aims and overview*

The principal aim of this study was to explore dysfunctional metacognitive beliefs and the potential effects of early trauma on metacognitive functioning in patients with psychosis. Additionally, the study presents a preliminary investigation of a brief, newly developed measure for the assessment of reflective functioning in psychosis, and explored a potential association between level of reflective functioning and early trauma history within this clinical population.

A number of large and well-controlled research studies have investigated the relationship between trauma and psychosis whereas only a limited number of studies explored metacognitive functioning in psychosis, and an even smaller number investigated the role of metacognitions in posttraumatic stress disorder (PTSD). However, no study to date has explored the role of early trauma on dysfunctional metacognitive beliefs in patients with psychosis.

Furthermore, a small number of studies indicate a link between early trauma and low reflective functioning. However, the level of reflective functioning has not yet been explored within a psychosis population. To date, the assessment of reflective functioning in clinical populations has been limited due to the lack of availability of assessment tools. As a result, briefer, more easily accessible clinical tools are required to enable clinicians to utilise the assessment of, and the focus on, reflective functioning in therapy settings. This is especially important since high reflective functioning has been associated with better service engagement, and better therapy outcome.

The present study's literature overview is aimed at orientating the reader within the area of trauma and psychosis, eliciting links between the concepts of metacognition, and reflective functioning, and identifying gaps in research and literature.

A quantitative methodology was employed for the current study, consisting of a semi-structured interview for the assessment of trauma history; a self-report

questionnaire to determine the level of metacognitive functioning; and a brief, newly developed attachment-based measure, containing two open-ended questions to elicit a narrative for the assessment of reflective functioning via coding.

All participants had a diagnosis of psychosis or bipolar disorder and were recruited from a range of different out-patient and in-patient services in Edinburgh.

Exploratory analyses were conducted comparing the results of different groupings. First, the scores of both metacognition and reflective functioning measures for patients with 'early trauma' history were compared with patients with 'no early trauma' history. An additional two groupings were undertaken ('trauma' versus 'no trauma'; 'in-patient' versus 'out-patient') in order to test for significant group differences. The results are presented; and limitations of the study are discussed. Considerations in regard to the clinical utility are described and ideas for future research are presented.

To conclude, the current study represents a pilot study into the investigation of the role of early trauma in psychosis. No significant differences between groups were found for 'early trauma' versus 'no early trauma'. However, first tentative links could be established for the role of trauma in general on the level of metacognitive functioning in psychosis. Furthermore, an effect for patient status in relation to level of reflective functioning was found. Construct-validity was established for the measure of RF.

Due to a number of limitations of this study, more research has to be conducted to further investigate these associations.

## **1.2 Why this study?**

The researcher has a strong interest in the area of trauma stemming from her postgraduate training in CBT and trauma studies as well as clinical work experience in a specialist trauma service. Furthermore, the researcher was based for 18 months on specialist training and work placement in an early intervention service for

psychosis for young people. This has caused her to become interested in the area of psychosis and first episode of psychosis in particular.

Working with young people at risk of developing psychosis, or who had experienced a first episode of psychosis, raised the researcher's awareness of the high prevalence of trauma history, especially neglect, abuse and attachment-based difficulties relating to problems in current interpersonal relationships. Young people with psychosis showed significant engagement difficulties with the service. Also, comorbid mental health difficulties, such as anxiety and low mood, appeared to be common.

Research has established a link between a range of different emotional disorders and dysfunctional metacognitive functioning, including anxiety and psychosis (Wells, 2000; Wells, 2009; Morrison & Wells, 2003; Morrison & Wells, 2007). Therefore, the researcher hypothesised that young people with psychotic symptoms might show evidence of dysfunctional metacognitive beliefs.

Moreover, diagnostic issues became evident because not all problems the young people in the service presented with could be related to their psychotic presentation. They rather appeared to be associated with early traumatic experiences, insecure attachment patterns and emotional deprivation. These clinical observations indicated the importance for traumatic memories to be addressed within the therapeutic context to enable a young person to recover from a psychotic episode and stay well afterwards.

Patients within the service showed low capacity to reflect on their own thoughts and feelings, but even less so on those of other people. This suggested that the level of reflective functioning may be low within this clinical population.

As a result, the researcher aimed to explore whether core links exist between early trauma and dysfunctional metacognitive beliefs as well as low reflective functioning within a clinical sample of patients with psychosis.

## 2 Introduction

Psychosis can include a wide range of different experiences, including confused thinking, delusions, hallucinations or disorganised behaviour. Read, Mosher & Bentall (2004) and others (Kendell & Brockington, 1980; Kendell, 1991) have challenged the Neo-Kraepelinian conceptualisation of psychosis which has dominated psychiatry and has governed the way in which psychosis has been conceptualised in the past. This model of psychosis, also referred to as the ‘disease model’ or the ‘either-or-model’, draws a line of separation between sanity and madness (Benning, 2007). Read *et al.*(2004) and others (Chapman & Chapman, 1980; Claridge, 1990) have challenged the validity and clinical utility of the conceptualisation of psychosis as a diagnostic entity and argue that psychotic experiences lie on a continuum between psychotic and ordinary experiences. Many patients experience symptoms of more than one diagnosis, which supports the suggestion that the actual experiences patients present do not fit the diagnostic criteria of distinct syndromes, such as schizophrenia (Kendell & Brockington, 1980; Kendell, 1991).

In this literature review, I will consider a similarly broad conceptualisation of psychosis rather than adhering to distinct diagnostic classifications and their criteria. In general, the term psychosis is used across different diagnostic classifications, including bipolar disorder. Specific diagnostic entities, such as schizophrenia or bipolar disorder, are referred to in the context of considering specific theories or conceptualisations.

Firstly, I will first provide an overview of the current understanding about the relationship between trauma and psychosis. Specifically, I will explore the hypothesised role of early traumatic experiences in psychosis, and discuss pathways of risk for psychosis as well as the ongoing controversy surrounding whether trauma is, in fact, a causal factor for psychosis. Furthermore, I will consider the conceptual overlap between the diagnoses of psychosis and posttraumatic stress disorder

(PTSD), and explore the role of developmental factors particularly relevant to traumatic events that have occurred in early life.

Secondly, I will review Wells' (e.g. 2000, 2009) concept of metacognition and the underlying metacognitive model for emotional disorders. In addition, I will consider the applicability of the metacognitive model to psychosis and trauma.

Finally, I will discuss the concept of reflective functioning, its role within the context of early trauma and psychosis, and its clinical relevance.

## **2.1 Early Trauma and Psychosis**

In the existing literature, early trauma has been referred to under a variety of different terms, including 'childhood trauma' or 'developmental trauma'. It has been used to capture a range of negative life experiences including physical, sexual, and emotional abuse as well as physical and emotional neglect. Severe trauma includes ongoing, cumulative trauma, for example child sexual abuse (CSA) or child physical abuse (CPA), and symptoms of posttraumatic stress disorder (PTSD). Throughout this section, early trauma is defined in the presence of severe adverse experiences, including the examples given above.

### **2.1.1 Role of early trauma in psychosis**

The effects of traumatic events, particularly childhood trauma, on people's mental health and well-being has been increasingly recognised over the last decade (Morrison, Frame, & Larkin, 2003; Read, Perry, Moskowitz, & Connolly, 2001; Read, Morrison, & Ross, 2005). A study on the prevalence of child abuse and neglect in a general population sample in the UK estimated the rate of childhood sexual abuse at 11% and maltreatment at 23% based on a random probability sample of 18-24 year old individuals (May-Chabhal & Cawson, 2005). A number of studies (e.g. Bifulco, Brown, & Adler, 1991; Morrison *et al.*, 2003) provided evidence for a link between childhood sexual or physical abuse and an increased vulnerability for a

range of mental health problems, including depression, PTSD, substance dependency, or psychosis.

A review by Read *et al.* (2005) summarised research studies and reviews on the relationship between trauma and psychosis. As a result, the authors estimated high rates of childhood trauma in patients with psychosis. Some of the evidence considered in this review was based on cross-sectional designs or uncontrolled group comparisons which allows for estimates of the prevalence of early trauma but does not give any information about the quality of the relationship between trauma and psychosis. However, the review also included a number of large, well-controlled population studies (Bebbington, Bhugra, Brugha, Singleton, Farrell, Jenkins *et al.*, 2004; Janssen, Krabbendam, Bak, Hanssen, Vollebergh, de Graaf, *et al.*, 2004; Whitfield, Dube, Felitti, & Anda, 2005) and based on their findings, Read *et al.* (2005) suggest an association between early traumatic experiences and psychosis with a 'dose-effect'. This means that the more severe the abuse, for example cumulative trauma and length of exposure, the higher the vulnerability for psychosis (Mullen, Martin, Anderson, & Romans, 1993; Fergusson, Horwood, & Lyskey, 1996). The authors suggest underlying psychological and biological mechanisms by which childhood trauma increases the vulnerability to psychosis.

However, there is still an ongoing debate about the causality of this relationship (Bendall, Jackson, Hulbert, & McGorry, 2008), particularly since a number of methodological limitations of some of the studies included in this review were not considered (Bendall *et al.*, 2008) which reduces the evidence in support of a causal relationship.

An addition to the studies included in the review by Read *et al.* (2005), five large-scale studies (Spataro, Mullen, & Burgess, 2004; Lataster, T., van Os, J., Drukker, M., Henquet, C., Feron, F., Gunther, N., *et al.*, 2006; Spauwen, Krabbendam, Lieb, Wittchen, van Os, 2006; Scott, Chant, Andrews, Martin, & McGrath, 2007; Shevlin, Dorahy, & Adamson, 2007) controlled for potentially confounding factors, including age, gender, socioeconomic status, substance used and non-clinical psychotic

symptoms, and found a significant dose-effect between the number of traumas experienced and the increased risk of psychotic symptoms, particularly positive symptoms, such as hallucinations. It has been suggested that these findings further suggest a causal relationship between early trauma and psychotic symptoms (Larkin & Read, 2008). However, research findings that indicate an association between early trauma and delusional experiences are less significant (Scott *et al.*, 2007) and need to be explored further.

Studies using a cross-sectional design (Bebbington *et al.*, 2004; Shevlin *et al.*, 2007; Whitfield *et al.*, 2005; Scott *et al.*, 2007) found that the risk-increasing effects of trauma seem to be associated with negative interpersonal events, but are not solely related to sexual abuse.

Severe trauma, as defined by symptoms of PTSD or the traumatic event being associated with the experience of intense fear, helplessness or horror as per DSM-IV 'A2' criterion suggested even stronger effects (Spauwen *et al.*, 2006).

These studies suggest a role for potentially unprocessed traumatic events and the experience of psychotic symptoms, and there seems to be a specific role for cumulative trauma. However, the underlying mechanisms remain unclear.

Research findings across a number of large, well-controlled studies are consistent, in that childhood trauma may present as an environmental vulnerability factor that, increases the risk of developing psychotic symptoms interactively with genetic factors (van Os, J., Krabbendam, L., Myin-Germeys, I. & Delespaul, P., 2005). Evidence suggests that the development and maintenance of these symptoms are mediated by shared psychological and biological mechanisms of risk as discussed in the following section.

### **2.1.2 Possible pathways of risk**

Recent cognitive and biological theories suggest a potential causal link between early trauma and psychotic phenomena. Some of these theoretical models are considered

in the following section and mechanisms are described by which this link between early trauma and psychosis may occur.

### **2.1.2.1 Cognitive Theories**

Cognitive models posit that early traumatic experiences may lead to a cognitive vulnerability. Adverse experiences may cause an individual to develop negative schemas about the self and the world, including beliefs about the self as powerless and the world and others as dangerous. These beliefs combined with an externalising attribution style, can lead to paranoid interpretations of unusual experiences (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Garety, Bebbington, Fowler, Freeman, & Kuipers, 2007; Birchwood, 2003). Morrison's (2001) cognitive approach to understanding positive psychotic symptoms suggests that it is the way these symptoms are interpreted that causes distress. The exposure to trauma may influence the nature of these interpretations, therefore leading to symptoms being appraised negatively.

A prospective study by Bak, Krabbendam, Janssen, de Graaf, Vollebergh & Van Os (2005) delivers empirical evidence for the association between how symptoms are interpreted and associated distress amongst individuals who have experienced early trauma. The results of the study suggest that developmental trauma predisposes an individual to experience more emotional distress and a reduced experience of internal control associated with psychotic experiences, than individuals who have not experienced trauma. The authors conclude that this may be the effect of underlying cognitive and social vulnerabilities. Besides the development of negative schemata and dysfunctional attributional style, it has been suggested that early traumatic experiences may result in disrupted attachment relationships with loss of trust in others, therefore impacting interpersonal functioning negatively (Liem & Boudewyn, 1999). However, the results of this study have to be evaluated with caution due to a number of methodological problems, including an unrefined trauma measure and low rates of trauma disclosure.

Further empirical support for the relationship between cognitive processes and the predisposition to psychotic experiences was found by another study (Gracie, Freeman, Garety, Kuipers, Hardy, Ray, *et al.*, 2007). The findings of this study suggest an association between trauma and the predisposition to psychotic symptoms is mediated by negative beliefs about the self and others, particularly paranoid ideation. The study recruited a student sample and employed a cross-sectional design which makes it difficult to draw conclusions from the data to clinical populations.

Additionally, Andrew, Gray & Snowden (2008) explored the difference in the nature and prevalence of developmental trauma and associated psychotic symptoms by comparing psychiatric and non-psychiatric voice-hearers. Interestingly, non-psychiatric voice-hearers had predominantly positive beliefs about the nature of their voices compared to negative beliefs in the psychiatric group. The results of the study suggest a high prevalence of traumatic life events in both groups. However, current trauma symptoms appeared to be a significant predictor of beliefs about the malevolence, benevolence and omnipotence of the voices. Moreover, a number of trauma variables seem to play a role in the interpretation of voices. In particular, the extent, to which the psychological effects of trauma remain, seemed to have an impact on the quality of the beliefs about voices.

The research evidence described above supports cognitive theories in proposing an underlying cognitive vulnerability caused by trauma exposure, which is characterised by negative beliefs about the self and others as well as dysfunctional attributional style in regard to the experience of psychotic symptoms. The self is believed to be powerless and vulnerable, and the world is seen as dangerous and untrustworthy. Psychotic symptoms are experienced as dangerous which causes higher levels of emotional distress. Attributional style and negative beliefs about symptoms represent metacognitive processes (see 2.2), that appear to be involved in the development and maintenance of severe mental illness, particularly in psychosis.

### 2.1.2.2 Biological theories

Research studies on the aetiology of psychosis, particularly schizophrenia, suggest a biological base (see Read *et al.*, 2001 for overview). The diathesis-stress model in schizophrenia (e.g. Zubin & Spring, 1977; Walker & DiForio, 1997) proposes that the experience of stress is an important factor for the onset of psychosis. This means that internal and external stressors interact with a genetic and biological vulnerability in the development of psychotic disorders. In this context, diathesis refers to a genetic predisposition, and stressors include life events, traumatic experiences (physical and emotional), and neglect. It is argued that patients with schizophrenia are not exposed to more stress than other individuals, but that they over-respond to stress. This oversensitivity is believed to be genetically predisposed and interacts with early traumatic events and environmental factors, and causes stress sensitisation by deregulating the dopaminergic system, which leads to an oversensitivity to stressors in adult life.

Neurodevelopmental research has established that traumatic events, such as childhood abuse and neglect, in the first few years of a child's life have long-term impacts on the child's emotional, cognitive, social, and physiological functioning (Read *et al.*, 2001). It is believed that repeated stressors, such as adverse life experiences, can sensitise neurobiological processes, and the individual develops an over-responsivity to stress experiences. Two different patterns of responses have been identified during childhood: a hyperarousal response (or 'fight-or-flight') and dissociation, which has been found more often in young children and girls, and is characterised by decrease in blood pressure and dissociative 'freezing' (Read *et al.*, 2001). Both responses represent functional processes initially but are believed to become maladaptive in later life via sensitisation.

Read *et al.* (2001) formulated a traumagenic neurodevelopmental (TN) model to schizophrenia in order to integrate social, psychological, and biological factors involved in the development of psychosis following early trauma. The main premise

of this model is that early traumatic events may increase the risk of psychosis by affecting the brain development and leading to neurodevelopmental abnormalities. The TN model (Read *et al.*, 2001) proposes that cumulative exposure to stressors may result in persistently high stress-induced glucocorticoid release, dysregulation in the hypothalamic-pituitary-adrenal (HPA) axis as well as structural changes in the hippocampus (e.g. Bremner, 1999; Heim, Newport, Heit, Graham, Wilcox, Bonsal, *et al.* 2000; Teicher, Andersen, Polcari, Anderson, Navalta, & Kim, 2003). Dopaminergic abnormalities are associated with psychosis (Read *et al.*, 2001), which may be due to the dysregulation of the HPA axis. This suggests that developmental trauma may lead to oversensitivity to stress and potentially present as an environmental factor in the vulnerability to psychotic experiences.

However, the mechanisms described are still not entirely understood and more research is needed to contribute to the evidence so far.

### **2.1.3 Controversy regarding causality**

Despite a number of studies and theories suggesting a causal link between early trauma and psychotic illness, there is an ongoing debate amongst researchers with regard to the causality of the relationship. A review of studies investigating the relationship between trauma and psychosis by Bendall *et al.* (2008) found several methodological problems across a number of studies which limit the extent of conclusions that can be drawn from these studies. The authors argue that past reviews on the relationship between trauma and psychosis (Morrison *et al.*, 2003, Read *et al.*, 2001, Read *et al.*, 2005) did not take into account methodological flaws of studies, or did not include all relevant studies (Morgan & Fisher, 2007).

The methodological problems found in existing studies include lack of statistical power, unknown effects of potential mediating or moderating variables, and the use of cross-sectional designs. Some of the potential mediating or moderating variables affecting the relationship between childhood trauma and psychosis consist of the

inclusion of different psychotic diagnoses, such as first-time episode and chronic schizophrenia, and the different prevalence rates of childhood trauma associated with these. Also, male or female gender may affect the findings of studies since female gender has been linked with a higher prevalence of childhood trauma (sexual and physical abuse) (Read et al., 2005).

Furthermore, Bendall *et al.* (2008) argue that the use of a cross-sectional design does not consider the possibility of various causal pathways of early trauma and psychosis by assuming that trauma occurred before the development of psychotic symptoms.

A high percentage (25-60%) of children with a schizophrenic parent display developmental abnormalities including gross and fine motor impairment, attentional and information processing deficits and cognitive and neuropsychological problems (Cannon & Clarke, 2005). These problems can be detected throughout early childhood and adolescence and present a 'dose-response' relationship with risk of schizophrenia. Developmental abnormalities leave children more susceptible for childhood victimisation, e.g. physical and sexual abuse (Bendall *et al.*, 2007).

Some of the studies reviewed by Bendall *et al.* (2008) inferred an association between developmental trauma and psychosis based on the high prevalence of childhood trauma in the studies. However, in order to establish a link between childhood trauma and psychosis, it must be determined that developmental trauma occurs more often in individuals with psychosis than in the general population (Bendall *et al.*, 2008). Therefore, prevalence rates of childhood trauma within patients with psychosis should be compared to non-clinical control groups before an association can be concluded.

Furthermore, there is inconsistency across studies conducted as to how childhood trauma was defined and measured. Various definitions include child sexual abuse (CSA), child physical abuse (CPA), and child emotional abuse, as well as childhood neglect. However, childhood trauma was not defined in any of these studies according to any specific criteria such as severity or age of the individual when the

event(s) occurred. In terms of measurement of trauma, most studies used retrospective self-reports which may have been confounded by memory errors. Moreover, a high rate of under-reporting traumatic events retrospectively has been found in a national survey (Kessler, Sonnega, Broment, Hughes, & Nelson, 1995). There has been a controversy about the validity of people's narrative of traumatic experiences, especially when reporting retrospectively from childhood experiences (Mueser, Rosenberg, Goodman, & Trumbetta, 2002) as the child's developmental stage in terms of cognitive and emotional abilities influences the encoding of the trauma memory, retrieval and trauma resolution. In particular the accuracy of the narrative of patients with psychosis was assumed to be influenced by difficulties with reality testing (Lysaker, Beattie, Strasburger, & Davis, 2005). However, this assumption does not appear to be evidence-based, as reports of abuse by psychiatric patients seem to be reliable (Meyer, Muenzenmaier, Cancienne, & Struening, 1996).

Spataro *et al.* (2004) found that childhood trauma presents as an etiological factor in other psychiatric disorders, such as personality disorder, anxiety disorder, and major affective disorder, therefore suggesting that childhood trauma is associated with a wide range of mental health problems and not solely related to psychotic experiences.

Some research evidence proposes that early trauma may be associated with an atypical form of psychosis characterised by hallucinations and delusions (Scott *et al.*, 2007; Shevlin *et al.*, 2007), which highlights the problems with the diagnostic criteria of psychosis and the clinical utility of these. These findings suggest that there may be a possible pathway between early trauma and specific symptoms, such as hallucinations and delusions.

Only six studies were identified by Bendall *et al.* (2008) to adequately address the association between childhood trauma and psychosis. The findings of these studies show some preliminary evidence of such association. However, it has been suggested

that the causality between early trauma and psychotic symptoms may be bidirectional. Childhood trauma may be a causal factor for psychosis on one hand, but potential developmental abnormalities associated with childhood trauma (Cannon & Clarke, 2005) may also present as a risk factor for childhood victimization on the other hand.

Despite a range of methodological problems, current research evidence appears to confirm an association between childhood trauma and psychosis; however, this association may represent more than a simple causal link. There may be an interactive, multifaceted relationship:

Developmental abnormalities in children may increase the risk for childhood victimisation which may be associated with cognitive and biological vulnerabilities, including metacognitive dysfunctional beliefs and over-sensitisation to stress. Furthermore, the cognitive and emotional abilities of the child at the time of the traumatic events may determine whether the experience can be processed or resolved. Unresolved, unprocessed trauma in addition to underlying vulnerabilities (which in turn may be affected by the trauma) may lead to the experience of psychotic symptoms. Associated cognitive dysfunctional processes may then increase the vulnerability for PTSD or further trauma, which reinforces and maintains cognitive dysfunctional processes and existing mental health problems, such as depression and anxiety.

#### **2.1.4 Psychosis and posttraumatic stress disorder as related types of trauma**

Mueser *et al.* (2002) review preliminary evidence suggesting that rates of PTSD in individuals with psychosis are higher than in the general population. This in turn suggests that patients with psychosis may be more vulnerable to developing PTSD after a traumatic event. Posttraumatic stress disorder (PTSD) represents a psychiatric disorder which is directly linked to trauma and is defined in DSM-IV by three clusters of symptoms: re-experiencing of the trauma event; hypervigilance; and avoidance of trauma-related stimuli. These symptoms are present at least one month

after exposure to the traumatic event (American Psychiatric Association, 1994). PTSD may be potentially associated with distress-related psychotic symptoms, hospitalisation and substance abuse, however not much is known about the exact effects trauma has on the course of mental illness. Theories on PTSD have traditionally focused on the traumatic content and quality of external events (criterion 'A1' as per DSM-IV, APA, 1994) rather than internal processes, such as attributions and interpretations (Morrison *et al.*, 2003). However, the severity of psychotic symptoms including some of the consequences such as hospital admission or non-voluntary medication treatments may be experienced as traumatic in themselves (Mueser *et al.*, 2002).

Read *et al.* (2005) describe an overlap between the diagnostic constructs of schizophrenia, dissociative disorder and PTSD (Ross, 2005; Muenzenmaier, Castille, & Shelley, 2005; Seedat, Stein, Oosthuizen, Emsley, & Stein, 2003). The content of positive symptomatology such as hallucinatory experiences in schizophrenia appears very similar to the cluster of re-experiencing symptoms in PTSD. Research evidence indicates that between 46% and 67% of acutely psychotic patients also meet criteria for a diagnosis of PTSD (Read *et al.*, 2005). Read *et al.* suggest that the awareness of a trauma history informs the diagnostic classification, that is, once a traumatic event is known to the clinician, the symptoms the individual is experiencing are more interpreted as part of PTSD than psychosis.

Researchers have tried to make sense of these overlapping and similar constructs by providing different conceptualisations for the relationship between PTSD and psychosis.

Firstly, Mueser *et al.* (2002) present an interactive model of trauma, PTSD and severe mental illness which is based on an adaptation and extension of the stress-vulnerability model (Zubin & Spring, 1977) developed for schizophrenia and other severe mental health illnesses (see 2.1.2.2). While the stress-vulnerability model offers options for treatment and prevention of symptoms, Phillips, Francey, Edwards & McMurray (2007) identify a number of limitations in the model and question the

simple, linear relationship between stress and psychosis. The authors suggest that other factors, such as appraisal of meaning, might mediate a potential relationship. As a consequence, the clinical utility of the model, within the context of psychosis appears to be limited.

The interactive model by Mueser *et al.* (2002) suggests that PTSD worsens the severity and course of severe mental illness through the direct effects of PTSD symptoms, including re-experiencing or hypervigilance. Indirectly, the effects of PTSD on substance abuse, re-traumatisation, and poor engagement with services may reduce access to clinical services for symptom management and prevention. The model describes a vicious cycle: traumatic events precipitate a psychotic episode which can cause PTSD in relation to psychotic symptoms, which may worsen the severity of psychosis. The model attempts to conceptualise the interactive nature of the relationship between trauma and psychosis and offers ways to formulate clinical cases and devise therapeutic interventions. However, despite diagnostic overlaps not all patients with psychosis meet the diagnostic criteria of PTSD, which limits the clinical generalisations that can be inferred from the model.

Secondly, Morrison *et al.* (2003) suggest that PTSD and psychosis may share common developmental and maintenance factors. Both disorders are characterised by intrusions and avoidance or negative symptoms. Intrusions appear to be commonly interpreted as “*going mad*” (p.341, Morrison *et al.*, 2003). Patients with a ‘sealing recovery style’ (they want to forget about the psychosis and move on) display greater avoidance than those patients who employ an ‘integrating recovery style’ where they try to make sense of the psychosis. (e.g. McGlashan, 1987; Tait, Birchwood & Trower, 2004).

Morrison *et al.* (2003) have attempted to conceptualise these processes with the integrative model of trauma and psychosis. This model is based on an integration of Morrison’s (2001) cognitive approach to understanding psychotic symptoms, Ehlers and Clark’s (2000) cognitive model of PTSD and Wells & Matthews (1994; 1996) self-regulatory executive functioning model. Morrison’s (2001) cognitive model of psychosis proposes that hallucinations and delusions can be conceptualized as intrusions, and that it is the interpretation of these intrusions that causes the

associated distress. The cognitive model of PTSD (Ehlers & Clark, 2000) describes the involvement of negative appraisals of the trauma event and its sequelae in the maintenance of persistent PTSD, whereas the S-REF model (Wells & Matthews, 1994) posits that positive and negative beliefs are involved in the development and maintenance of PTSD and psychosis. Due to the similarities of the processes and symptoms involved in both PTSD and psychosis, the integrative model suggests that PTSD and psychosis do not represent different entities but rather two points on the same spectrum of responses to trauma which is mediated by shared mechanisms such as interpretation of intrusions, attributional style (appraisals) and dissociation.

A central assumption of the integrative model is that traumatic experiences contribute to the development of negative beliefs about the self, others and the world. Negative beliefs can lead to distressing interpretations of symptoms which are associated with psychosis (Kilcommons & Morrison, 2005). These distressing interpretations are maintained by cognitive, behavioural, emotional and physiological responses, and environmental factors (e.g. psychosocial stressors).

The model represents a further development of Morrison's cognitive model of psychosis (2001). Conceptualising psychosis and PTSD as different types of responses on the same spectrum of reactions to traumatic life events appears to be a clinically useful formulation to account for the diagnostic overlaps between psychosis and PTSD.

## **2.1.5 The impact of developmental factors on childhood trauma**

### **2.1.5.1 Memory encoding and trauma resolution**

Several developmental factors have an effect on how traumatic events are encoded in the memory and how the trauma may be resolved. Encoding refers to a number of information-processing mechanisms including focussing attention from one stimulus to another, appraisal, and attribution of meaning (Stein, Wade & Liwag, 1997). The quality of encoding is influenced by the knowledge base and language ability of the traumatised child (Salmon & Bryant, 2002). Younger children seem to encode less and do so more slowly than older children or adults. The child's existing knowledge

base influences the way the child makes sense of an event. It is, therefore, possible that events that are outside the child's knowledge base and understanding of the world will not be appraised as dangerous. Parental appraisals and their response during the traumatic event can help the child to attribute meaning to the experience. If the child is not able to understand and appraise the traumatic event appropriately, this may have an effect on the trauma memory and the child's emotional response (Salmon & Bryant, 2002).

Moreover, the level of the child's language development at the time of the traumatic event impacts on how the child can describe the event verbally. Where language is not developed, children can re-enact traumatic experiences behaviourally prior to the development of language (Bauer, Kroupina, Schwade, Dropik, & Wewerka, 1998). For example, toddlers are able to recreate a pattern of behaviours up to one year after this behaviour was first displayed. However, it is difficult to judge clinically whether a child's behaviour may be related to a traumatic event or not, when s/he is unable to give a verbal account of their experience.

A range of different developmental factors influence how children adjust after traumatic events. As already discussed, the child's knowledge base and level of language development have an impact on the encoding process of the memory. However, other important developmental factors include memory retrieval; the child's ability to have conversations with adults; and emotion-regulation.

The ability of children to recall information from memory changes with the level of development. Young children experience difficulties with spontaneous memory retrieval and rely on adults for prompts and cues. This again changes with the developmental stage of the child, as s/he becomes more able to provide accounts of the memory without prompting.

Moreover, the child's language capacity influences how children are able to share their experiences with adults, which may be beneficial for reappraisal and the reattribution of meaning. If children are unable to talk about the traumatic event with

adults, they are less likely to process and integrate the events into memory appropriately. Adults can also help children to regulate emotions related to traumatic events by talking about them, and are able to offer emotional support, which again may help the child to resolve the experience on an emotional level (Salmon & Bryant, 2002).

How children process a traumatic event is also influenced by potential secondary or comorbid problems after the experience, which again is affected by the developmental level of a child in terms of cognitive abilities, e.g. reasoning skills. Children often display anxiety symptoms after trauma as they are unable to reason and to evaluate the risk of being involved in another traumatic situation. As a result, they tend to worry and ruminate about potential negative events (Vasey, 1993).

In terms of trauma resolution, the role of adults is critical; a supportive and empathic adult can help the child to adapt cognitively and emotionally. Just by talking to the child, the adult facilitates memory resolution by helping the child to develop a coherent trauma narrative: supporting the child to interpret the experience and to challenge misunderstandings as well as helping the child to manage and regulate his/her emotions appropriately. Adults can also support children in the development of coping strategies and help to implement and use them in order to support memory resolution and manage the child's difficulties to adapt (Salmon & Bryant, 2002).

#### **2.1.5.2 PTSD diagnosis in children**

Exposure to early trauma, especially for children who experience multiple and chronic forms of abuse, can lead to developmental delay in some of the areas previously discussed, such as language and knowledge base, but also in motor and socialisation skills. The diagnosis of PTSD for children seems to describe only reactions to isolated traumatic events adequately, such as being involved in a road traffic accident. However, it does not seem to capture the complex presentation of children who are chronically abused or have to undergo repeated evasive medical procedures (e.g. cancer treatment).

Van der Kolk (2005) describes a whole range of developmental effects of complex childhood trauma including, deficits in affect regulation; disruptions in early attachment patterns; behavioural regression; aggression (against self and others); failure to meet developmental milestones; problems with self-care; a range of somatic problems; and negative schemas of the self and the world. As a result of the complex presentation of chronically traumatised children and the fact that these children rarely meet criteria for PTSD (Kiser, Heston, Millsap, & Pruitt, 1991) a new diagnostic category has been proposed to be included in DSM-V: Developmental Trauma Disorder. The provisional diagnosis is based on the theory that cumulative exposure to interpersonal trauma, such as physical or sexual abuse, will affect multiple areas of functioning: cognitive, emotional, physical, motor and social skills, which seems to adequately capture the complex presentation of chronically traumatised children.

Therefore, the clinical utility of the PTSD diagnosis with children appears to be controversial.

### **2.1.5.3 Emotion-regulation and attachment security**

Emotion-regulation refers to the ability to modulate and change internal feeling states that are regulated by parents or caregivers in early childhood (Eisenberg, 1998). This means that the parent or caregiver will regulate the child's distressed state by giving food, changing nappies or consolation by affectionate close contact with the child. However, children usually shift from relying on external sources of emotion-regulation to becoming able to efficiently self-regulate emotions. By pre-school age, for example, children are able to manage distress by covering their ears and leaving the situation (Cicchetti & Lynch, 1995). Older children are able to engage in a range of cognitive strategies, such as thinking pleasant thoughts in stressful situations, and are able to choose different ways of coping for problems that can be controlled and those that cannot (Eisenberg, 1998). The ability to regulate emotions is likely to be influenced by a variety of metacognitive processes such as the child's understanding of their thinking and their emotions and their capacity to suppress or intentionally 'forget' thoughts. Thought suppression, as well as 'forgetting' about negative

memories, have been shown to influence the adjustment after traumatic events, in that they impede the resolution of traumatic memories (e.g. Harvey & Bryant, 1998; Koutstaal & Schacter, 1997).

Attachment patterns are formed in early life and influence how children process and regulate emotions (Crittenden, 1992). Securely attached children learn to express their emotions and to communicate these to others. Moreover, secure attachment can alleviate the effects of a traumatic event by an available caring parent or caregiver in order to help the child experience a sense of safety and control (Browne & Finkelhor, 1986). However, insecurely attached children, are less able to regulate their own emotions and rather rely on others to do this for them. In these cases, if the parent or caregiver is unavailable, then children are unable to modulate feelings like anxiety and they experience a loss of control and stability, which makes them less able to distinguish between stimuli that are harmless and those related to danger. As a result, they are less likely to re-appraise and re-integrate the traumatic event in to their memory and behave as if the danger is current and persistent when exposed to reminders of the trauma, becoming re-traumatised as a result (Streeck-Fischer & van der Kolk, 2000).

Moreover, children experience the world from an egocentric point of view as they see themselves at the centre of the world. Over the course of their development, they realise that the 'here and now' of their experience is part of their overall personal experience over time (Streeck-Fischer & van der Kolk, 2000). Children need further consistency and certainty in order to categorise their experiences so that they can place these into the larger context. Such certainty will enable children to appraise experiences in line with the categories they have created (van der Kolk, 2005). Children are unable to categorise experiences and the world around them when they are exposed to stressful situations and the parent or caregiver is unable to modulate the child's distress. If children are exposed to cumulative trauma, they will develop deficits in their capacity to regulate their own emotions (van der Kolk, 2005). This can lead to altered states of consciousness, such as dissociation and depersonalisation which again prevents the traumatic experiences from being resolved effectively.

### **2.1.6 Summary**

The literature presented suggests an association between early trauma and psychopathology, particularly psychosis. This relationship is believed to be influenced by a number of cognitive and behavioural mechanisms, including dysfunctional metacognitive beliefs. Diagnostic overlaps between psychosis and PTSD show how closely the two diagnostic constructs are related. The impact of developmental factors on encoding and resolution of the trauma memory has also been considered.

The key points in this section are as follows:

- Despite a number of methodological problems, research evidence suggests an association between early trauma and psychosis
- This association may not just present a simple causal link but rather a multi-faceted, interactive relationship
- Evidence has been found for a dose-response relationship between trauma and psychosis
- Metacognitive processes, such as appraisals and dysfunctional beliefs appear to be related to psychosis
- Evidence for biological pathways has been considered, that is, the impact of early trauma on brain development and on the vulnerability to the development of psychosis in later life
- The diagnostic overlap between psychosis and PTSD suggests that both disorders may represent different responses to traumatic events that are located on the same spectrum
- Developmental factors have an effect on encoding and resolution of the trauma memory

- The clinical utility of the diagnostic construct of PTSD for children is being questioned, and a new diagnostic construct for DSM-V, Developmental Trauma Disorder, has been proposed for chronically traumatised children.
- The author infers from literature and existing research that early trauma might have an effect on metacognitive functioning, which has been shown to increase vulnerability to psychosis

## **2.2 Metacognition and Psychosis**

*Thoughts don't matter but your response to them does. (Wells, 2009)*

### **2.2.1 The concept of metacognition**

Metacognition is a multifaceted concept and describes a variety of cognitive processes that are associated with the interpretation, monitoring or controlling of cognition. The term was introduced by Flavell (1979) in the context of developmental psychopathology to describe cognitive monitoring and control processes. The concept has been explored further in various areas, ranging from memory to ageing and neuropsychology (Metcalf and Shimamura, 1994; Koren *et al.*, 2004; Castel, 2008; Pansky *et al.*, 2009). Wells & Matthews (1994; 1996) and Wells (2000) suggest that metacognition plays a fundamental role in psychological disorders.

In order to conceptualise the role of metacognition in the development of psychopathology, the central ideas of metacognition will be considered, including its components, modes of experience, self-regulatory executive functioning model and the metacognitive approach.

### **2.2.1.1 Metacognitive knowledge, experiences and regulation**

The concept of metacognition has been divided by theorists' (Flavell, 1979; Wells, 2000) into three different components: metacognitive knowledge, experiences and strategies.

Metacognitive knowledge refers to people's knowledge and beliefs about their own thoughts and way of thinking. Two different types of metacognitive knowledge have been proposed (Wells & Matthews, 1994; Wells, 2000): explicit and implicit knowledge. Explicit knowledge (or declarative beliefs) can be verbally expressed, such as "Thinking these thoughts means that I am mad" whereas implicit knowledge (or procedural knowledge) is not directly accessible by words but rather refer to rules that guide the thinking process, for example, the cognitive process of worry and rumination. Wells & Matthews (1994) posit that implicit knowledge can be assessed in order to provide a metacognitive profile which entails rules that guide the allocation of attention or the checking of memory. Furthermore, metacognitive knowledge encompasses positive and negative metacognitive beliefs (Wells, 2009). Positive metacognitive beliefs relate to the advantages of maintaining certain thoughts/beliefs, such as "Worrying helps me to avoid problems in the future" or "I need to worry in order to remain organised". On the other hand, negative metacognitive beliefs refer to the danger of thoughts as well as the uncontrollability of cognitive experiences: for example, "My worrying is dangerous for me" or "I could make myself sick with worrying". It is believed that metacognitive beliefs are specifically related to the development and maintenance of emotional disorder (Wells & Matthews, 1996; Wells, 2000).

The second component of metacognition is referred to as metacognitive experiences and includes the feelings an individual has about his/her own mental state. Metacognitive experiences include appraisals about specific mental events including interpretation and labelling of cognitive experiences (Wells, 2000). An example of such appraisal processes is the 'feeling of knowing', which means that an individual knows intuitively the answer to a question but is unable to recall the information at a specific point in time. Flavell (1979) suggests that this 'tip-of-the-tongue' effect is

likely to occur in situations that demand conscious thinking from an individual, for example at school or at work.

Metacognitive regulation or strategies constitute the third component of metacognition and encompasses a variety of executive functions, including attentional processes, checking, and planning. These processes represent cognitive monitoring or control processes that interact with metacognitive knowledge and constitute responses to control thinking in order to enable the individual to self-regulate, emotionally and cognitively (Wells, 2000).

### **2.2.1.2 Modes of experience**

Within the metacognitive model, Wells (2009) describes two different modes as to how inner events may be processed: object mode and metacognitive mode. Object mode represents the default mode and refers to accepting appraisals, thoughts and perceptions as accurate representations of reality without being evaluated. In this mode, no distinction is made between inner and outer events, thoughts or perceptions. In contrast, metacognitive mode refers to the experience of observing thoughts as separate from the self and the world, and the individual is able to monitor his/her own thoughts as if standing back and observing from the outside. The skill of metacognitive mode refers to an individual's ability to relate to inner experiences by observing the content of the thought from the outside. Normal functioning individuals can switch flexibly between modes. However, patients with emotional disorders lack this flexibility, and become locked in object mode (Wells, 2000).

Wells & Matthews (1994) identify a separate type of experience within the metacognitive mode which relates to an inner-awareness of thoughts without reacting to them by separating the conscious experience of the self from thoughts. This mode is referred to as 'detached mindfulness' and it has been suggested that attaining

‘detached mindfulness’ during psychological therapy is associated with positive changes in therapy (Wells, 2005).

### **2.2.1.3 Self-regulatory executive function model (S-REF, Wells & Matthews, 1996; Wells, 2000)**

Wells & Matthews (1996) developed a metacognitive model of psychological disorder to overcome the limitations of Beck, Rush, Shaw and Emery’s cognitive theory (1979) and schema theory which focus on the content of thoughts and beliefs but do not account for factors that control and influence the thinking process. Wells (2000) draws attention to the need to focus in therapy on factors that control and modulate thinking, that is, metacognitive processing, in order to achieve long-term changes.

The self-regulatory executive function (S-REF) model represents a generic model of psychological processing associated with emotional dysfunction. This integrative information-processing model addresses cognitive and metacognitive aspects that have an effect on the maintenance of psychological disorder. The S-REF model was originally developed for emotional disorder but was adapted to a range of specific disorders, including generalised anxiety disorder (GAD) (Wells, 1995); major depressive disorder (Wells, 2009); social phobia (Clark & Wells, 1995); and obsessive-compulsive disorder (Wells, 1997, Wells, 2009); and PTSD (Wells, 2000; Wells, 2009).

#### *Levels of processing*

The model is based on a multi-level cognitive architecture and comprises three interacting levels of cognitive processes. The first level refers to lower level processing which is automatic or reflexive. The second level represents an online, conscious and controlled processing of thoughts and behaviour and can be labelled as cognitive style. The third level refers to a meta-system of stored self-knowledge,

metacognitive beliefs and plans which are stored in long-term memory. Lower-level processing is conducted mostly outside conscious awareness and requires few attentional processes, whereas online processing is controlled and conscious and interacts with metacognitive beliefs stored in the meta-system. All processing across the levels can be carried out within different modes of experiences (object mode and metacognitive mode).

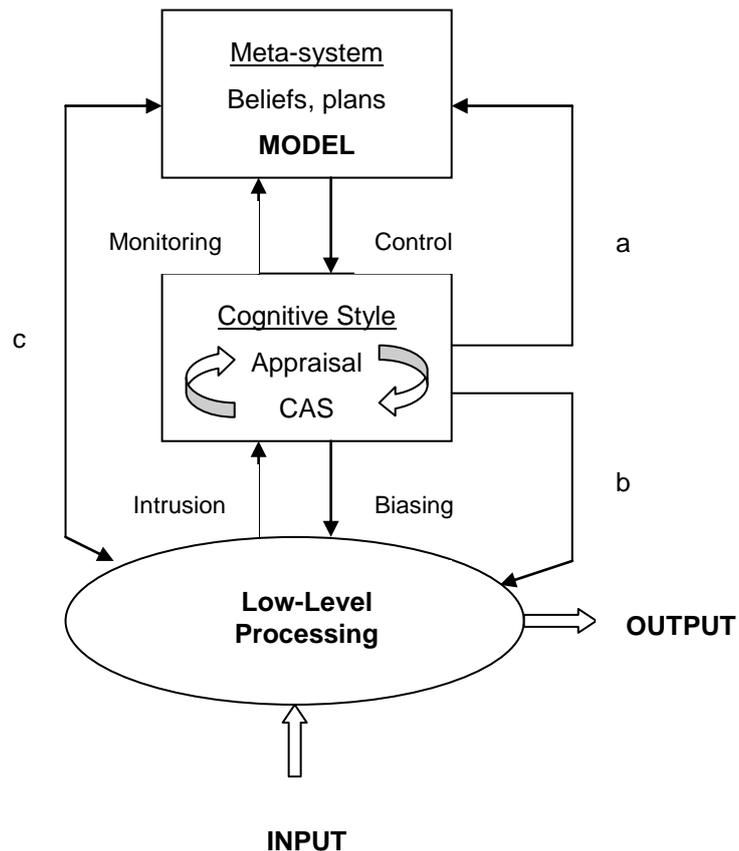


Fig.1: S-REF model of psychological disorders (after Wells & Matthews, 1996; in Wells, 2009)

*Cognitive attentional syndrome (CAS)*

The core principle of the S-REF model is that vulnerability to and maintenance of psychological disorder is associated with a cognitive-attentional syndrome (CAS) which represents an antithesis to the ‘detached mindfulness’ mode of experiences. This syndrome is characterised by heightened self-focus, threat monitoring, ruminative processing, activation of dysfunctional beliefs, and self-regulation

strategies that fail to modify maladaptive self-knowledge. Wells (2009) proposes that the CAS is based on metacognitive knowledge and beliefs stored in the meta-system. It is also proposed that it is regulated by positive beliefs for the need to activate the CAS (“As long as I worry, nothing bad will happen”) and negative beliefs about the danger and uncontrollability of thoughts and feelings (“My worrying thoughts persist, no matter how I try to stop them”). Both types of beliefs are pertinent to the development of emotional disorder; however, the content of the thoughts is associated with different psychological problems and varies across disorders.

The concept of CAS and ‘detached mindfulness’ bears similarity to the concepts of ‘depressive interlock’ and ‘mindfulness’ within the interactive cognitive subsystem-model (ICS) by Teasdale & Barnard (1993). The ICS-model posits that depression is maintained by a self-perpetuating processing configuration, the ‘depressive interlock’, which is characterised by ruminative, self-focused cognitive thinking style (similar to the CAS). The authors suggest that the ‘depressive interlock’ can be prevented by experiencing negative thoughts through ‘metacognitive insight’, therefore relating to them as ‘just thoughts’ rather than reflections on reality (Scherer-Dickson, 2004). These findings have led to the development of mindfulness-based therapy for depression (Segal, Williams, & Teasdale, 2002), drawing from mindfulness meditation techniques in the Buddhist tradition.

#### **2.2.1.4 Metacognitive approach**

The S-REF model posits that metacognitive beliefs and worry processes are involved in the vulnerability to and the maintenance of psychological disorder (Cartwright-Hatton & Wells, 1997; Wells & Papageorgiou, 1998). The basic assumption of the metacognitive approach entails that patients become ‘stuck’ with their emotional problems when they respond to their mental state by activating the CAS which is characterised by worry, rumination, threat monitoring and unhelpful behaviours such as avoidance. Negative emotions such as sadness or anxiety are an indication that the individual is not able to self-regulate his/her inner state. In healthy individuals, these

negative emotions are time-limited because individuals tend to engage in a number of coping strategies to reduce threat and gain control of their thoughts. However, in patients with psychological problems these negative emotions are maintained by the patient's unhelpful thinking style (CAS). The CAS results from unhelpful and faulty metacognitive beliefs that control the person's inner state. The patient therefore engages in unhelpful self-regulatory strategies that maintain the problem. Contradictory to cognitive theory according to Beck *et al.* (1979), this suggests that the thoughts themselves are not problematic for the individual, but the way the individual reacts to them is.

Metacognitive therapy (Wells, 2009) focuses on the experience of inner events in metacognitive mode, that is, the ability to observe thoughts as separate from the self and the world. This offers a range of possibilities for treatment, such as the modification of metacognitive beliefs and the development of different ways to relate to inner events.

Research evidence has been found to support the association between metacognitive beliefs and emotional disorder, including generalised anxiety disorder (Wells & Carter, 2001); depression (Papageorgiou & Wells, 2003); posttraumatic stress disorder (Roussis & Wells, 2006); and psychosis (Morrison & Wells, 2003; Morrison, French & Wells, 2007).

#### *Attention Training Technique (ATT)*

As a means of treating CAS, Wells (2000) developed the Attention Training Technique (ATT) which can be applied in the treatment of several disorders. Wells (2007) reports evidence of its effectiveness in the treatment of panic disorder, social phobia, hypochondriasis, and recurrent major depression. ATT comprises three categories for exercises: selective attention, attention switching, and divided attention. The aim of ATT is not to suppress or avoid internal events, such as feelings or thoughts, but to practise the skill of switching attention flexibly.

Therefore, ATT does not represent a distraction strategy for reducing awareness for internal events, but rather a means of disengaging from the CAS and, as a result, reducing vulnerability to, and avoiding the maintenance of, psychological disorder.

Wells (2007) suggests that ATT may be a useful approach in the treatment of distressing auditory hallucinations by disengaging from the CAS and developing adaptive metacognitive beliefs about the benign nature of the voices. A single case study on this application of ATT has shown preliminary evidence for its effectiveness (Valmaggia, Bouman, & Schuurman, 2007). However, Tarrier (2007) questions whether the presented evidence (Valmaggia *et al.*, 2007) provides any new conceptualisation and guidance for clinical practice in the treatment of psychotic patients or whether, in fact, it represents yet another form of treating anxiety. This suggests that the applicability of ATT in the treatment of psychosis remains to be proven.

### **2.2.2 Metacognitive beliefs in psychosis**

A number of studies have explored the role of metacognitive beliefs in psychosis. Recent models of psychotic experiences (Morrison, Haddock & Tarrier, 1995; Morrison, 2001) have suggested that metacognitive beliefs about psychotic experiences are pertinent to their development and maintenance.

In order to measure, in a quantitative manner, metacognitive beliefs about worry and metacognitions in anxiety disorders, Cartwright-Hatton & Wells (1997) developed the Metacognition-Questionnaire (MCQ) based on the S-REF model. The original MCQ was later adapted to a short form (MCQ-30; Wells & Cartwright-Hatton, 2004) in order to measure maladaptive beliefs. It has been suggested that high scores on the MCQ are related to vulnerability to emotional disorders and psychological distress.

Evidence has been found for negative metacognitive beliefs in schizophrenia patients with hallucinations (Baker & Morrison, 1998; Morrison & Wells, 2003) and delusions (Morrison & Wells, 2007).

The model of auditory hallucinations (Morrison *et al.*, 1995) proposes that the occurrence of hallucinations may be influenced by metacognitive beliefs about the controllability of intrusive thoughts. In addition, the model proposes that hallucinations are experienced in an attempt to reduce cognitive dissonance between thoughts and metacognitive beliefs. Baker & Morrison (1998) found that individuals with auditory hallucinations scored higher on metacognitive beliefs on the MCQ relating to positive beliefs about worry and negative beliefs about uncontrollability and danger associated with thoughts. Further evidence suggest that individuals predisposed to hallucinations scored significantly higher on cognitive self-consciousness (e.g. “I think a lot about my thoughts” or “I am constantly aware of my thinking”) and negative beliefs about uncontrollability and danger associated with thoughts (“My worrying thoughts are uncontrollable”) than those with a low predisposition to hallucinations (Morrison, Wells, & Nothard, 2000). Essentially, conceptualisations about auditory hallucinations in psychosis appear to apply to a metacognitive model of anxiety within psychosis, as psychotic symptoms are related to heightened distress in the individual.

Morrison’s (2001) cognitive approach to psychosis draws from the S-REF model and suggests that positive beliefs about psychotic experiences are related to symptoms, such as, hallucinations and delusions. The model suggests that positive symptoms, like auditory hallucinations, are experienced as intrusions and the interpretation of these intrusions is related to the distress the individual experiences. Positive and negative beliefs about intrusions are influenced by faulty self and social knowledge and can lead to culturally unacceptable interpretations. Intrusions and interpretations are maintained by mood, physiology, cognitive and behavioural responses which in turn are related to metacognitive beliefs (Morrison, 2001).

The model suggests that the distress associated with auditory hallucinations is related to how the individual interprets these and that auditory hallucinations, per se, do not

cause psychological distress. This becomes evident when considering the high percentage of voice hearers in non-clinical populations (37-39% in college samples, Posey & Losch, 1983; Barret & Etheridge, 1992) who do not present to mental health services, indicating that not all individuals feel distressed by auditory hallucinations.

Morrison's cognitive model for auditory hallucinations bears similarities to Wells' (2007) adaptation of the cognitive attentional syndrome (CAS) in terms of its application in the context of auditory hallucinations. Within the framework of the S-REF model, auditory hallucinations are believed to present a way of 'hearing thoughts', which is, initially a coping strategy for the individual to self-regulate his/her internal state, but which has been negatively appraised by the individual. As a result, the CAS is activated, which is associated with worry and rumination on the malevolence of the voices. Consequently, the voices have become distressing for the individual.

Further evidence for the role of metacognitive processes, such as worry, was found in studies indicating that patients with psychosis had high rates of anxiety disorders, including PTSD (Frame & Morrison, 2001) and social anxiety (Gumley, O'Grady, Power & Schwannauer, 2004). Worry represents a subcomponent of anxiety disorders and forms part of the CAS, which is associated with emotional disorders. Morrison & Wells (2007) present evidence that worry might play an important part in psychosis as they could find higher levels of worry in patients with psychosis.

### **2.2.3 Metacognitive beliefs in trauma**

Despite the interest in the role of metacognitive beliefs in psychosis, and the suggested relationship between trauma and psychosis, the effects of trauma on metacognitive beliefs in psychosis have scarcely been investigated.

One study (Morrison & Peterson, 2003) explored the role of trauma, metacognition and predisposition to hallucinations in a non-clinical sample and concluded that metacognitive beliefs may contribute to the development of psychosis. The results

suggested that hallucinations may present a coping strategy for the individual following adverse experiences, such as bereavement and emotional abuse, and that metacognitive beliefs about thoughts may be implicated in the predisposition to hallucinations. A similar association may be inferred between chronic trauma and hallucination in clinical populations. However, this suggested link needs to be further investigated.

Consistent with the model of auditory hallucinations by Morrison *et al.* (1995) the study showed an association between positive beliefs about voices and metacognitive beliefs with predisposition to auditory hallucinations. However, the clinical utility of this study is limited as a non-clinical sample was recruited meaning that it may be relevant to use a clinical sample for future research to infer clinical implications.

Only a few studies have investigated the role of metacognitive beliefs in posttraumatic stress disorder (PTSD) without a psychotic symptomatology. However, the diagnostic overlap between the two disorders on a continuum as different reactions to adverse events (Morrison *et al.*, 2003) has been explored in Section 1.1.4 of this study.

The metacognitive model of PTSD (Wells, 2000) proposes that metacognitions play a more important role in the development and maintenance of PTSD than memory factors, as most theoretical cognitive models on PTSD propose. Wells (2000) suggests that the normal adaption process to intrusions after a traumatic event is prevented by the activation of the CAS, which is influenced by positive and negative metacognitive beliefs. As a result, the CAS maintains the symptoms and prevents a threat-free mode of processing.

Roussis & Wells (2006) found evidence for a relationship between positive metacognitive beliefs about worry, and symptoms of stress. The results suggested that the relationship is mediated by worry as a coping strategy. However, negative beliefs about worry concerning uncontrollability of thoughts and danger showed a

direct relationship with stress symptoms that were not mediated by worry as a strategy. Further evidence was found for the role of metacognitions in PTSD by Bennett & Wells (2010). Their results indicated that rumination mediated the relationship between beliefs about the trauma memory and PTSD symptoms. However, the clinical utility of both samples is limited due to the recruitment of non-clinical samples.

#### **2.2.4 Summary**

Evidence has been presented for the role of metacognition in the development of psychopathology in general and psychosis in specific. The suggested relationship between trauma and psychosis has been explored in Section 2.1. However, when considering the literature, no research has been conducted to date that is related to the rationale of this study, i.e. a study that explores the role of metacognitions in psychosis for patients who have experienced trauma.

The key points in this section were as follows:

- Metacognition is a multifaceted concept and plays an important role in psychological disorders in general and psychosis in specific
- Metacognition is constituted of three parts: metacognitive knowledge, metacognitive experiences and metacognitive regulation
- Metacognitive knowledge refers to positive and negative metacognitive beliefs about thoughts
- Metacognitive mode of experience entails a ‘detached mindfulness’ which is thought to be associated with positive change in therapy
- The self-regulatory executive functioning model (S-REF) posits that vulnerability and maintenance of psychological disorder is associated with a cognitive-attentional syndrome (CAS) that is characterised by worry and rumination and becomes activated by metacognitive beliefs

- CAS represents an antithesis to the ‘detached mindfulness’ mode of experience
- The metacognitive approach suggests that the thoughts themselves are not problematic, but the problems stem from the way an individual reacts to them
- Substantial research evidence has been found for the role of metacognitive beliefs in psychosis; however, only a few studies found evidence for the role of metacognitions in PTSD. The clinical utility of these is limited due to the use of non-clinical samples
- No research has yet been conducted to the researcher’s knowledge, to explore the role of dysfunctional metacognitive beliefs in psychosis with patients who have experienced trauma

## **2.3 Reflective Functioning and Psychopathology**

### **2.3.1 Conceptual background of reflective functioning**

Reflective Functioning (RF) refers to the narrative manifestation of an individual’s capacity to mentalise, which relates to an individual’s ability to recognise, understand and reflect on the self and others in terms of underlying intentional states, e.g. feelings, beliefs, needs, or desires (Fonagy, Gergely, Jurist, & Target, 2004). This capacity develops within the presence of attachment relationships and is a crucial component of affect regulation (Slade, 2005).

Mentalising implies a focus on mental states in the self and others and attempts to explain behaviours that, in turn, are influenced by feelings, thoughts, and wishes (Fonagy *et al.*, 2004). The process of mentalising represents a primarily imaginative mental activity, outside normal awareness, as an individual has to imagine what other people might be thinking and feeling and how their behaviours are affected by these

imaginings (Bateman & Fonagy, 2008). This ability is thought to be crucial to the formation of interpersonal relationships.

A distinction can be made between implicit and explicit forms of mentalisation. Bateman and Fonagy (2008) suggest that implicit mentalisation underlies all human interactions, and refers to an automatic process, below the level of consciousness. Individuals are often unaware of this activity, although they are constantly monitoring themselves without thinking about what they are doing. In contrast, explicit mentalisation refers to an individual's activity of talking and thinking about his/her own thoughts and emotions and those of others, amongst family and friends as well as patients within clinical settings. Explicit mentalisation is believed to occur in the 'here and now' but can also occur within different time frames: for example, evaluating experiences that may have happened earlier or exploring whether a certain feeling had been experienced previously. Bateman & Fonagy (2008) suggest that implicit and explicit mentalisation form a multifaceted psychological understanding of the self and others, drawing from, and influencing, each other like a 'double helix', and therefore facilitating and influencing the quality of interpersonal relationships.

The concept of mentalisation was introduced by Fonagy and his colleagues (Fonagy, Steele, Steele, Leigh, Kennedy, Mattoon, *et al.* 1995) and has been further elaborated over the last decade. The origins of mentalisation can be traced to object-relations (psychoanalytic) and attachment theories as well as developmental psychology. In psychoanalytic theory mentalisation can be described as a mental process that helps to integrate and amalgamate self and object-representations, that is, the ability to understand the self within the emotional and behavioural context of interpersonal relationships. These processes of integration and amalgamation become detectable through changes in mental ability as part of normal development (Karlsson, 2004).

In developmental psychology mentalisation is referred to a 'Theory of mind' which describes a developmental level of attainment, within which children become able to respond to the behaviour of other people, as well as their own conception of another person's beliefs, attitudes, and intentions. 'Theory of mind', therefore, enables children to 'read' other people's minds (Baron-Cohen, 1995), allowing the behaviour of other people to become meaningful and predictable for the child.

It has been suggested that mentalisation overlaps conceptually on three dimensions with other psychological constructs, such as mindfulness, psychological mindedness, empathy, and affect consciousness (Choi-Kain & Gunderson, 2008). These dimensions include self-/other-oriented, implicit/explicit, and cognitive/affective. However, there are significant differences. For example, regarding the self-/other-dimension mentalisation focuses on mental states within the self whereas empathy is believed to be associated with the self's imagination of the mental states in others. Moreover, the concept of mindfulness is based on Buddhist meditation practice and has been applied to the treatment of recurrent major depressive disorder (Segal et al., 2002) and other psychological disorders (Baer, 2003). Mentalisation and mindfulness share a number of characteristics including an awareness of inner mental states, but differ in terms of present-past focus: mindfulness focuses on present experience whereas mentalisation concerns the past, present and the future. Furthermore, mindfulness aims at acceptance of internal experience but mentalisation emphasises the integration of experiences and the construction of meaning within interpersonal contexts (Chai-Kan & Gunderson, 2008).

Reflective functioning can be described as the operationalisation of mentalisation and shows similarities with the concept of metacognition (see 2.2). The construct can be assessed by applying the RF rating scale (Fonagy, Target, Steele & Steele, 1998) to narrative in interviews. The coding scale was originally devised to rate narratives related to self-other interactions in transcripts from the Adult Attachment Interview (AAI, George, Kaplan & Main, 1985) providing a single score for RF.

The development of the RF rating scale evolved from Main's (1991) research on metacognition within the context of intergenerational transmission of attachment (different to Wells' conceptualisation of metacognition) which suggests that the child's capacity for metacognition influences the experience of the attachment relationship with the primary caregiver. This inference is based on research findings indicating a relationship between secure attachment and a well-developed capacity for metacognition. Conceptually, this refers to the ability to self-monitor in the context of attachment security. Fonagy, Steele, & Steele (1991) attempted to replicate Main's (1991) findings with the London Parent-Child Study which explored intergenerational transmission of attachment patterns. However, the researchers included an additional measure for the assessment of attachment before the child was born. As a result, Fonagy *et al.* (1991) found that parents' attachment patterns prior to the birth of their baby were predictive of the attachment pattern of the children at one year of age. That is, if mothers' attachment narratives were rated as secure, they were more likely to have securely attached children. These findings were replicated in subsequent studies (Benoit & Parker, 1994; Ward & Carlson, 1995). Subsequently, Fonagy and colleagues (Fonagy *et al.*, 1991; Fonagy *et al.*, 1995) began to reframe the concept of child development, attachment security and metacognitive monitoring by integration of psychoanalytic-oriented and metacognitive theories.

While Main (1991) mainly emphasised cognitive appraisal processes regarding the development of thinking about one's own thinking (metacognition), Fonagy *et al.* (1995) focused on the interpersonal and intersubjective quality of thinking about one's own and others' internal, mental and emotional experiences. They suggest that it is important to consider the capacity to *think* about emotions and their relation to behaviour, since the development of attachment is closely related to affect-regulation in times of infant distress (Fonagy *et al.*, 2004). The assessment of reflective functioning with the RF scale provides operationalised definitions about metacognitive capacities in individuals.

Reflective Functioning is usually assessed as part of an Adult Attachment Interview; however, the coding frame can also be applied to any therapy narrative by using

explicit questions that invite reflections on mental states and require metacognitive ability. Fonagy *et al.* (1998) suggest five questions in their RF-coding manual for this purpose. More recently, Meehan, Levy, Reynoso, Hill & Clarkin (2009) have developed the Reflective Function Rating Scale (RFRS), a 50-item scale based on the RF scale which measures RF across different domains, instead of a single RF score. The scale can be used for interviews, including, but not limited to the AAI. The authors suggest that this scale assesses subcategories of RF across a range of domains reflected in the theory, e.g. awareness of mental states or explicit effort to tease out mental states underlying behaviour. Preliminary findings related to the RFRS indicate reliability and validity. The clinical utility of this measure remains to be tested further.

### **2.3.2 Development of reflective functioning**

Fonagy *et al.* (2004) propose that humans are born with the ability to develop the capacity to mentalise within the attachment relationship to the primary caregiver. Early attachment relationships offer the child a chance of learning about mental states in interaction with the social environment.

The main premise of attachment theory (Bowlby, 1969, 1973, 1980) postulates that humans need to form close emotional bonds in infancy and early childhood in order to enable normal development. A child is not born with the ability to recognise and regulate his/her own affective states, but their understanding is facilitated by the dyadic and reciprocal relationship with the caregiver, who regulates the child's emotions by parental affect mirroring (Gergely & Watson, 1996). The quality of the relationship between caregiver and child is represented internally, even into adulthood (internal working models, Bowlby, 1973).

The child learns about his/her own mental states and their social environment by recognising them in the caregiver's emotional expressions, which in fact are the child's own emotions and behaviours. The development of the capacity to recognise

and group mental states and to understand the links between emotions and behaviour is crucially important for the development of the mentalising ability during a child's first year (Slade, 2005).

Children acquire the capacity to mentalise throughout their developmental stages, firstly by learning that it is essential to respond to another person's behaviour, and secondly by learning to respond to the child's understanding of the other person's feelings, beliefs, attitudes and intentions. This, again, facilitates the child's capacity to 'read' other people's minds, which influences interpersonal functioning, as other people's behaviour becomes meaningful and predictable (Fonagy *et al.*, 1998). However, it is important for children to learn that their own understanding about what is on their minds is related to their own feelings and thoughts and that how reality relates to the self or others can be interpreted in different ways (Fonagy & Target, 1996). Pretend play offers the child the opportunity to learn to imagine what is on another person's mind by pretending to think and feel the other person's thoughts and feelings. This process facilitates the integration of the child's inner and outer reality, and as part of a normal development the child moves from fractionation towards integration. Winnicott (1965, 1971) suggests that development is facilitated through the use of language and pretend play within the 'transitional playspace' between reality and play.

The capacity of RF is important in several ways: behaviour becomes meaningful and predictable for the child: RF supports and maintains attachment security; and helps the child distinguish between appearance and reality (Fonagy *et al.*, 1998). These processes influence interpersonal functioning and emotion-regulation, and enable the child to build and maintain relationships with others. It is believed that the development of RF is facilitated by a secure attachment relationship (Fonagy *et al.*, 2004).

### 2.3.3 Reflective functioning and early trauma

Fonagy *et al.* (2004) suggest that the caregiver's ability to hold and contain the child's mental states is pertinent to the child's normal development and that the early development of the child's self can be disrupted by non-reflective care-giving, e.g. where the primary caregiver is unable to hold and contain the child's emotional experience. This dysregulation may be associated with the development of a number of different forms of psychopathology.

Research about maternal reflective functioning (Grienenberger *et al.*, 2005) suggests that reflective functioning acts as a buffer against the breakdown in affect-regulation at times when the child is distressed. In other words, RF poses as a resilience factor to cope with adverse experiences and events. The influence of RF is mediated through the mother's behaviour, especially by regulating the child's distress without unsettling the child even more.

Within the context of interpersonal trauma, the ability to mentalise offers the child ways of coping by developing the awareness that the abuser's way to see the world is different from how the child sees the world. The child becomes able to attribute the abuser's behaviour to the abuser's beliefs, intentions and thoughts, rather than the child's sense of self. This facilitates more positive self-beliefs, enables trauma resolution and increases overall psychological well-being. Reflective functioning enhances communication and allows the child to connect his/her internal and external worlds which enables the formation of more meaningful relationships with others. This again can act as a buffer in times of emotional distress or in the aftermath of adverse events.

Research on psychiatric in-patients by Fonagy, Leigh, Steele, Steele, Kennedy, Mattoon, *et al.* (1996) suggested that patients with an abuse or maltreatment history and low reflective functioning capacity were more likely to be diagnosed with borderline personality disorder than individuals with high RF scores. Borderline

personality disorder is generally associated with lower RF (Fonagy, Target, & Gergely, 2000). This, again, demonstrates the protective factor of reflective functioning in the context of trauma resolution.

A study of patients with anorexia nervosa (Ward, Ramsay, Turnbull, Steele, Steele, & Treasure, 2001) provided further evidence for low RF as a vulnerability factor for psychopathology when compared to healthy controls. Grienenberger *et al.* (2005) found an association between maternal reflective functioning and maternal behaviour: mothers with high RF were less likely to disrupt affective communication with their child during the Strange Situation test (Ainsworth, Blehar, Waters, & Wall, 1978). This further supports the hypothesis that reflective functioning can prevent the break-down of affective communication when the child is in distress.

D'Angelo (2007) found evidence in a non-clinical sample of the importance of RF as a protective factor that promotes resiliency for early trauma. The results suggest that high levels of RF are associated with fewer symptoms of psychopathology despite higher levels of reported trauma. Although the findings of this study did not reach significance and were based on a small, non-clinical sample, there seems to be a clear role for RF as a protective mechanism that promotes resiliency and maintains overall psychological well-being across the life-span.

These studies suggest that an unresponsive primary caregiver in early life of a child can lead to developmental disruption, which can lead to low mentalisation capacity. This is associated with lower resilience to adverse life events and higher vulnerability to psychopathology, including severe mental illness such as borderline personality disorder.

### **2.3.4 Reflective functioning and psychosis**

Most research exploring the association between reflective functioning and psychopathology has focused on borderline personality disorder (Bateman &

Fonagy, 2004). The role of reflective functioning in psychosis has, to date, not been researched.

The association between mentalising impairment and schizophrenia has been investigated. However, mentalising, or ‘theory of mind’, in this study does not represent reflective functioning as defined by Fonagy and others (e.g. 2004), but is based on Frith’s (1992) model suggesting psychotic symptoms might be caused by impaired mentalising. In this conceptualisation, mentalisation refers to an individual’s ability to think about other people in terms of their mental states. This makes behaviour of others predictable for the individual (Baron-Cohen, 1995). ‘Theory of mind’, however, relates to cognitive abilities rather than emotional self-regulation aspects of reflective functioning. Langdon, Coltheart, Ward & Catts (2001) investigated the role of mentalising, or ‘Theory of mind’, in schizophrenia and found an association between mentalising impairment and paranoia. The findings of Langdon *et al.* were supported by a recent meta-analysis (Sprong, Schothorst, Vos, Hox, van Engeland, 2007) which found further evidence for a significant and stable mentalising impairment in schizophrenia. The differences between the concepts of ‘theory of mind’ and reflective functioning suggest that the results of these studies need to be considered with caution in the context of research evidence for the role of low RF in psychotic disorders. The results show, nonetheless, that patients with schizophrenia present with an impaired ability to think about other people’s internal mental states which has a negative effect on their interpersonal functioning.

### **2.3.5 Clinical relevance of reflective functioning**

There seems to be a clear association between reflective functioning and mental health, however, it appears unknown whether RF prevents the development of mental disorder or whether mental disorder affects the development of RF. If we were to assume that RF may act as a buffer against psychological disorder, it would be crucial to integrate techniques to develop RF further into therapeutic interventions. In the tradition of psychotherapy, outcome and change in therapy have been attributed

to mental skills that are similar to mentalisation, including insight, mindfulness, psychological mindedness, and increase in empathy (Karlsson & Kermott, 2006).

However, there are not many suggestions available as to of which psychotherapies might facilitate the development of RF. Bateman & Fonagy (2004) present techniques aimed at increasing RF in their manual for Mentalisation-based Therapy for borderline personality disorder (BPD) and their efficacy has been demonstrated. Further evidence (Levy, Meehan, Kelly, Reynoso, Weber, Clarkin *et al.*, 2006) for increasing RF therapeutically with BPD patients is associated within the context of Transference-Focused Psychotherapy (e.g. Clarkin, Yeomans & Kernberg, 1999) which is a highly structured, intensive psychodynamic treatment. Transference-Focused Psychotherapy is based on Kernberg's (1984) objects-relations theory of Borderline personality disorder. The study suggested positive changes in narrative coherence and RF as a result of Transference-Focused Psychotherapy.

However, no interventions have been developed so far to increase RF in brief therapies. It has been suggested that brief therapies do not promote an increase in RF (Jones, 2000; Fonagy *et al.*, 2004) since RF requires a longer-term developmental process that can only be facilitated in a secure and strong therapeutic relationship. Fonagy *et al.* (2004) propose that the therapist's ability to mentalise about the patient's experiences may be an important factor in facilitating the development of RF in therapy. Evidence suggests that RF may increase in psychological treatments that are insight-oriented (e.g. Transference-Focused Psychotherapy; see Levy *et al.*, 2006) rather than supportive.

Research into the association between RF and therapy outcome suggest that high RF might predict better therapy outcome. A study by Müller, Kaufhold, Overbeck & Grabhorn (2006) found evidence that RF could predict therapy process as more developed mental abilities enabled patients to make better use of therapy components. The authors propose that this suggests a clinical independence of the

RF construct from other therapy components. However, the study was based on a small sample size, including patients with different diagnoses (all women). This makes it more difficult to generalise the data to a wider clinical population.

### **2.3.6 Summary**

The conceptual background for the development for reflective functioning has been considered. Evidence has been presented for the role of high RF as a protective factor against early traumatic events. However, there is a lack of research into the role of RF in psychosis, despite good evidence for mentalisation-based treatment in Borderline personality disorder. High RF appears to be associated with positive therapy outcome; and the development of RF can be facilitated in long-term, insight-oriented psychotherapy.

The key points in this section were as follows:

- Mentalisation refers to the mental capacity of recognising and understanding the self and others in terms of underlying mental states (feelings, thoughts, beliefs, intentions)
- This ability is crucial for the formation of interpersonal relationships
- Reflective Functioning (RF) refers to the operationalisation of mentalisation and bears similarities to metacognition and ‘Theory of mind’
- RF can be assessed by application of the RF coding scale (Fonagy *et al.*, 1998)
- RF is facilitated within a secure attachment relationship and develops during infancy and early childhood
- The ability to mentalise makes behaviour meaningful and predictable for the child
- RF can be disrupted by early traumatic events and can act as a buffer in times of disrupted affect-regulation
- Low RF is associated with psychopathology, such as Borderline personality disorder.

- Impaired ‘Theory of mind’ has been found in patients with schizophrenia. However, no research has explored the level of RF in patients with schizophrenia to the author’s knowledge
- High RF has been linked with positive treatment outcome
- RF might increase in long-term, insight-oriented therapies
- No information is available to date as to how RF can be increased during brief therapies
- No research has yet been done, to the researcher’s knowledge, to explore the effects of trauma on level of RF in psychosis

## **2.4 Summary**

The literature reviewed suggests that there is an overlap between the concepts of trauma, psychosis, metacognition and reflective functioning. Early trauma as well as faulty metacognitions may contribute to the vulnerability to, and maintenance of, psychotic disorders, whereas a low capacity of reflective functioning has been associated with severe mental health problems, such as Borderline personality disorder.

Despite a number of methodological problems, current research evidence proposes an association between trauma, particularly childhood trauma, and psychosis. However, this association may represent more than a simple causal link with childhood trauma, leading to psychosis, but might be better conceptualised as an interactive, multifaceted relationship. That is, early trauma may cause developmental impairment and, as a result, increase vulnerability to psychosis by affecting cognitive and metacognitive functioning (appraisals, beliefs) negatively, as well as biological mechanisms, e.g. oversensitisation to stress in schizophrenia. Psychotic symptoms and associated cognitive dysfunctional processes may then increase the vulnerability for PTSD, which reinforces and maintains cognitive dysfunctional processes and

existing mental health problems. The interactive component between trauma and psychosis and the diagnostic overlap between both presentations have been conceptualised in recent models of trauma and PTSD, such as the interactive model (Mueser *et al.*, 2002) and the integrative model (Morrison *et al.*, 2003). Moreover, it has been suggested that psychosis and PTSD may represent different responses to traumatic experiences on the same continuum.

In terms of early trauma, it is important to consider developmental factors such as language development and acquired knowledge base for the understanding of trauma encoding in memory, and trauma memory resolution in children. The dissimilarities of children's presentations after traumatic experiences with adults' symptoms invalidate the clinical utility of the PTSD diagnosis for children. Alternatives, such as Trauma Developmental Disorder (van der Kolk, 2005) have been proposed.

Research evidence suggests a clear role for dysfunctional metacognitive beliefs for the vulnerability to, and maintenance of, psychotic symptoms. This is believed to be associated with the activation of the cognitive-attentional syndrome (CAS), as per S-REF-model, and results in the use of worry and rumination, which leads to heightened distress in the individual and may be involved in the prevention of recovery and risk of relapse. Metacognitive conceptualisations of psychotic symptoms appear to be in effect metacognitive models of anxiety, particularly due to the role of worry and the associated heightened distress. To date, only a few studies found evidence for the role of dysfunctional metacognitive beliefs in PTSD.

Besides a vast body of literature on the relationship between trauma and psychosis, specifically early trauma or childhood trauma, and evidence for dysfunctional metacognitive processes in psychosis, potential effects of early trauma on metacognitive functioning in psychosis have not been researched, to date.

Furthermore, the literature reviewed suggested an overlap between the concepts of metacognition and reflective functioning which had been researched in the context of intergenerational transmission of attachment pattern. As a result, evidence suggested that there might be an association between secure attachment and a well-developed ability for metacognition. This emphasises the importance of secure relationships and responsive care-giving in the development of this capacity. The understanding of metacognition in the context of attachment was further developed by Fonagy and others by drawing from psychoanalytic, attachment, and cognitive theories. As a result, the capacity of mentalisation or reflective functioning was defined. Different to metacognition, mentalisation or reflective functioning focuses on the interpersonal quality of thinking about an individual's own mental states, feelings, and behaviour as well as those of other people. This ability is believed to be crucially important for the formation of interpersonal relationships by making behaviour meaningful and predictable for the child and bears similarities with the 'Theory of Mind'.

It has been suggested that early trauma can disrupt the development of reflective functioning, whereas high RF has been associated as a defence mechanism against traumatic experiences. However, low RF has been associated with severe mental illness such as Borderline personality disorder. No association, as yet, has been made with psychosis, although research evidence has suggested impaired 'Theory of Mind' ability in patients with schizophrenia.

This illustrates the association and overlapping between the concepts discussed. As a result, it was hypothesised that core links may exist between the effects of early trauma on metacognitive functioning and the capacity of mentalisation in psychosis.

## **2.5 Research Objectives**

The primary objective of this study therefore was to assess the level of dysfunctional metacognitive beliefs in participants with and without trauma history. The following hypothesis was explored:

- 1) Participants with early trauma will show higher metacognitive dysfunctions compared to participants who did not experience early trauma.

The secondary objective of the study was to assess the level of reflective functioning in participants with and without trauma history. This second part of the study also represented a preliminary investigation into a brief measure of reflective functioning within psychosis.

The following two hypotheses were explored:

- 2) Participants with early trauma will show lower levels of RF than participants who did not experience early trauma.
- 3) There will be association between the score of the metacognitions measure and the level of RF, indicating a similarity of both concepts as metacognitive processes.

The following chapters will describe the methodology and results of this study. Furthermore, the finding, clinical utility and future research will be discussed.

### 3 Methods

#### 3.1 Design

This study is a pilot study attempting to establish core links between the effects of developmental trauma on metacognitive functioning and the capacity of reflective functioning (RF) in individuals with psychosis.

A quantitative design was selected to assess trauma history; measure level of metacognitive dysfunction; and measure the level of reflective functioning. Other research exploring metacognitive dysfunction in a psychosis sample has also employed a quantitative design (Morrison & Wells, 2003; Morrison *et al.*, 2007). Moreover, therapy narrative has provided a quantitative score for reflective functioning in a number of studies (e.g. Rudden, Milrod, Target, Ackerman & Graf, 2006; Müller *et al.*, 2006; D'Angelo, 2007).

A semi-structured interview was chosen for the assessment of trauma history as this not only provided a structure, but also allowed some freedom for the participant to expand and to tell their individual experiences, especially important when talking about potentially traumatic memories. This type of trauma assessment has proven to be a well-used and validated measure in a number of other studies regarding trauma and psychosis (Mueser, Salyers, Rosenberg, Ford, Fox & Carty, 2001; Kilcommons & Morrison, 2005; Hardy, Fowler, Freeman, Smith, Steel, Evans, *et al.*, 2005).

A self-report questionnaire was selected for the assessment of metacognitive dysfunction. This has shown to be a reliable and valid tool to detect metacognitive beliefs with clinical and non-clinical populations (Morrison & Wells, 2003; Morrison & Peterson, 2003; Morrison *et al.*, 2007; Spada, Mohiyeddini & Wells, 2008). For the assessment of the level of reflective functioning, a reduced attachment related interview was developed. Essentially two open-ended questions were chosen from the RF-Manual with probing questions (Fonagy *et al.*, 1998) to provide a brief attachment narrative which was transcribed. The coding of the transcripts provided a quantitative RF score for the participant's ability to mentalise. Other studies have employed a similar methodology to assess level of RF (e.g. Lis, Zennaro &

Mazzeschi, 2000; Rudden *et al.*, 2006; Müller *et al.*, 2006; Karlsson & Kermott, 2006; D'Angelo, 2007). However, none of the studies to date have applied solely the questions chosen for this study. Therefore, this study represents a preliminary investigation into the utility of a brief measure of RF.

Participants were divided into two groups based on the results of the trauma history assessment: those who had experienced early trauma, and those who had not. Early trauma was defined as traumatic event before the age of 16 that still had an ongoing distressing impact on the individual. This was assessed by asking the participant whether they felt that they were still affected by the event, and whether they had experienced extreme fear, hopelessness or horror during the experience (criterion 'A2' as per DSM-IV, APA, 1994). Traumatic events after the age of 16 were defined as 'adult trauma'. This design allowed comparison of levels of metacognitive dysfunctions and reflective functioning in both groups to infer a potential effect of trauma.

### **3.1.1 Ethics**

A number of ethical issues considered in this study, including consent; confidentiality; traumatic memories; reducing stress for patients; and voluntary participation.

It was ensured that patients understood the aim of the study by issuing a detailed information sheet and consent form to potential participants. Although the patients were mentally unwell, they were able to give consent. Their ability to give consent was judged by their individual clinician. The researcher made sure that participants understood what the interview entailed and left ample opportunity for the patient to ask questions.

Confidentiality was assured by adhering to NHS Lothian confidentiality procedure in regards to storing data and patient information. If a patient disclosed sensitive information, the patient's clinician was to be informed, in order that they manage the case clinically. Furthermore, the researcher was aware of the potential distressing

impact of a trauma-focused interview on the participant. As a trained clinician, the researcher felt confident in the application of safety and grounding techniques to stabilise the patient until the case could be handed over to the patient's regular clinician, in order to assure ongoing care and potentially onward referral to appropriate services.

A clinician familiar to the patient introduced the research in order to reduce the potential distress caused by meeting a strange person. Interviews were arranged in familiar clinical environments (out-patient clinics, wards) to decrease the impact of participation for the patient.

Patients had at least 48 hours to consider their participation and the researcher made sure participants were aware that they had the right to withdraw at any time. The researcher also remained sensitive towards patients' willingness to partake in the study in order to prevent them from feeling that they had to participate even if they did not want to.

The study received ethical approval from the South East Scotland Research Ethics Committee 3 (SESREC03) and the University of Edinburgh.

### **3.1.2 Measures**

#### **3.1.2.1 THQ**

The Trauma History Questionnaire (THQ) (Green, 1996) (Appendix I) was selected for the assessment of trauma history. This trauma measure has been used in several studies to identify trauma exposure within a psychotic population, including bipolar disorder (Mueser, Goodman, Trumbetta, Rosenberg, Osher, Vidaver, *et al.*, 1998; Hammersley *et al.*, 2003; Kilcommons & Morrison, 2005; Morrison *et al.*, 2007).

The THQ is a history collection instrument and measures the history of exposure to potentially traumatic events that may meet the 'A1' criterion for DSM-IV (APA, 1994) posttraumatic stress disorder. Criterion 'A1' refers to an extreme traumatic experience that involves actual or threatened death or serious injury of another

person, or learning about an unexpected death or injury of a family member. This semi-structured interview contains 24 items addressing the lifetime occurrence of traumatic events. For each item, the participant indicates whether he or she has experienced the event, and if so, the age of occurrence and the number of times the event occurred. With regard to sexual and physical abuse, the participant is asked whether the experience was repeated and, if so, how often and at what age. A final item is included in the questionnaire to allow participants to report events they experienced that were extraordinarily stressful but which had not been included in the previous items. This allows the researcher the potential to re-score these events into existing categories. However, if the researcher feels that this item does not represent a traumatic event, it will not be scored. Kilcommons & Morrison (2005) additionally verified in their study whether participants experienced extreme fear, hopelessness or horror during the trauma event, consistent with the 'A2' as per DSM-IV (APA, 1994). The current study also assessed the presence of criterion 'A2' during the traumatic events.

Early trauma was defined as 16 and under, in line with previous studies that had used this questionnaire (e.g. Kilcommons & Morrison, 2005).

Moreover, this study used categories from previous research, for which acceptable psychometric properties were found (Hardy *et al.*, 2005). Traumatic events were grouped into sexual assault; physical attack without a weapon; physical attack with a weapon; witnessing trauma of another; car or work accident; natural or man-made disaster; and having a close friend or relative either killed or murdered by a drunk driver. These categories have been used in studies by Kilcommons & Morrison (2005) and Hardy *et al.* (2005). In this sample no participant experienced a natural or man-made disaster, however, six participants reported that they experienced their illness and hospitalisation as traumatic. As a result, this data was summarised in a separate category for the description of characteristics of the trauma group.

### 3.1.2.2 MCQ-30

The Metacognitions Questionnaire (MCQ-30) (Wells & Cartwright, 2004) (Appendix II) is a shortened version of the original Metacognitions Questionnaire (MCQ, Cartwright-Hatton & Wells, 1997) and primarily measures maladaptive cognitive beliefs or schema. This self-report questionnaire has good reliability and validity and consists of 30 items measuring individual differences in metacognitive beliefs, judgements of cognitive confidence and monitoring tendencies. Each of the items is rated on a 4-point Likert scale from 1 (strong disagreement) to 4 (strong agreement). The 5-factor structure of the MCQ-30 is almost identical to the original MCQ.

The 5 subscales are: 1) *Positive beliefs about worry*. These items relate to the belief that worrying helps to solve problems and to avoid unpleasant situations (e.g. “Worrying helps me cope”); 2) *Negative beliefs about uncontrollability of thoughts and danger*. This subscale detects beliefs concerning the necessity to control worry in order to function well as a person, beliefs about mental and physical dangers of worrying, and the belief that worry is uncontrollable (e.g. “Worrying is dangerous for me”); 3) *Cognitive confidence*. The items on this subscale relate to the efficacy of cognitive skills, such as memory and attentional functioning (e.g. “I have a poor memory”); 4) *Beliefs about need to control thoughts*. Items relate to negative outcomes that might result from having certain thoughts, and to a feeling of responsibility for preventing those outcomes (e.g. “If I did not control a worrying thought, and then it happened, it would be my fault”); and 5) *Cognitive self-consciousness*. The items on this subscale measure the degree to which a person focuses on their own thinking processes (e.g. “I think a lot about my thoughts”).

The MCQ has been used in a number of studies to assess metacognition with a psychosis population (Morrison & Wells, 2003; Morrison *et al.*, 2007; Barkus, Stirling, French, Morrison, Bentall & Lewis, 2010). The MCQ-30 has also been used in studies assessing metacognitions in posttraumatic stress disorder (PTSD) (Roussis & Wells, 2006) and the relationship of metacognitions to psychotic-like experiences (Reeder, Rexhepi-Johansson & Wyles, 2010). High scores on this questionnaire

(overall or different subscales) are believed to demonstrate a vulnerability to emotional disorder or distress (Barkus *et al.*, 2010). Cronbach's alpha for the MCQ-30 items of the current sample was  $\alpha = .915$ , demonstrating good internal consistency.

### 3.1.2.3 Demand Questions for RF coding

A reduced attachment related interview was developed for this study. Two open-ended questions were extracted from the Adult Attachment Interview (AAI) (George, Kaplan & Main, 1985) (Appendix III) with additional probing to assess the level of reflective functioning similar to the procedure during the AAI. The AAI is a semi-structured interview about relationship experiences and contains 20 questions that assess a person's experiences with his/her parents and other attachment figures, as well as significant losses and trauma. The Reflective Function Manual (Fonagy *et al.*, 1998; Target & Fonagy, 2003) delivers a coding frame for the level of RF and suggests a set of questions from the AAI that invite an individual to reflect on mental states due to their content structure and require metacognitive ability. These questions are referred to as demand questions. Other questions in the AAI ask about experiences and the effect of experiences for the individual.

Two questions were selected for the purpose of this study ("*To which parent did you feel the closest and why?*" and "*In general, how did your overall experiences with your parents affect your adult personality?*") in order to pilot a brief measure for RF. These questions represent demand questions that invite reflections. They were chosen as it was felt that they could be asked in isolation, without requiring contextual questions and that all participants should be able to answer them. Moreover, the narrative of demand questions allows the assessment of RF even in its absence because these questions require the participant to engage in meta-reflections, that is, reflecting on one's own reflections.

The RF coding frame is derived from therapeutic narrative and structured developmental interviews. It has been developed with the AAI, but can be applied to other research interviews independently. Several studies have applied the RF coding scale to therapy narrative independent from an AAI (e.g. Rudden *et al.*, 2006; Müller

*et al.*, 2006; Karlsson & Kermott, 2006; D'Angelo, 2007; Lis *et al.*, 2000); however, none of the studies so far have used solely the questions selected as RF measure in this study.

The narrative of the questions were transcribed by the researcher, and then coded by the academic supervisor of this research study who has been trained in RF coding. The transcripts were coded by only one clinician; therefore, no information on inter-rater reliability is available for the RF scores of this study. However, the RF scale has generally demonstrated good inter-rater reliability ( $r = .89$ ) and has been extensively validated in several studies (see overview by Fonagy *et al.*, 1998).

The coding provided quantitative data in form of a RF rating (-1, 1, 3, 5, 7, 9). The rating score refers to the following value: -1 = negative RF, 1 = absent or repudiated RF, 3 = questionable or low RF, 5 = definite or ordinary RF, 7 = marked RF, and 9 = full or exceptional RF. Any scores from -1 to 3 refer to negative or limited RF, whereas scores from 5 to 9 indicate moderate to high RF. The cut off between definite RF and absent RF is between the scores of 3 and 5.

### **3.2 Recruitment**

All participants had a current or past diagnosis of psychosis or bipolar disorder but were not actively psychotic at the time of the interview. All individuals participating in this study were currently being seen (mood-monitored) by a clinician. Participants were recruited from the Early Psychosis Support Service (part of the Child and Adolescent Mental Health Service), three Rehabilitation Wards at the Royal Edinburgh Hospital and three Community Mental Health Teams in Edinburgh. All participants had read the Information Sheet and given their signed consent (Appendix IV and V).

The researcher gave presentations about the rationale and recruitment criteria of the study to five (NW, NE, SW, SE, SC) Community Mental Health Teams and the Early Psychosis Support Service in order to increase awareness and interest amongst clinicians. Furthermore, two consultant psychiatrists from the Rehabilitation Wards

at the Royal Edinburgh Hospital were approached to identify potential participants for this project. The researcher attended out-patient clinics with a consultant psychiatrist linked with the CMHTs to promote the study and recruit potential participants to the study. All these measures were taken in order to ensure that as many participants as possible were recruited for this study.

Fifty-one individuals were identified as potential participants for the research: one was not suitable (learning disability), 36 agreed and 14 refused to participate. Nine patients dropped-out: 4 repeatedly did not attend arranged appointments, 1 patient became unwell and had to be hospitalised before she was able to participate in the study, and 4 patients changed their minds after they had initially agreed to participate. In total 27 patients participated (53% of the individuals who were identified) (see Fig. 2 below).

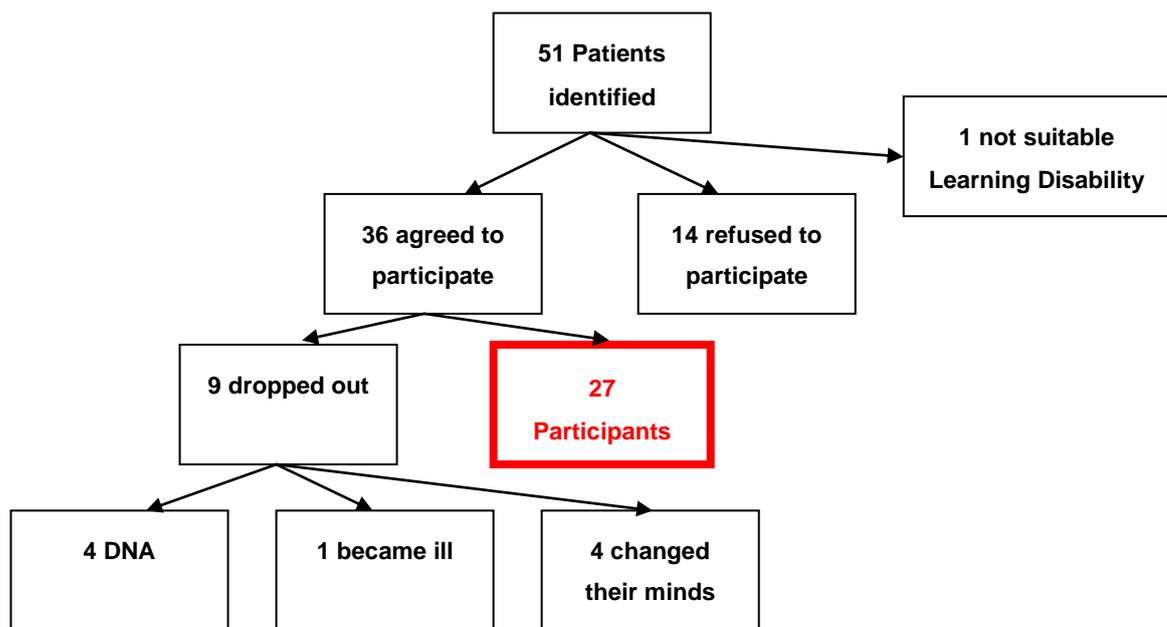


Fig. 2: Recruitment Pathway

The sample of this study included participants aged between 16 and 61 years. Twenty participants were male and seven participants were female. They were recruited from different services: twelve patients were residing in hospital; and fifteen patients were living within the community.

The researcher anticipated numerous challenges during the recruitment stage of this study. First, engaging patients with psychosis in treatment or services is considered to be problematic (e.g. Sainsbury Centre for Mental Health, 1998). Tait, Birchwood & Trower (2004) report evidence that the patient's recovery style ('integration' versus 'sealing-over') might contribute to their level of service engagement. That is, patients with a 'sealing over' recovery style minimize the impact of their psychotic symptoms and are less likely to engage with services. Further reasons for poor engagement with services might be related to childhood trauma or trust issues with authority (Lecomte, Spidel, Leclerc, MacEwan, Greaves & Bentall, 2008). Patients with psychosis present with a host of co-morbid difficulties, including depression and anxiety which may also affect their willingness to participate in research.

The researcher tried to overcome these problems by recruiting the patients' clinicians to introduce the research to potential participants in order for them to learn about the study from a familiar person. Patients were given the option to phone the researcher if questions arose about the research study. Meetings were arranged at patients' local clinics or at their wards to minimise problems in regards to transport. Once a patient had expressed his or her interest in participating in the research study, every opportunity was given to re-schedule the meeting if they felt too unwell or too tired at the agreed time of the interview. Unfortunately, despite high flexibility and the attempt to reduce the stress levels associated with participation in a research study, almost one third of the identified potential participants refused to partake in the study.

Furthermore, it was anticipated that due to the clinicians' high workloads, the number of patients they would be able to identify might be quite low as this would not be the clinicians' priority. The researcher tried to overcome this challenge by regularly liaising with all teams and wards involved in order to try to maximise recruitment for this study, and to offer any assistance required to aid recruitment. However, despite an initial high level of interest expressed by all teams and clinicians involved, due to over-commitment and substantial workloads, the researcher did not receive as many referrals as hoped for.

These efforts demonstrate the difficulty of recruiting patients with psychosis for research purposes.

### **3.3 Procedure**

Clinicians identified suitable participants, and then passed on information and consent forms and before asking patients for permission to pass on their contact details to the researcher. It was thought that using a familiar person to introduce the study to a patient would increase the likelihood of participation. Once an interest had been expressed, the researcher contacted potential participants to give them the opportunity to question and discuss concerns. Patients, who were residing at the hospital and were identified by their consultant psychiatrist, were approached by their individual key workers with the information about the study. Participants were given at least 48 hours to consider whether they wanted to participate. They were aware that their contribution was entirely voluntary and that they were able to withdraw at any point. The voluntary nature of participation in the study was reinforced at the beginning of the interview. Meetings were arranged in local clinics or different Rehabilitation wards at a time suitable for the participant. Participants met with the researcher once for about 45 to 60 minutes. The interview started with the researcher ensuring the participant understood the nature of the study and then to give written consent to participate and to be audio-recorded (RF questions). Some patients had signed the consent form at home before attending the meeting; other patients signed their form at the start of the meeting. Some time was allocated by the researcher to ease the patient into the interview situation at the beginning of the meeting by facilitating friendly small talk and giving the patient some space and time to feel “heard” afterwards, especially after sharing some traumatic and personal experiences. The open-ended questions were read to the participants before their responses were audio-recorded in order to give them time to consider their answers. These measures were taken to allow patients to feel more comfortable in the setting of the meeting and to reduce anxiety.

The THQ was conducted to assess the individual's trauma history in order to divide participants into early trauma and non-early trauma group. Individuals were then asked to fill in the metacognitions questionnaire (MCQ-30). To conclude, participants were asked two open-ended questions from the AAI to measure RF and their narrative was audio-recorded.

The researcher stayed vigilant in terms of providing a safe space for participants and recognising any signs of distress or agitation throughout the whole interview. The researcher also provided contact information in case further questions arose after the interview. This offer was taken up by only one of the participants.

## 4 Results

### 4.1 Sample description

#### 4.1.1 Demographic information

The sample consisted of 27 participants, aged between 16 and 61 years with a mean age of 36.19 (SD 13.45) and with a gender ratio of 20 (74.1%) males and 7(25.9%) females. Twelve (44.4%) participants were recruited from in-patient services and 15 (55.6%) from out-patient services.

#### 4.1.2 Trauma exposure

The trauma assessment with the THQ showed the following trauma history: 12 (44.4%) participants reported ‘no trauma history’, and 15 (55.6%) reported ‘trauma history’.

The trauma group consisted of 6 participants with early trauma (5 in combination with adult trauma) and 14 participants had experienced adult trauma (9 cases of adult trauma only) (see Table 1).

No trauma	Early trauma only	Early & Adult trauma	Adult trauma only
12	1	5	9

Table 1: Trauma exposure in sample

All reported early trauma histories were cumulative traumatic experiences, such as ongoing sexual or physical abuse. One participant reported only early trauma, 3 experienced early trauma and one single traumatic event in adulthood whereas 2 participants reported early traumatic events combined with cumulative adult trauma (see Fig. 3).

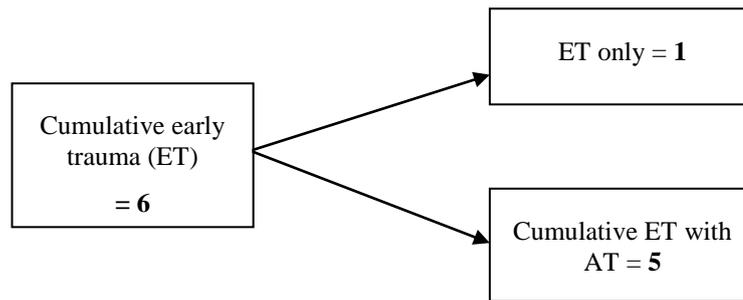


Figure 3: Cumulative early trauma (with or without AT)

Fourteen participants had experienced adult trauma: 6 experienced a single event and 8 experienced cumulative adult trauma (see Fig. 4).

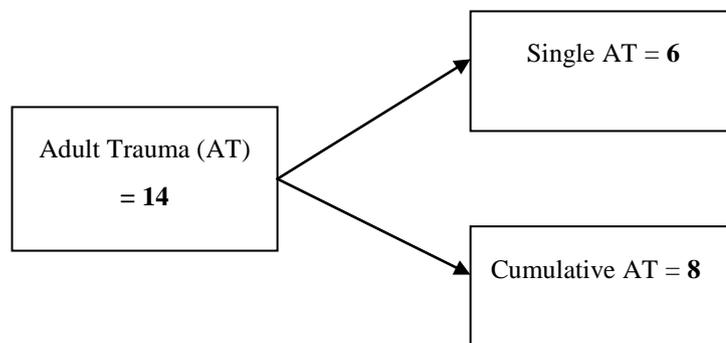


Figure 4: Adult trauma (single and cumulative)

Traumatic experiences were grouped into categories according to previous research (Mueser et al., 2001; Hardy et al., 2005; Kilcommons & Morrison, 2005). Table 2 below illustrates the nature of trauma experienced by participants in the sample: mainly sexual and physical assault; followed by the trauma of their illness and hospitalisation; friend or relative murdered; and car/work accident. Most incidents of sexual and physical assault occurred in childhood and were ongoing for a number of years, whereas experiences such as the killing of a friend or relative and car/work accidents happened mainly in adulthood as a single incident.

	Sexual Assault	Physical assault	Witness killing of serious injury of another	Close friend or relative murdered or killed by a drunk driver	Car or work accident	Illness as traumatic
Early trauma	5	6	2	1	1	0
Adult trauma	2	1	1	4	4	6
<b>TOTAL</b>	<b>7</b>	<b>7</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>6</b>

Table 2: Categories of trauma experiences in sample

## 4.2 Analysis

### 4.2.1 Skewness and Kurtosis of data

The scores for MCQ-30 subscales and total score as well as RF-codings were checked for skewness and kurtosis. Descriptive statistics indicated slightly high values for both skewness and kurtosis for the following subscales of the MCQ-30: “*positive beliefs about worry*”, “*negative beliefs about the uncontrollability and danger of worry*”, “*cognitive confidence*”, total MCQ-30 score; and the RF scores (see Table 3).

MCQ-30 subscales and total score, RF score	Skewness and Kurtosis	Statistic	Std. Error
Positive Beliefs about Worry	Skewness	<b>.895</b>	.448
	Kurtosis	<b>-.526</b>	.872
Negative Beliefs about uncontrollability and danger of worry	Skewness	.355	.488
	Kurtosis	<b>-1.232</b>	.872
cognitive confidence	Skewness	.398	.448
	Kurtosis	<b>-.668</b>	.872

need for control	Skewness	.503	.448
	Kurtosis	-.035	.872
cognitive self-consciousness	Skewness	-.322	.448
	Kurtosis	-.661	.872
overall total MCQ score	Skewness	<b>.902</b>	.448
	Kurtosis	-.049	.872
RF	Skewness	.134	.448
	Kurtosis	<b>-.921</b>	.872

Table 3: Descriptive values for skewness and kurtosis

As a result a Kolmogorov-Smirnoff Test of normality was conducted. The analysis showed non-significant results for the subscales “*positive beliefs about worry*” and “*negative beliefs about the uncontrollability and danger of worry*” as well as the RF scores (see Table 4).

MCQ-30 subscales and total score, RF score	Statistic	df	Sig.
Positive Beliefs about Worry	.221	27	<b>.002</b>
Negative Beliefs about uncontrollability and danger of worry	.171	27	<b>.042</b>
cognitive confidence	.145	27	.152
need for control	.111	27	.200
cognitive self-consciousness	.100	27	.200
overall total MCQ score	.072	27	.200
RF	.171	27	<b>.041</b>

Table 4: Kolmogorov-Smirnov Test of Normality

The findings demonstrate that these subscales, including the RF scores, are not normally distributed. As a result, non-parametric tests have to be conducted in the following exploratory analyses for “*positive beliefs about worry*”; “*negative beliefs about the uncontrollability and danger of worry*”; and RF to compare group differences.

#### 4.2.2 Group Characteristics: Early Trauma versus No Early Trauma

##### 4.2.2.1 MCQ-30 and RF: Comparison of Means

A comparison of means of the MCQ-30 including subscales was done. The mean of the total MCQ-30 score in the ‘early trauma group’ ( $M = 63.77$ ,  $SD = 18.24$ ) was slightly higher than the mean in the ‘no early trauma group’ ( $M = 60.29$ ,  $SD = 17.03$ ). The ‘early trauma group’ showed a higher mean for *cognitive self-consciousness* ( $M = 16.92$ ,  $SD = 5.19$ ) than the “no early trauma group” ( $M = 14.21$ ,  $SD = 4.49$ ) and a higher mean for *need for control* (‘in early trauma’:  $M = 13.23$ ,  $SD = 5.15$ ; ‘no early trauma’:  $M = 11.79$ ,  $SD = 4.08$ ). Otherwise, the mean scores of the different subgroups were similar across both groups (see Table 3).

The means of RF across both groups were very similar, albeit slightly higher in the ‘early trauma group’ ( $M = 2.69$ ,  $SD = 2.689$ , in the ‘early trauma group’; and  $M = 2.29$ ,  $SD = 2.301$ , in the ‘no early trauma group’).

MCQ-30 subscales and total score, and RF	Early Trauma $M(SD)$	No Early Trauma $M(SD)$
Positive Beliefs about Worry	9.46 (4.409)	9.57 (3.298)
Negative Beliefs about uncontrollability and danger of worry	12.08 (4.873)	12.79 (5.790)
cognitive confidence	12.08 (5.330)	11.93 (4.323)
need for control	13.23 (5.150)	11.79 (4.080)
cognitive self-consciousness	<b>16.92 (5.188)</b>	14.21 (4.492)

overall total MCQ score	<b>63.77 (18.240)</b>	60.29 (17.031)
RF	<b>2.69 (2.689)</b>	2.29 (2.301)

Table 5: Means and SD for MCQ-30 scores and RF (Early trauma vs No early trauma)

### 4.2.3 Exploratory Analysis: Early Trauma versus no No Early Trauma

#### 4.2.3.1 T-test: “cognitive confidence”; “need for control”; “cognitive self-consciousness”; total MCQ-30 score

Results of t-test for equality of means for “cognitive confidence”; “need for control”; “cognitive self-consciousness”; and total MCQ-30 score showed no significant differences between groups (see Table 6).

	Levene’s Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference
cognitive confidence	.252	.620	.080	25	.937	.148
need for control	.284	.599	.811	25	.425	1.445
cognitive self-consciousness	.201	.658	1.454	25	.159	2.709
total MCQ score	.110	.743	.513	25	.612	3.484

Table 6: T-test for 3 MCQ-30-subcales and MCQ-30 total score (Early Trauma versus No Early Trauma)

**4.2.3.2 Mann-Whitney U Test: “positive beliefs about worry”;  
“negative beliefs about uncontrollability and danger of worry”;  
and RF**

Results of Mann-Whitney U tests for “positive beliefs about worry”; “negative beliefs about uncontrollability and danger of worry”; and RF showed no significant differences between groups (see Table 7).

	Positive Beliefs about worry	Negative Beliefs about uncontrollability and danger of worry	RF
Mann-Whitney U	77.500	86.500	81.500
Wilcoxon W	168.500	177.500	186.500
Z	-.672	-.220	-.473
Asymp. Sig. (2-tailed)	.501	.826	.636

Table 7: Mann-Whitney U Test MCQ-30 subscales and RF (Early Trauma versus No Early Trauma)

The comparison between ‘early trauma group’ and ‘no early trauma group’ did not show the expected differences between groups. Therefore, another grouping of participants into ‘trauma’ versus ‘no trauma’ was undertaken to test for differences.

**4.2.4 Group Characteristics: Trauma versus No Trauma**

**4.2.4.1 MCQ-30 and RF: Comparison of Means**

A comparison of means showed a higher mean in the ‘trauma group’ ( $M = 69.2$ ,  $SD = 15.09$ ) compared with the ‘no trauma group’ ( $M = 52.92$ ,  $SD = 16.21$ ) for total MCQ-30 scores. The means of all subscales were higher in the ‘trauma group’, specifically for *negative beliefs about the uncontrollability and danger* (trauma:  $M = 14.76$ ,  $SD = 4.12$ ; no trauma:  $M = 8.92$ ,  $SD = 3.42$ ); *cognitive confidence* (trauma:  $M =$

= 13.67, SD = 4.30; no trauma:  $M = 9.92$ , SD = 4.48); and *cognitive self-consciousness* (trauma:  $M = 17.07$ , SD = 4.92; no trauma:  $M = 13.58$ , SD = 4.42).

The comparison of means of RF scores showed that the mean for the ‘trauma group’ was slightly higher ( $M = 3.13$ , SD = 2.2) compared with the ‘no trauma group’ ( $M = 1.67$ , SD = 2.60) (see Table 8). The range of RF scores was the same across groups (min = -1; max = 7).

MCQ-30 subscales and total score, and RF	Trauma $M$ (SD)	No Trauma $M$ (SD)
Positive Beliefs about Worry	10.00 (4.123)	8.92 (3.423)
Negative Beliefs about uncontrollability and danger of worry	<b>14.67 (4.467)</b>	9.67 (5.015)
cognitive confidence	<b>13.67 (4.304)</b>	9.92 (4.582)
need for control	13.80 (4.491)	10.83 (4.345)
cognitive self-consciousness	<b>17.07 (4.920)</b>	13.58 (4.420)
overall total MCQ score	<b>69.20 (15.086)</b>	52.92 (16.211)
RF	<b>3.13 (2.20)</b>	1.67 (2.60)

Table 8: Means and SD for MCQ-30 and RF scores (Trauma versus No trauma)

The comparison of means for both measures showed higher scores for the “trauma group”, therefore, an exploratory analysis was conducted to check whether the differences were significant.

#### 4.2.5 Exploratory Analysis: Trauma versus No Trauma

##### 4.2.5.1 T-test: “*cognitive confidence*”; “*need for control*”; “*cognitive self-consciousness*”; total MCQ-30 score

Results of t-test for equality of means showed a significant difference between groups for total MCQ-30 score ( $t(25) = 2.70$ ,  $p = .012$ ) and one subscale, *cognitive*

confidence, ( $t(25) = 2.19, p = .038.$ ), with higher scores in the ‘trauma group’ (see Table 9).

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference
cognitive confidence	.112	.741	2.186	25	<b>.038*</b>	3.750
need for control	.201	.658	1.730	25	.096	2.967
cognitive self-consciousness	.512	.481	1.911	25	.068	3.483
total MCQ score	.033	.858	2.697	25	<b>.012*</b>	16.283
RF	.484	.493	1.587	25	.125	1.467

Table 9: T-test for 3 MCQ-30 subscales and RF (Trauma vs No trauma)

**4.2.5.2 Mann-Whitney U Test: “positive beliefs about worry”; “negative beliefs about uncontrollability and danger of worry”; and RF**

Results of Mann-Whitney U tests for *positive beliefs about worry*; *negative beliefs about uncontrollability and danger of worry*; and RF showed significant differences between groups for *negative beliefs about uncontrollability and danger of worry* ( $U(25) = 35.5, Z = -2.674, p = .008$ )(see Table 10).

	Positive Beliefs about worry	Negative Beliefs about uncontrollability and danger of worry	RF
Mann-Whitney U	78.500	35.500	58.000
Wilcoxon W	156.500	113.500	136.000
Z	-.576	-2.674	-1.603
Asymp. Sig. (2-tailed)	.565	<b>.008*</b>	.109

Table 10: Mann-Whitney U Test MCQ-30 subscales and RF (Trauma vs No Trauma)

### 4.2.5.3 Correlation between MCQ-30 total score and RF score

A Spearman's correlation was performed to test for an association between MCQ-30 scores and level of RF. A significant positive correlation was found ( $r = 0.397$ ,  $N = 27$ ,  $p = .040$ ) (see Table 11).

		overall MCQ score	total RF
overall total MCQ score	Spearman's rho	1	<b>.397*</b>
	Sig. (2-tailed)		.040
	N	27	27
RF	Spearman's rho	<b>.397*</b>	1
	Sig. (2-tailed)	.040	
	N	27	27

Table 11: Spearman's rho for MCQ-30 and RF scores

## 4.2.6 Group Characteristics: In-patients versus Out-patients

The sample of participants consisted of 12 in-patients and 15 out-patients which offered the possibility to test for differences between these groups.

### 4.2.6.1 Comparison of Means: MCQ-30 and RF

The comparison of means of the MCQ-scores showed a slightly higher mean for the total MCQ-30 scores in the 'out-patient group' ( $M = 63.07$ ,  $SD = 14.27$ ) compared to the 'in-patient group' ( $M = 60.58$ ,  $SD = 21.22$ ). The means of the subscales showed the following difference: *cognitive self-consciousness* was higher in the 'out-patient group' ( $M = 17.33$ ,  $SD = 4.19$ ) compared to 'in-patient group' ( $M = 13.25$ ,  $SD = 5.03$ ); and *positive beliefs about worry* were higher in the 'in-patient group' ( $M = 10.33$ ,  $SD = 4.81$ ) than in the 'out-patient group' ( $M = 8.87$ ,  $SD = 2.75$ ).

Comparison between means of RF-scores showed a higher score for the ‘in-patient group’ ( $M = 3.53$ ,  $SD = 2.45$ ) compared with the ‘out-patient group’ ( $M = 1.17$ ,  $SD = 1.80$ ) (see Table 12).

MCQ-30 subscales and total score & RF score	In-patient $M$ (SD)	Out-patient $M$ (SD)
Positive Beliefs about Worry	<b>10.33 (4.812)</b>	8.87 (2.748)
Negative Beliefs about uncontrollability and danger of worry	12.00 (5.576)	12.80 (5.185)
cognitive confidence	12.42 (5.384)	11.67 (4.320)
need for control	12.58 (6.156)	12.40 (3.066)
cognitive self-consciousness	13.25 (5.029)	<b>17.33 (4.186)</b>
overall total MCQ score	60.58 (21.224)	<b>63.07 (14.265)</b>
<b>RF Score</b>	1.17 (1.801)	<b>3.53 (2.446)</b>

Table 12: Means and SD for MCQ-30 and RF (In-patient vs Out-patient)

#### 4.2.7 Exploratory Analysis: In-patients versus Out-patients

##### 4.2.7.1 T-test: “*cognitive confidence*”, “*need for control*”, “*cognitive self-consciousness*”, total MCQ-30 score

Results of t-test for equality of means showed a significant difference between groups for higher scores in the ‘out-patient group’ for *cognitive self-consciousness* ( $t(25) = -2.30$ ,  $p = .030$ ). No significant result was found for total MCQ-30. Levene’s test for equality of variance showed no homogeneity of variance for *need for control*, and it can be concluded that there is a difference between variances in this subscale (see Table 13).

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference
cognitive confidence	1.338	.258	.402	25	.691	.750
need for control	6.600	<b>.017</b>	.101	25	.920	.183
cognitive self-consciousness	.746	.396	-2.304	25	<b>.030*</b>	-4.083
total MCQ score	1.961	.174	-.363	25	.720	-2.483

Table 13: T-test for 3 MCQ subscales and total MCQ-30 score (In-patient vs Out-patient)

**4.2.7.2 Mann-Whitney U Test: “positive beliefs about worry”; “negative beliefs about uncontrollability and danger of worry; and RF**

Results of Mann-Whitney U tests for *positive beliefs about worry; negative beliefs about uncontrollability and danger of worry; and RF* showed significant differences between groups for RF scores ( $U(25) = 41.0, Z = -2.455, p = .014$ )(see Table 14).

	Positive Beliefs about worry	Negative Beliefs about uncontrollability and danger of worry	RF
Mann-Whitney U	86.000	81.500	41.000
Wilcoxon W	206.000	159.500	119.000
Z	-.200	-.417	-2.455
Asymp. Sig. (2-tailed)	.841	.677	<b>.014*</b>

Table 14: Mann-Whitney U Test MCQ-30 subscales and RF (Inpatient vs Outpatient)

## 5 Discussion

### 5.1 Findings

This study aimed to explore the effects of early trauma on metacognitive functioning and reflective functioning in psychosis. Despite a number of limitations (see 5.2) a few first results were found.

#### 5.1.1 Trauma exposure in sample

The assessment of trauma history resulted in 12 (44%) participants with no trauma history and 15 (55.6%) with trauma history. Only 6 (22.2%) patients in the research sample reported an early trauma history compared with previous studies stating prevalence rates of 85% of patients with schizophrenia who suffered childhood abuse or neglect (Cannon, Caspi, Moffitt, Harrington, Taylor, Murray *et al.*, 2002) and 78% of female schizophrenic out-patients who had experienced child sexual abuse (Holowka, King, Saheb, Pukall, & Brunet, 2003). This indicates that either the prevalence for early trauma particularly, was very low in the sample or patients have underreported the experience of childhood trauma (Read *et al.*, 2005).

A number of potential factors may have contributed to this. It is possible that people who have experienced early trauma were less likely to participate in the study due to avoidance of dealing with traumatic memories; heightened ongoing distress; and symptoms relating to their illness. Patients with psychosis in general may employ a 'sealing over' rather than an 'integrating' recovery style, which impacts negatively on service engagement and therapy (e.g. McGlashan, 1987; Tait *et al.*, 2004). Therefore, psychotic patients may be less willing to talk about potentially traumatic experiences in their past because they would rather forget about these memories.

Furthermore, there was a high incidence of adult trauma in the trauma group of this study. Most cases were cumulative trauma and some were in combination with early trauma. This suggests that the potential distress to ongoing trauma symptoms might be confounding the effects of underlying early trauma. Cumulative exposure to

traumatic events is believed to be associated with increasing the risk for psychosis by 'behavioural sensitisation' (van Winkel, Stefanis, & Myin-Germeys, 2008). Chronic exposure to stressful events may progressively increase behavioural and biological responses to subsequent trauma exposure. This means that individuals with psychosis have learned to 'over-respond' to stressful events, thus exacerbating symptomatology. This argument confirms the 'dose-response' relationship between the number of traumatic events and the severity of psychotic symptoms as proposed in previous research (Read *et al.*, 2005).

Moreover, adult trauma has been suggested to be a potential mediating factor in the relationship between childhood trauma and psychosis (Read *et al.*, 2005). However, research linking adult trauma with psychosis is often confounded by the fact that patients are given a PTSD diagnosis in the presence of recent traumatic events. For example, studies suggest that war veterans with PTSD have more psychotic symptoms, such as hallucinations and paranoia, than patients without PTSD do (e.g. Butler, Mueser, Sprock, & Braff, 1996; Sautter, Brailey, Uddo, Hamilton, Beard, & Borges, 1999). As discussed earlier in this study, there appears to be an overlap between the diagnostic constructs of psychosis and PTSD; and similarities between the content of positive, psychotic symptoms such as hallucinatory experiences and PTSD symptoms such as hallucinations seem apparent. Furthermore, it has been suggested that besides increased prevalence rates for childhood trauma, most psychiatric patients will have suffered sexual or physical assault as adults (Read *et al.*, 2005). This could be associated with increased vulnerability to victimisation and socio-economic problems related to chronic mental health problems.

An interesting finding of the trauma assessment was to learn that a large proportion of cumulative adult trauma was related to the individual becoming unwell and being hospitalised. This confirms the results of other studies suggesting that first onset of psychosis and hospitalisation can be traumatic for individuals (Shaner & Eth, 1998; Priebe, Bröker, & Gunkel, 1998), and emphasises the need for this fact to be recognised and accounted for in the treatment of patients with psychosis.

### **5.1.2 Effects of trauma on metacognitive beliefs and reflective functioning**

Despite the initial hypothesis for this study, no differentiating effects were found for early trauma in the sample recruited. Existing research evidence has emphasised the role of childhood trauma in the development of psychotic symptoms (e.g. Read *et al.*, 2005). This is believed to be associated with developmental abnormalities (Cannon *et al.*, 2002) leading to cognitive (e.g. Morrison, 2001) and biological (e.g. Read *et al.*, 2001) vulnerabilities linked with psychotic symptomatology. Therefore, there might be individual or longitudinal effects for the role of early trauma on metacognitive functioning in psychosis. However, due to methodological limitations, it is possible that these effects were not detected in the present study. The comparison of MCQ-30 and RF mean scores did indeed indicate slightly higher scores in the early trauma group. Nevertheless, these differences were too small to become statistically significant. A larger sample size is necessary to test whether this difference may become significant.

Moreover, the 'no early trauma' group consisted of participants without trauma history as well as participants with adult trauma. The comparison of early trauma with a group consisting of patients who have experienced adult trauma may have confounded any effects particularly related to the experience of early trauma. The level of dysfunctional metacognitive beliefs and low mentalising capacity may be similar in both the adult trauma group and in patients with early trauma history. It is further possible that a higher level of metacognitive functioning as well as a higher level of RF capacity in patients who did not report a trauma history may have confounded the mean score for the 'no early trauma' group as a whole.

An analysis of subgroups would have been useful. However, due to the small sample size this was not possible.

Due to the high incidence of adult trauma in the sample, it was decided to explore whether any effects between trauma in general (including both early and adult trauma) and no trauma might be detected.

A comparison of means showed higher scores for the total MCQ-30 score in the 'trauma group' as well as higher scores for all subscales, specifically for *negative beliefs about uncontrollability and danger of worry*, *cognitive confidence*, and *cognitive self-consciousness*. Furthermore, there was a higher mean score of RF in the 'trauma group' compared with the 'no trauma group'. The results of t-test and Mann-Whitney U test (for not normally distributed scales and RF score) showed that the higher mean scores in the 'trauma group' were significant for: the total MCQ-30 score; for *negative beliefs about uncontrollability and danger of worry* (which refer to beliefs regarding the necessity to control worry in order to function well as a person and the belief of worry as uncontrollable); and *cognitive confidence* (which refers to beliefs about the efficacy of a person's cognitive skills, including memory and attentional processing).

This result reflects the findings of Morrison & Wells' (2003) study when comparing metacognitive beliefs in patients with auditory hallucinations, persecutory beliefs, panic disorder, and non-patient controls. Patients with auditory hallucinations had higher scores across all subscales. However, patients with delusions scored lower on *negative beliefs about uncontrollability and danger of worry* than patients with panic disorder, indicating that this subscale might be related to anxiety-based worry. Scores on the *cognitive confidence* subscale were similar across the clinical groups and lower in the non-clinical group. Another study by Morrison *et al.* (2007) found high levels of *negative beliefs about uncontrollability and danger of worry* in patients with psychosis and patients at risk of developing psychosis compared to non-patient controls. Furthermore, the scores for *cognitive confidence* were the highest in the psychosis group.

The significant differences between groups in the current study indicate that traumatic experiences may be related to higher negative metacognitive beliefs as well as increased monitoring of cognitive skills in psychotic patients. There seems to be a specific role for worry and rumination in the trauma group which indicates similarities with anxiety based disorders. Cognitive models of PTSD (e.g. Ehlers and

Clark, 2000) are based on the anxiety component as a maintenance factor for ongoing PTSD. This includes negative appraisals of event and symptoms, as well as ongoing threat-monitoring. Furthermore, the role of metacognitive beliefs in the vulnerability to, and maintenance of, emotional disorders is based on the S-REF model (Wells & Matthews, 1994; 1996) which has initially been developed for the conceptualisation of Generalised Anxiety Disorder (GAD). Worry and rumination constitute the central component of the S-REF model.

High rates of anxiety disorders have been found in psychotic populations, including PTSD (Frame & Morrison, 2001) and social anxiety (Gumley *et al.*, 2004). Moreover, negative beliefs in PTSD have shown to be directly related to stress symptoms (Roussis & Wells, 2006). These results confirm similarities between trauma, psychosis and anxiety disorders.

It is unclear how trauma may lead to more dysfunctional metacognitive beliefs and the deployment of worry and rumination as cognitive strategies in an attempt to alleviate distress. Furthermore, it is debatable whether there is a simple causal link between trauma and a specific metacognitive style characterised by worry and rumination, including a bias of monitoring one's own cognitive skills. As discussed earlier, this association between trauma and dysfunctional metacognitive beliefs may be interactive with ongoing psychotic and trauma symptoms, and influenced by genetic and further environmental factors.

A Mann-Whitney U test showed no significant difference between groups with regard to the RF scores. Again, this does not mean necessarily, that there are no effects since the mean score of the 'trauma group' was obviously lower than the score of the 'no trauma group'. However, the sample size might have been too small to detect a significant difference between groups. This could be due to the fact that the RF measure used may have not been adequate for measuring the level of RF appropriately across participants. Moreover, the level of RF may have been confounded by variables such as in-patient status, current traumatic symptoms, medication, and levels of ongoing emotional distress. The RF score may have been further influenced by the fact that some patients had psychotherapy after trauma. It

has been suggested that psychotherapy can increase reflective functioning capacity in patients with Borderline Personality Disorder (Bateman & Fonagy, 2004; Levy et al., 2006). However, there is a lack of research investigating the effects of psychotherapy on reflective functioning in patients with psychosis.

### **5.1.3 Association between MCQ-30 and RF measures**

An association between the MCQ-30 score and the RF score was hypothesised, indicating overlap between both concepts as metacognitive processes. It was expected that patients with high MCQ-30 scores would show low RF scores, indicating generally dysfunctional metacognitive capacity (negative correlation).

However, the results showed a correlation between MCQ-30 scores and RF scores, suggesting a modest linear positive relationship between the two measures, in that high MCQ-30 scores are associated with high RF scores. Therefore, patients with high metacognitive dysfunctional beliefs generally appear to have a higher mentalising capacity. This result indicates construct-validity of the RF measure used in this form for the first time.

This finding suggests that both concepts are similar. However, it also draws attention to the fundamental differences between metacognitive dysfunctional beliefs and reflective functioning. As discussed earlier, the MCQ-30 is based on the S-REF model for emotional disorders (Wells & Matthews, 1994; 1996) which represents, first and foremost, a conceptualisation of the vulnerability to, and maintenance of, anxiety based disorders. The fundamental premise of the S-REF model refers to the activation of the cognitive-attentional syndrome (CAS), and therefore, the deployment of worry and rumination. In general, the S-REF model describes the self-focus of individuals, such as monitoring of cognitions: thinking about one's own thoughts. In contrast, reflective functioning refers to a more generic capacity, based on attachment and psychoanalytic theory as well as developmental psychology and emotion-regulation. It focuses on the interpersonal quality of thinking, including

one's own feelings, thoughts, intentions, and beliefs as well as that of others. This capacity is intrinsic to emotion-regulation and crucial to the formation of interpersonal relationships.

Furthermore, the results of the study suggest that RF may not be affected negatively by dysfunctional metacognitive beliefs. Reflective functioning might present a more independent construct from specific cognitive styles. Further, it may be associated with resilience and recovery from mental illness, due to its suggested protective function against adverse experiences such as traumatic events (e.g. Grienberger *et al.*, 2005).

These results may suggest that the higher a person's capacity to reflect on his/her own feelings and thoughts, the more likely he/she is to engage and become aware of dysfunctional metacognitive thinking styles. Dysfunctional metacognitive beliefs are not, per se, associated with emotional disorders, as they are also present in healthy individuals (Morrison & Wells, 2003; Roussis & Wells, 2006; Morrison *et al.*, 2007). This may suggest that the distress linked to dysfunctional metacognitions may also be related to the frequency in which they occur.

The association found in this study needs to be further explored in a larger sample combined with the comparison to clinical and non-clinical control groups. This would provide further data in order to assert whether this association is only applicable specifically to psychosis patients, or whether similar results can be found in other clinical groups.

#### **5.1.4 Effect of in-patient versus out-patient status on metacognitive beliefs and reflective functioning**

Due to the high prevalence of in-patients in the current sample (44%), a further grouping was created, in order to assess potential effects between "in-patient" and 'out-patient' status.

The comparison of means between both groups showed a slightly higher mean for MCQ-30 scores in the 'out-patient-group'. A t-test for equality of means resulted in significantly higher mean for *cognitive self-consciousness* in the 'out-patient-group'. No other significant differences were found for either the total MCQ-30 score or any other subscales. *Cognitive self-consciousness* refers to the degree to which a person focuses on his/her own thinking processes. The higher score in the 'out-patient-group' may suggest that those patients are cognitively higher functioning compared to in-patients and are, therefore, more able to monitor their thinking.

The means scores for RF between both groups showed a higher score for RF in the 'out-patient-group'. As a result, a Mann-Whitney U test was conducted which showed that the difference was significant: in that 'in-patients' had significantly lower RF scores than 'out-patients'. This indicates that RF functioning may be influenced by current distress or medication dosages of patients in hospital.

Some research evidence suggests that the experience of developing a psychotic illness or the process of hospitalisation can be experienced as a traumatic event, and the role of PTSD as secondary to the onset of the illness and hospitalisation has been explored (e.g. Priebe *et al.*, 1998). Corresponding to this, studies have shown that patients with psychosis often experience higher PTSD symptoms related to the onset of their illness (Shaner and Eth, 1989; McGorry, Chanan, McCarthy, Van Riel, McKenzie, & Singh, 1991).

Meyer, Taiminen, Vuori, Äijälä, & Helenius (1999) found that, generally, patients experienced psychotic symptoms as being more traumatic than involuntary hospitalisation. This further illustrates that the illness itself can be traumatic due to the impact it has on a person's quality of experiencing and on his/her quality of life in general. Evidence has indicated that patients' negative appraisal of potentially traumatic events and their maladaptive coping styles may mediate the traumatic impact of a first episode of psychosis. Patients with a 'sealing over' coping style (e.g.

McGlashan, 1987) may avoid thinking about their first episode of illness and suppress painful memories and thoughts related to that experience (Jackson, Knott, Skeate & Birchwood, 2004).

Consequently, the capacity of reflective functioning in in-patients might have been affected by a number of variables including current traumatic symptoms related to hospitalisation or onset of illness, medication dosages, potential affective disorders, negative appraisals, and maladaptive coping styles. Furthermore, in-patients' level of RF functioning may have been influenced by the individual's stage of engagement with treatment, the amount of support offered and the overall level of care in in-patient settings. In-patient care generally entails low levels of activity and lack of individual therapy to allow processing of the experiences, including the illness and hospitalisation. In attachment terms, onset of illness and admission to hospital may activate an individual's threat system which negatively affects metacognitive functioning and RF capacity. As a result, it would be interesting to re-assess participants' reflective functioning level once they have recovered and were able to live independently in the community.

The 'out-patients' showed significantly higher RF scores than the 'in-patients. This might be associated with the fact that 'out-patients' were generally higher functioning, and likely to be less medicated, combined with the likelihood of having received psychological therapy. The potential influence of psychotherapy on mentalising capacity as a means to increase RF has already been discussed.

### **5.1.5 Summary of findings**

There was a high prevalence for cumulative trauma including early and adult trauma and a combination of both in the sample of this study, confirming previous research findings (e.g. Mueser *et al.*, 2002; Read *et al.*, 2005).

No significant differences were found in relation to the effect of early trauma on metacognitive functioning and RF capacity in the sample. This might be due to the small sample size or the fact that the 'no early trauma group' consisted of patients with no trauma history and patients who had experienced adult trauma. This may have confounded potential effects of early trauma.

However, significant differences were found between 'trauma' and 'no trauma' for the overall MCQ-30 score and two subscales: *negative beliefs* and *cognitive confidence*. This result is consistent with other studies with psychotic patients (e.g. Morrison & Wells, 2003; Morrison *et al.*, 2007) and suggests a role of negative metacognitive beliefs and a bias to self-monitor cognitive skills in individuals with trauma history. There appears to be a specific role for worry and rumination in patients with psychosis who have experienced trauma which causes distress and negative emotions. These cognitive styles might be implicated in the maintenance of psychotic symptoms and in the vulnerability to relapse as they impede recovery and increase the likelihood of becoming unwell again.

No significant differences were found with regard to mentalisation capacity between 'trauma' and 'no trauma' groups. This might be related to confounding factors, such as including in-patients as well as out-patients, and the small sample size of the study.

A positive correlation between MCQ-30 and RF scores was found, indicating an association of both concepts and suggesting construct-validity of the RF measure. However, this result also confirms the fundamental differences between both concepts: MCQ-30 explores self-focused monitoring of cognitive style and RF score assesses an intersubjective quality of reflections, fundamental to interpersonal functioning and emotion-regulation.

The comparison of ‘in-patients’ versus ‘out-patients’ showed that ‘out-patients’ scored significantly higher on one of the subscales of the MCQ-30 (*cognitive self-consciousness*), which may be related to their functioning higher cognitively than ‘in-patients’. This would, therefore, make the ‘out-patients’ more able to monitor their own thinking. Increased self-monitoring and associated increased self-awareness might enable individuals to become more able to detect dysfunctional thinking styles.

Moreover, the results also showed that ‘in-patients’ had significantly lower RF scores than ‘out-patients’ which may be related to ongoing distress and medication. Also, out-patients are generally higher functioning than in-patients, cognitively as well as emotionally, which is implied in their ability to live independently. However, high RF has been associated with better therapy outcomes as well as increased resilience against adverse events.

In summary, no effects were found for early trauma in particular, but significant effects were found for the effects of trauma in general on metacognitive functioning in psychosis. Results indicate a specific role for worry and rumination in psychotic patients with trauma history. MCQ-30 and the RF measure used in this study appear to be associated. However, fundamental differences between the concepts are apparent. The in-patients’ RF score was significantly lower than the out-patients’ suggesting that in-patients’ ability to reflect on the emotions, thoughts and intentions of others as well as their own may be influenced by current symptomatology and other factors such as medication and hospitalisation.

## **5.2 Limitations of the study**

The study has many methodological problems, which suggests that the findings have to be considered with caution.

### **5.2.1 Small sample size**

To start with, the sample size of the study is very small. Twenty-seven patients were recruited, and larger studies are necessary to confirm the tentative links suggested here.

However, conducting research with patients suffering from a psychotic illness is highly challenging due to the emotional distress and poor engagement levels: factors which have been highlighted in previous research (Sainsbury Centre for Mental Health, 1998; Lecomte et al., 2008).

Despite the researcher's persistent efforts to recruit as many participants as possible, only about 53% of individuals identified by clinicians as potential participants for the study took part. Patients who had agreed to participate were prone to changing their minds, whilst mood problems and generally disorganised life-styles resulted in potential participants not attending meetings, or simply forgetting that a research meeting had been arranged.

### **5.2.2 Over-inclusiveness of sample**

Another important limitation of this study is the inclusion of patients with: diverse diagnoses; different stages of their illness (first onset or chronic presentation); at a wide range of ages (16 to 61 years); and from both in-patient and out-patient settings. This may indicate that the sample is distorted.

Moreover, participants were not randomly selected but selected by their clinicians. Only patients who were willing to participate voluntarily in a research study took part, whereas a large proportion of patients with psychotic illness in clinical settings were not accounted for in this study. It may be possible that patients with a trauma history are less likely to agree to participate in a research study due to emotions like shame or embarrassment linked with adverse childhood experiences.

All patients had a diagnosis of psychosis or bipolar disorder but no distinction was made in terms of ongoing symptomatology, such as auditory hallucinations or paranoia, or for distinct disorders such as schizophrenia or bipolar disorder. The

rationale for including different diagnoses such as paranoid schizophrenia, schizoaffective disorder, or bipolar disorder in the sample relates back to the argument made by Read *et al.* (2004) and others (Chapman & Chapman, 1980; Claridge, 1990) that psychotic experiences are placed on a continuum, between normal and psychotic experiences. Patients in clinical practice often present with symptoms of more than one diagnosis, including symptoms of depression and anxiety. Furthermore, in clinical reality it is often the case that once a diagnosis is given, it is seldom reviewed, despite the fact that patients' quality of experiences might change over time.

Furthermore, no differentiation was made between chronicity of illness: patients from a first-episode service were included, as were patients from rehabilitation wards who were unable to live on their own, and higher functioning out-patients. Some patients had been unwell for a number of years and some had a history of multiple hospitalisations. Recruiting patients from only one service would have made the recruitment process even more challenging, and might have resulted in a smaller sample size.

### **5.2.3 Confounding variables**

One of the core weaknesses of this study is that the presentation of participants may have been influenced by depression, anxiety, emotional distress, medication, and ongoing traumatic symptoms. Measures to control for those symptoms were not included as they did not relate to the original hypotheses.

The inclusion of both in-patients and out-patients may suggest that effects related to medication were not controlled for. Power, Elkins, Adlard, Curry, McGorry & Harrigan (1998) found that higher doses of anti-psychotic medication in in-patients when compared with out-patients.

Moreover, a first episode psychosis can present a distressing and traumatic event which has been linked to comorbid symptomatology, including anxiety, depression and PTSD symptoms; particularly intrusions and avoidance (Jackson et al., 2004). Current or ongoing trauma symptoms were not assessed as part of this study. Nevertheless, a number of research studies (Shaner and Eth, 1989; Shaw, McFarlane, & Bookless, 1997) emphasise the importance of assessing traumatic symptoms in psychotic patients as traumatic symptoms can exacerbate psychosis (see interactive model by Mueser *et al.*, 2002).

#### **5.2.4 Lack of clinical and non-clinical control groups**

An additional methodological weakness of the study is related to the lack of clinical and non-clinical control groups. In order to establish a clear link between trauma and metacognitive dysfunction in psychosis, the data related to trauma history and metacognitive functioning in a psychosis sample should be compared with the results from a matched clinical control group, which should ideally reflect the characteristics of the psychosis sample and a general population control group. If metacognitive dysfunction was higher in the psychosis group, it could be inferred that trauma may contribute and increase metacognitive dysfunctional processes, particularly in psychosis.

Other research studies have compared clinical and non-clinical groups of participants. Morrison & Wells (2003) found higher scores of metacognitive dysfunctional beliefs in auditory hallucinations, compared with other clinical groups and a non-clinical control group. However, panic disorder patients scored higher on one of the subscales of the Metacognitions-Questionnaire (Cartwright-Hatton & Wells, 1997) compared to the delusional clinical group, indicating that metacognitive dysfunctions are not generally linked with psychotic presentations, and that negative beliefs about worry and the danger of thoughts maybe more related to anxiety disorders than psychotic symptoms.

Another study investigating the relationship between trauma and beliefs about hearing voices (Andrew *et al.*, 2008) compared the results of psychiatric and non-psychiatric voices hearers. The results of the study showed that despite a high prevalence of trauma in both groups, the psychiatric group reported more current trauma symptoms sufficient for PTSD diagnosis, than the non-psychiatric group, which were found to be a significant predictor of negative beliefs about voices (malevolence). This suggests that negative beliefs about voices are associated with ongoing distress related to trauma symptoms rather than a trauma history, *per se*.

These considerations illustrate that, in order to be able to attribute significant findings of this study specifically to the effects of trauma in psychosis, it would be crucial to compare these findings with the data of group comparisons in clinical and non-clinical control groups.

### **5.2.5 Problems associated with assessment of trauma history**

A problem associated with the assessment of the trauma history may relate to the somewhat arbitrary definition of childhood trauma before the age of 16, which defines even events shortly before the 16<sup>th</sup> birthday as childhood trauma rather than adult trauma. This classification has been done in previous studies investigating the effects of childhood trauma (e.g. Kilcommons & Morrison, 2005). Nevertheless, the developmental impact of traumatic experiences might potentially be more significant in earlier childhood due to the rapid changes in developmental stages at a young age, and therefore, on the cognitive development and brain physiology (see Read *et al.*, 2001).

### **5.2.6 Problems associated with measures used in this study**

A number of methodological problems are associated with the measures used in this study.

*General problems associated with self-report measures of trauma*

Generally, a host of problems are linked with the assessment and measurement of childhood trauma, specifically childhood sexual and physical abuse (e.g. Briere, 2002; Fergusson, Horwood & Woodward, 2000). Due to the ethical implications of child abuse in particular, it is not possible to assess childhood trauma in a standardised and unbiased way. It has been suggested that there might be a high number of cases of underreporting childhood trauma retrospectively (Read *et al.*, 2005).

This may be associated with several factors, including autobiographical issues related to recall problems (as with non-traumatic memories) and active repression of traumatic memories as a means of self-protection. Moreover, the highly sensitive nature of the content of traumatic memories, may be a factor because the individual might not want to share the memories within the context of a research interview with a stranger, due to embarrassment or general avoidance of the trauma memory (Fergusson *et al.*, 2000).

The results of a longitudinal study into the stability of child abuse suggested poor stability and low reliability of retrospective reports of child abuse (Fergusson *et al.*, 2000).

Moreover, there have been problems associated with the validity of self-report information, particularly with psychotic patients (Read *et al.*, 2005) due to the nature of their illness, such as hallucinations and delusional beliefs. It has been suggested that psychotic patients may have problems with reality-testing. However, research evidence (Meyer *et al.*, 1996; Goodman, Thompson, & Weinfurt, 1999) shows that reports of psychiatric patients are in fact reliable.

*Trauma History Questionnaire*

A number of problems are associated with the Trauma History Questionnaire (THQ). Information of trauma history is gathered in a context-free way, that is, specific questions are asked about potential traumatic events, such as involvement in a road

traffic accident or witnessing someone dying, without any contextual information or ‘warming up’ of the individual’s ability to recall autobiographical memory.

Furthermore, the THQ identifies traumatic events that may classify as ‘A1’ (extreme traumatic experience) criterion as per DSM-IV (APA, 1994). There has been an ongoing discussion as to whether a criterion ‘A1’ event needs to be present in order to classify an event as traumatic. It is currently being debated whether criterion ‘A2’ (experience of extreme fear; hopelessness; or horror during the event) should be re-defined for the new DSM-V version, and whether PTSD presents a new category of anxiety disorders (see [www.dsm5.org](http://www.dsm5.org)).

Some patients had experienced a number of traumatic events listed by the THQ. However, they did not experience any distress during the event and had no long-term effects associated with the experience. Therefore, for all traumatic experiences identified by participants, it had to be established whether the distress related to these was still ongoing. In terms of early trauma, only four questions out of 24 asked specifically about sexual and physical assault, which may not have given the participant enough opportunity to answer the questions with consideration. In retrospect, the THQ may not have represented the best assessment tool in order to specifically detect early trauma history in patients.

*Metacognitions Questionnaire (MCQ-30):*

A limitation for the use of the MCQ-30 is that it has been developed on the basis of the S-REF model (Wells & Matthews, 1994; 1996), which originally represents a conceptualisation for anxiety disorder. However, the model has lent its theoretical basis to cognitive conceptualisations of emotional disorders, including psychosis (Morrison, 2001). Despite this, the MCQ-30 might not detect a specific metacognitive profile in psychosis, as psychotic patients do not score higher on all the subscales of the MCQ-30 when compared to other clinical groups. As discussed earlier, research evidence suggests higher metacognitive dysfunction in panic disorder than in psychotic patients with persecutory beliefs (Morrison & Wells, 2003), which indicates that the subscales identified by the MCQ-30 may not

adequately reflect the content of dysfunctional metacognitive beliefs specifically related to psychotic presentations.

Furthermore, the MCQ-30 does not assess the frequency of thoughts and beliefs and measures only whether the individual agrees with them. This might indicate that thoughts and beliefs are assessed as dysfunctional when in fact they might represent a positive coping strategy. Positive beliefs about worry, for example, might occur only occasionally and be associated with problem-solving in healthy individuals.

However, the rationale for choosing the MCQ-30 as assessment tool for metacognitive beliefs is that it had been used in other studies within a psychotic population (Morrison & Wells, 2003; Morrison *et al.*, 2007) as well as PTSD (Roussis & Wells, 2006).

#### *Measure of reflective functioning*

This study pilots a measure of reflective functioning which has not been used in this form before. Although the coding frame of reflective functioning (Fonagy *et al.*, 1998) has been applied to therapy narrative in previous studies, irrespective of a complete Adult Attachment Interview (AAI) (George *et al.*, 1985) (see Karlsson & Kermott, 2006; D'Angelo, 2007), this is the first time that reflective functioning has been assessed by the coding of narrative of only two demand questions from the Adult Attachment Interview.

There is no information about the validity and reliability of this measure. However, construct-validity is suggested by the correlation between MCQ-30 and RF scores.

Extracting two questions from the AAI may be associated with a number of difficulties: the length of a full AAI provides a context for preparing individuals to reflect on their experiences. This is difficult to facilitate by asking only two questions out-with context. Some of the transcripts used in this study were difficult to code (-1, which refers to negative RF) due to being very short and participants seemed unable to reflect on answers. This related mostly to in-patients, which may suggest reduced RF due to cognitive slowness as a result of medication, severity of symptoms

(psychosis or current trauma), or general current distress. These problems may further be associated to the questions being placed out-with a context.

A further problem associated with the RF scale is that it represents a categorical scale which only assesses high or low RF. Meehan *et al.* (2009) have suggested the clinical utility of a continuous scale in order to capture the different dimensions of RF (Reflective Function Rating Scale, RFRS). However, its clinical utility remains to be further evaluated.

### **5.2.7 Relationship between anxiety and psychosis**

In addition, the findings of this research study might be further influenced by the relationship between anxiety and psychosis. Research studies have found evidence of high rates of anxiety disorders in patients with psychosis, including PTSD and social anxiety (Frame & Morrison, 2001; Gumley *et al.*, 2004). As mentioned earlier, the S-REF model (Wells & Matthews, 1994; 1996), which provides the theoretical basis for the MCQ-30, represents originally a conceptualisation for anxiety disorders and is characterised by the role of worry and rumination. It is therefore possible that the metacognitive profile detected in this sample may be more associated with underlying anxiety disorders rather than be specifically related to psychosis.

## **5.3 Clinical utility and future research**

### **5.3.1 Clinical utility**

Despite the fact that the small sample size of this study reduces the statistical validity of the findings, the results have clinical validity as they include patients who present to mental health professionals in their clinical day-to-day practice.

Moreover, this is the first time a study has explored the effects of trauma on metacognitive functioning and RF in psychosis. The results suggest a higher level of

dysfunctional metacognitive beliefs in psychosis patients with trauma history, and a lower level of RF in in-patients compared with patients in the community.

The high prevalence of trauma in the sample confirms previous research (e.g. Mueser *et al.*, 2002) and emphasises the importance of routinely assessing trauma history and symptoms in psychosis patients, in order to tailor treatment accordingly. Due to the overlap of symptoms between psychosis and PTSD (Morrison *et al.*, 2003), current distress related to ongoing PTSD symptoms may often not be recognised in patients with a psychotic illness. This, again, illustrates the importance of monitoring potentially ongoing PTSD symptoms in psychosis.

The study showed no significant effect for early trauma on metacognitive functioning and RF. However, a bigger sample size might be able to detect any hypothesised, underlying effects.

Moreover, the findings of this study suggest higher prevalence of negative beliefs regarding worry and cognitive self-monitoring in the trauma group. Evidence for high levels of *negative beliefs about the danger and uncontrollability of worry* as well as *cognitive confidence*, irrespective of a trauma history, has been found in other studies (e.g. Morrison & Wells, 2003; Morrison *et al.*, 2007).

For clinical practice, this indicates that strategies for psychological treatment might benefit from a focus on reducing the distress associated with worry or rumination. Wells (2008) suggests the application of the Attention Training Technique, ATT (Wells, 2000), for the treatment of patients with auditory hallucinations in order to disengage from the cognitive-attentional syndrome (CAS), develop more adaptive beliefs about the nature of voices, and, therefore, reduce associated distress. However, this technique does not appear to be very different to techniques used in the treatment of anxiety disorders and its clinical utility in the treatment of specific psychotic symptoms remains to be further evaluated.

Furthermore, it might be clinically beneficial to assess and formulate the stage of the patients' cyclical behaviour, that is, where the patient gets 'stuck', concerning worry and rumination, and utilise techniques to develop adaptive responses to the distress resulting from the activation of underlying negative metacognitive beliefs. However, these techniques might be more appropriate when working with patients who have recovered in order to ensure resilience and future well-being, rather than actively unwell patients in in-patient wards.

This study represents a pilot for the applicability of the RF measure used in this study. Access to adequate measures of RF in clinical practice is limited and more research should be done in order to develop briefer measures of RF, making the assessment of the mentalising capacity more easily accessible for clinicians. Higher RF is associated with higher interpersonal functioning since RF not only concerns reflections on one's own thoughts, feelings, and behaviour, but also that of others. The results of this study suggest that RF may be affected by a number of factors, including ongoing distress or medication. However, high RF has been associated with better treatment outcome, better resilience to relapse and subsequent traumatic events due to more effective affect-regulation. As a result, psychological interventions with psychosis patients should aim to increase the individual's mentalising capacity. Suggestions regarding how this could be therapeutically achieved have already been made for the treatment of borderline personality disorder (Bateman & Fonagy, 2004; Levy *et al.*, 2008).

The positive correlation between MCQ-30 score and RF found in this study indicates that these constructs are different, despite similarities. High RF does not appear to be an indicator for fewer metacognitive dysfunctional beliefs, which means that both aspects need to be addressed separately in therapy to ensure a best possible therapy outcome.

Moreover, the findings of this study suggest that in-patients have lower RF than out-patients. A high number of patients within the 'trauma group' of the sample reported that the onset of the illness and hospitalisation had been traumatic for them, indicating high levels of distress and other symptoms in in-patients. This again emphasises the importance of adequately assessing trauma symptoms in psychotic patients and offering appropriate therapeutic techniques to facilitate coping.

Clinicians working with patients with severe mental illness often feel unequipped to ask patients about trauma history. During one of the presentations the researcher gave to clinicians in order to recruit participants, it became apparent that clinicians felt that they did not want to talk about trauma with patients for fear that patients might disclose traumatic events. The clinicians felt that they would be unable to deal with this due to lack of training, as well as a lack of appropriate services for onward referral. Some clinicians even felt reluctant to refer patients to the research study for fear of trauma disclosure and the attached feelings of being unable to manage this clinically in the most appropriate way.

In summary, it is important to increase awareness about the effects of trauma in psychosis. Moreover, it seems important to assess and treat symptoms of trauma routinely and to focus on developing adaptive responses to distress related to negative metacognitive beliefs. The development of increased RF ability within a therapeutic setting might facilitate better treatment outcome, higher resilience, and higher probability for patients to stay well.

Over and above this, the reluctance of some clinicians to even talk about potential trauma with patients suggests that it might be beneficial to devise specific training packages for clinicians in order to increase their confidence to manage trauma disclosures clinically. This would ensure that patients are offered the best care possible.

### 5.3.2 Future research

An association between trauma and higher levels of metacognitive dysfunctions can be inferred from the findings of this study. This emphasises the need for research into the effects of trauma, especially in psychotic patients. Despite the challenges related to recruiting patients with psychosis for research, there is a need to conduct research with patients who have a psychotic illness, in order to gain a better understanding of the mechanisms involved in the development and maintenance of these experiences. The result of such studies hopefully would be the development of more effective therapeutic interventions to alleviate patients' distress.

A vast body of research literature (see Morrison *et al.* 2003; Read *et al.*, 2005) suggests a role for childhood trauma in the vulnerability to psychotic illness due to the developmental disruption caused by traumatic experiences in childhood. Despite the fact that no significant effects could be found for early trauma in this study, future research should aim to further explore the potential mechanisms involved in this relationship.

Following from the findings of this study, future research studies should aim to explore the effects of trauma on metacognitive functioning and RF in bigger sample sizes. It would be interesting to investigate differences in effects between in-patient and out-patient services separately, and then to compare the findings between groups. Furthermore, it would be valuable to explore the role of trauma on metacognitive functioning and RF in different subgroups, such as early versus adult trauma, cumulative versus single trauma, and the effects in regards to chronicity (first onset versus long-term psychotic illness).

The use of clinical and non-clinical control groups would deliver information with regard to the role of trauma on metacognition, and whether it is solely related to psychosis, or whether it can be found in other clinical populations as well.

A number of different measures might be selected for future research to account for the limitations of the current study, including: alternative trauma assessment; additional measures for metacognitive functioning; assessment of current trauma and psychotic symptoms; and measures of affect and considerations regarding the measure for reflective functioning.

#### *Trauma assessment*

The Childhood Trauma Questionnaire (CTQ, Bernstein, Fink, Handelsman, Foote, Lovejoy, Wenzel *et al.*, 1996) may be appropriate for the assessment of early trauma in particular, and has been used in other studies for the assessment of trauma history (e.g. D'Angelo, 2007). The CTQ specifically assesses the occurrence of neglect, and physical and sexual abuse in childhood.

#### *Assessment of metacognitive functioning*

The current study used only one measure in order to assess metacognitive functioning which may restrict the aspects of metacognition that can be assessed. As previously discussed, metacognition is a multi-faceted concept but the MCQ-30 assesses only one aspect, that is, dysfunctional metacognitive beliefs.

Another study investigating the relationship between different components of metacognition and psychotic-like experiences (Reeder *et al.*, 2010) selected two further measures to assess beliefs about one's own cognitive skills. These measures include the Metacognitive Awareness Questionnaire (MAI; Schraw & Dennison, 1994) to assess an individual's perception of his/her own cognitive skills, and the General Question Task (GQT; Koriat, Lichtenstein, & Fischhoff, 1980) which assesses an individual's cognitive confidence in his/her own performance.

A more thorough assessment of the metacognitive profile may help to determine whether other metacognitive abilities are affected by trauma, rather than focusing solely on dysfunctional beliefs

*Assessment of trauma symptoms*

A number of measures might be appropriate to assess traumatic symptoms. For example, the Posttraumatic Diagnostic Scale (PDS; Foa, 1995) and the Impact of Events Scale-Revised (IES-R, Weiss & Marmar, 1997) represent self-report measures that assess symptoms in line with the main components for PTSD as listed in DSM-IV (APA, 1994). The PDS can not be used in isolation for a diagnosis of PTSD. However, it covers all main forms of traumatic life events, and has proven to be useful in supporting a diagnosis of PTSD. The IES-R on the other hand, assesses the three clusters of symptoms required for a diagnosis of PTSD (intrusion, avoidance and hyperarousal) as per DSM-IV (APA, 1994).

*Assessment of psychotic symptoms*

In order to assess current psychotic symptoms, the Positive and Negative Scales of the Positive and Negative Symptom Scale (PANSS, Kay, Fidzbein & Opler, 1987) facilitate the assessment of severity and quality of psychotic symptoms, whereas the Psychotic Symptoms Rating Scale (PSYRATS, Haddock, McCarron, Tarrier & Faragher, 1999) assesses specific symptoms such as hallucinations and delusions, and has, additionally, been shown to be useful in the measurement of distress associated with the distress dimension of symptoms (Steel, Garety, Freeman, Craig, Kuipers, Bebbington *et al.*, 2007).

*Assessment of affective problems*

In order to assess affective disorders, such as anxiety or depression symptoms, the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) and the Beck Depression Inventory – II (BDI-II; Beck, Steer & Brown, 1996) could be included in a future study similar to previous research studies (for example Andrew *et al.*, 2008). Both self-report measures are commonly used in clinical practices to assess symptoms of anxiety and depression. The BAI measures the severity of anxiety symptoms, whereas the BDI-II assesses the affective, cognitive, motivational, psychomotor and vegetative symptoms of depression.

*RF measure*

This study also represents a preliminary exploration into the usability of a brief measure of RF. One of the problems associated with the RF measure was that the narrative of some patients was very short and difficult to code. This may be related to a lack of ‘warming up’ of patients before the questions were asked, especially for patients who are not used to talking within a therapeutic setting (e.g. in-patients with no experience of psychotherapy). Future research into the utility of this measure should include the design of a longer interview, including a number of questions that are not relevant for the coding. This would give participants the chance to open up and feel confident in the researcher’s presence to talk about personal information. Some of the participants in this study have not had any psychological therapy and may have felt too uncomfortable to speak freely in a therapeutic setting. This may have had an effect on their ability to elaborate on their answers to the open-ended questions.

In summary, despite some preliminary findings of the current study on the impact of trauma on metacognitive beliefs in psychosis, more research is needed to explore the role of trauma on metacognition in psychosis, particularly for early trauma. No effects were detected in regards to the impact of trauma on RF in psychosis. However, effects were found in terms of in-patient-out-patient status. More research is implicated to further explore the role of trauma on the level of RF in patients with psychosis, as well as at different stages of symptomatic acuteness.

## 6 Conclusions

This study represents a preliminary investigation into the role of early trauma on metacognitive beliefs and reflective functioning in psychosis. Despite a number of limitations a few interesting results were found.

Empirical evidence suggests an association between early trauma and psychosis (e.g. Morrison *et al.*, 2003; Read *et al.*, 2005; Krabbendam, 2008; Larkin & Read, 2008), but the potentially underlying mechanisms are still not clear.

Furthermore, evidence has been reported of higher levels of metacognitive beliefs in psychosis (Morrison & Wells, 2003; Morrison *et al.* 2007). Metacognitive models of psychosis conceptualise the vulnerability to, and maintenance of, psychotic symptoms similar to existing models on anxiety, wherein worry and rumination play a key role in the persistence of problems. Drawing from these areas of research, it was hypothesised that early trauma may be associated with high levels of metacognitive beliefs in psychotic patients due to its developmental impact. To date, no studies have explored these potential effects. Therefore, the first objective of this study was to explore levels of metacognitive beliefs in psychosis patients with and without early trauma history.

Exploratory analysis showed no effects between patients with early trauma and without early trauma experiences. However, long-term or individual effects may exist, but potential effects were not picked up due to the limitations of the current study, including a small sample size. Further research is implicated with bigger samples to investigate whether differential effects exist for early trauma.

Nevertheless, the findings of this study suggest a role for general trauma on metacognitive beliefs as patients with trauma history had significantly higher levels of dysfunctional metacognitive beliefs in regards to the overall MCQ-30 score as well as two subscales. The underlying mechanisms are unclear and may probably

represent an interaction of different factors, including cognitive, behavioural, environmental factors as well as available support. An association between early, developmental trauma and increased metacognitive dysfunctional beliefs in psychosis may exist, but was not detected in the current study.

Moreover, the capacity of RF has been linked with psychopathology and well-being. Low RF is believed to be associated with severe mental illness, such as borderline personality disorder (Fonagy *et al.*, 1996), whereas high RF has been linked with overall well-being and resilience to adverse life events (Fonagy *et al.*, 2004; Grienberger *et al.*, 2005; D'Angelo, 2007). Despite a marked interest into the investigation of RF within the context of borderline personality disorder and the concurrent development of treatment manuals (Bateman & Fonagy, 2004), the capacity of RF within psychosis is still under-researched.

As a result it was hypothesised that early trauma will lead to a lower level of RF in patients with psychosis. Therefore, the secondary objective of this study was to assess the level of RF in psychosis patients with and without early trauma history. A reduced attachment related interview was specifically developed to measure the level of RF in patients with psychosis. The current study represents a pilot into the applicability of a new, brief measure of RF.

The findings showed no effects for early trauma or general trauma in the sample of this study. However, more research with bigger sample sizes is implicated to investigate any potential effects that were not detected in the current study, due to its methodological limitations.

A modest, positive correlation was found between MCQ-30 and RF measures which indicated construct-validity of this newly developed RF measure, and suggests conceptual overlaps between metacognition and reflective functioning. However, the positive correlation also demonstrates the differences between both concepts as a high MCQ-30 (high level of metacognitive dysfunctional beliefs) is associated with

high RF (infers higher functioning, mental well-being and resilience). Reflective functioning presents a more generic concept than the scores on the MCQ-30, which is fundamentally based on models of anxiety, and the role of worry and ruminations for the maintenance of problems. This reduces the applicability of the metacognitive model in psychosis as other emotions might be implicated in the psychotic symptomatology, including shame, guilt, and loss (health, work, social network, independence), which are not accounted for in the metacognitive conceptualisation of psychotic symptoms.

A comparison of in-patients and out-patients in the sample showed a higher level of metacognitive dysfunctional beliefs in the out-patient group, despite the fact that they were generally better functioning and living independently. A significantly higher score in the out-patient group was found for one of the subscales of the MCQ-30, *cognitive self-consciousness*. This may indicate that metacognitive dysfunctions might be related to higher metacognitive awareness, which was not assessed as part of the study. The finding also suggests a higher level of cognitive self-monitoring in out-patients, a capacity which appears reduced in in-patients. The findings further indicate that high RF is associated with higher general functioning which is not equivalent to lower metacognitive dysfunctions. On the contrary, higher levels of dysfunctional metacognitive beliefs were found.

Moreover, level for RF was significantly lower in in-patients, which may be related to ongoing distress; current symptomatology (trauma or psychosis); medication; and attachment-based difficulties (e.g. activation of threat system undermines RF and metacognition). Further research is implicated to clarify these effects.

The findings of this study highlight a role for addressing dysfunctional metacognitive beliefs in patients with psychosis therapeutically, in order to support the development of more adaptive responses to the symptoms they are experiencing, and therefore, disrupting the maintenance cycle. This confirms previous research results (e.g. Morrison & Wells, 2003; Morrison *et al.*, 2007) and their implication for treatment of patients with psychosis (e.g. Wells, 2007).

The results of the current study also confirm the findings of previous studies, suggesting that high RF may be important for recovery and resilience. Moreover, it might be beneficial for acutely unwell patients with psychosis to be offered therapeutic interventions aimed at increasing RF capacity. This may refer to giving patients more therapeutic space to process some of their experiences appropriately, and to contain their distress therapeutically rather than medically. Higher level of RF capacity might be associated with more effective emotion-regulation (Fonagy *et al.*, 2004), thus enabling the individual to become able to self-regulate and cope better with negative experiences and emotions.

To conclude, the findings of this pilot study indicated core links between trauma and level of metacognitive functioning in psychosis. The results further highlight the impaired RF capacity in patients residing in hospital, which may be affected by a number of variables. However, increasing RF therapeutically may be linked with better recovery and better resilience in the long-term.

## 7 References

- Ainsworth, M.D.S., Blehar, M.C., Waters, E. & Wall, S. (1978). *Patterns of attachment: a psychological study of the Strange Situation*. Hillsdale, NJ: Lawrence Erlbaum.
- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. 4<sup>th</sup> ed. Washington, DC.
- Andrew, E.M., Gray, N.S. & Snowden, R.J. (2008). The relationship between trauma and beliefs about hearing voices: a study of psychiatric and non-psychiatric voice hearers. *Psychological Medicine*, 38, 1409-1417.
- Baer, R.A. (2003). Mindfulness training as clinical intervention: a conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10, 125-143.
- Bak, M, Krabbendam, L., Janssen, I., de Graaf, R., Vollebergh, W. & van Os, J. (2005). Early trauma may increase the risk for psychotic experiences by impacting on emotional response and perception of control. *Acta Psychiatrica Scandinavica*, 112, 360-366.
- Baker, C. & Morrison, A.P. (1998). Metacognition, intrusive thoughts and auditory hallucinations. *Psychological Medicine*, 28, 1199-1208.
- Barkus, E., Stirling, J., French, P., Morrison, A., Bentall, R. & Lewis, S. (2010). Distress and metacognition in psychosis prone individuals. *The Journal of Nervous and Mental Disease*, 198(2), 99-104.

Baron-Cohen, S. (1995). *Mindblindness: an essay on autism and Theory of Mind*. Cambridge, MA: MIT Press.

Barrett, T.R. & Etheridge, J.B. (1992). Verbal hallucinations in normals: people who hear "voices". *Applied Cognitive Psychology*, 6, 379-387.

Bateman, A.W. & Fonagy, P. (2008). Mentalization-based treatment for BPD. *Social Work in Mental Health*, 6(1/2), 187-201.

Bauer, P.J., Kroupina, M.G., Schwade, J.A. & Dropik, P.L., Wewerka, S.S. (1998). If memory serves, will language? Later verbal accessibility of early memories. *Development and Psychopathology*, 10, 655-679.

Bebbington, P.E., Bhugra, D., Brugha, T., Singleton, N., Farrell, M. & Jenkins, R. et al. (2004). Psychosis, victimisation and childhood disadvantage. *British Journal of Psychiatry*, 185, 220-226.

Beck, A.T., Epstein, N., Brown, G.K. & Steer, R.A. (1988). An inventory for measuring clinical anxiety: psychometric properties. *Journal of Consulting and Clinical Psychology*, 56, 893-897.

Beck, A.T., Rush, A.J., Shaw, B.F. & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.

Beck, A.T., Steer, R.A. & Brown, G.K. (1996). *Manual for Beck Depression Inventory –II*. San Antonio, TX: Psychological Corporation.

Bendall, S., Jackson, H.J., Hulbert, C.A. & McGorry, P.D. (2007). Childhood trauma and psychotic disorders: a systematic, critical review of the evidence. *Schizophrenia Bulletin*, 34(3), 568-579.

Bennett, H. & Wells, A. (2010). Metacognition, memory disorganization and rumination in posttraumatic stress symptoms. *Journal of Anxiety Disorders*, 24, 318-325.

Benning, T. (2007). The psychotic among us: The Emerging View of Psychosis and its Possible Implications for Stigma. *International Journal of Psychosocial Rehabilitation*, 12(1),

Benoit, D. & Parker, K. (1994). Stability and transmission of attachment across three generations. *Child Development*, 65, 1444-1456.

Bentall, R.P., Corcoran, R., Howard, R., Blackwood, N. & Kinderman, P. (2001). Persecutory delusions: a review and theoretical integration. *Clinical Psychology Review*, 21, 1143-1192.

Bentall, R.P. & Fernyhough, C. (2008). Social predictors of psychotic experience: Specificity and psychological mechanisms. *Schizophrenia Bulletin*, 34(6), 1012-1020.

Bernstein, D.P., Fink, L., Handelsman, L., Foote, J., Lovejoy, M. & Wenzel, K. et al. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *The American Journal of Psychiatry*, 151(8), 1132-1136.

- Bifulco, A., Brown, G.W. & Adler, Z. (1991). Early sexual abuse and clinical depression in adult life. *British Journal of Psychiatry*, 159, 115-122.
- Birchwood, M. (2003). Pathways to emotional dysfunction in first-episode psychosis. *British Journal of Psychiatry*, 182, 373-375.
- Bowlby, J. (1969). *Attachment and Loss, Vol.1. Attachment*. London: Hogarth Press and the Institute of Psycho-analysis.
- Bowlby, J. (1973). *Attachment and Loss. Vol.2. Separation: Anxiety and Anger*. London: Hogarth Press and the Institute of Psycho-analysis.
- Bowlby, J. (1980). *Attachment and Loss, Vol.3. Loss: Sadness and Depression*. London: Hogarth Press and the Institute of Psycho-analysis.
- Bremner, J.D. (1999). Does stress damage the brain? *Biological Psychiatry*, 45, 797-805.
- Briere, J. (1992). Methodological issues in the study of sexual abuse effects. *Journal of Consulting and Clinical Psychology*, 60, 196-203.
- Browne, A. & Finkelhor, D. (1986). Impact of child sexual abuse: a review of the research. *Psychological Bulletin*, 99(1), 66-77.
- Butler, R., Mueser, K., Sprock, J. & Braff, D. (1996). Positive symptoms of psychosis in posttraumatic stress disorder. *Biological Psychiatry*, 39, 839-844.

Cannon, M., Caspi, A., Moffitt, T., Harrington, H., Taylor, A. & Murray, M. et al. (2002). Evidence for early-childhood, pan-developmental impairment specific to schizophreniform disorder. *Archives of General Psychiatry*, 59, 449-456.

Cannon, M. & Clarke, M.C. (2005). Risk for schizophrenia: broadening the concepts, pushing back the boundaries. *Schizophrenia Research*, 79, 5-13.

Cartwright-Hatton, S. & Wells, A. (1997). Beliefs about worry and intrusions: The meta-cognitions questionnaire and its correlates. *Journal of Anxiety Disorders*, 11(3), 279-296.

Castel, A.D. (2008). Metacognition and learning about primacy and recency effects in free recall: the utilization of intrinsic and extrinsic cues when making judgments of learning. *Memory & Cognition*. 36(2), 429-37

Chapman, L.J. & Chapman, J.P. (1980). Scales for rating psychotic and psychotic-like experiences as continua. *Schizophrenia Bulletin*, 6, 477-487.

Choi-Kain, L.W. & Gunderson, J.G. (2008). Mentalization: ontogeny, assessment, and application in the treatment of Borderline Personality Disorder. *American Journal of Psychiatry*, 165(9), 1127-1135.

Cicchetti, D. & Lynch, M. (1995). Failures in the expectable environment and their impact on individual development: the case of child maltreatment. In D. Cicchetti & D. Cohen (Eds.) *Developmental psychopathology: vol. 2. Risk, disorder, and adaptation* (pp.32-71). New York: Wiley.

Claridge, G.S. (1990). Can a disease model of schizophrenia survive? In R.P. Bentall (Ed.) *Reconstructing schizophrenia* (pp.157-183). London, UK: Routledge.

Clark, D.M. & Wells, A. (1995). A cognitive model of social phobia. In R.G. Heimberg, M.R. Liebowitz, D.A. Hope, & F.R. Schneider (Eds.) *Social phobia: diagnosis, assessment and treatment* (pp.69-93). New York: Guilford Press.

Clarkin, J.F., Yeomans, F. & Kernberg, O.F. (1999). *Psychotherapy of borderline personality: focusing on object relations*. New York: Wiley.

Crittenden, P.M. (1992). Treatment of anxious attachment in infancy and early childhood. *Developmental Psychopathology*, 4(4), 575-602.

D'Angelo, K.J (2007). *The role of reflective functioning as a protective factor in survivors of trauma*. Dissertation, Section B: The Sciences and Engineering, Long Island University: The Brooklyn Centre.

Ehlers, A. & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, 38, 319-345.

Eisenberg, N. (1998). Introduction. In W. Damon, & N. Eisenberg (Eds.) *Handbook of child psychology: vol.3. Social, emotional and personality development* (pp. 1-24). New York: Wiley.

Fergusson, D. M., Horwood, L. J. & Woodward, L. J. (2000). The stability of child abuse reports: a longitudinal study of the reporting behaviour of young adults. *Psychological Medicine*, 30(3), 529-544.

Fergusson, D., Horwood, L. & Lynskey, M. (1996). Childhood sexual abuse, and psychiatric disorder in young adulthood. *Journal of the American Academy for Child and Adolescent Psychiatry*, 35, 1365-1374.

Flavell, J.H. (1979). Metacognition and cognitive monitoring: a new area of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906-911.

Foa, E.B. (1995). *Posttraumatic Stress Diagnostic Scale*. Minneapolis, MN: National Computer Systems.

Fonagy, P. & Target, M. (1996). Playing with reality: Theory of mind and the normal development of psychic reality. *International Journal of Psychoanalysis*, 77, 217-223.

Fonagy, P., Gergely, G., Jurist, E.L. & Target, M. (2004). *Affect regulation, mentalization, and the development of the self*. London: Karnac.

Fonagy, P., Leigh, T., Steele, M., Steele, H., Kennedy, R. & Mattoon, G. et al. (1996). The relation of attachment status, psychiatric classification, and response to psychotherapy. *Journal of Consulting & Clinical Psychology*, 64, 22-31.

Fonagy, P., Steele, M. & Steele, H. (1991). Maternal representations of attachment during pregnancy predict the organisation of infant - mother attachment at one year of age. *Child Development*, 62, 891-905.

Fonagy, P., Steele, M., Steele, H., Leigh, T., Kennedy, R. & Mattoon, G., et al. (1995). Attachment, the reflective self, and borderline states: the predictive specificity of the Adult Attachment Interview and pathological emotional

development. In S. Goldberg, R. Muir, & J. Kerr (Eds.) *Attachment theory: social, developmental and clinical perspectives* (pp.112-279). Hillsdale, NJ: Analytic Press.

Fonagy, P., Target, M. & Gergely, G. (2000). Attachment and Borderline Personality Disorder: a theory and some evidence. *Psychiatric Clinics of North America*, 23(103), 122

Fonagy, P., Target, M., Steele, H. & Steele, M. (1998). *Reflective Functioning Manual, Version 5.0, for Application to Adult Attachment Interviews*. London: University College London.

Frame, L. & Morrison, A.P. (2001). Causes of posttraumatic stress disorder in psychotic patients. *Archives of General Psychiatry*, 58, 305-306.

Frith, C.D. (1992). *The cognitive neuropsychology of schizophrenia*. Hove, UK: Lawrence Erlbaum and Associates Ltd.

Garety, P.A., Bebbington, P., Fowler, D., Freeman, D. & Kuipers, E. (2007). Implications for neurobiological research of cognitive models in psychosis. *Psychological Medicine*, 37, 1377-1391.

George, C., Kaplan, N. & Main, M. (1985). *The Adult Attachment Interview*. Berkeley, CA: University of California at Berkeley, Department of Psychology. Unpublished manuscript.

Gergely, G. & Watson, J. (1996). The social feedback model of parental affect-mirroring. *International Journal of Psychoanalysis*, 77, 1181-1212.

Goodman, L., Thompson, K. & Weinfurt, K. (1999). Reliability of violent victimisation and PTSD among men and women with serious mental illness. *Journal of Traumatic Stress, 12*, 587-599.

Gracie, A., Freeman, D., Garety, P.A., Kuipers, E., Hardy, A., Ray, K., *et al.* (2007). The association between traumatic experience, paranoia and hallucinations: a test of the predictions of psychological models. *Acta Psychiatrica Scandinavica, 116*, 280-289.

Green, B.L. (1996). Trauma History Questionnaire. In B.H. Stamm (Ed.), *Measurement of stress, self-report trauma and adaptation* (pp.366-368). Luterville, MD: Sidran Press.

Grienenberger, J., Kelly, K. & Slade, A. (2005). Maternal reflective functioninh, mother-infant affective communication, and infant attachment: Exploring the link between mental states and observed caregiving behavior in the intergenerational transmission of attachment. *Attachment & Human Development, 7*(3), 299-311.

Gumley, A., O'Grady, M., Power, K. & Schwannauer, M. (2004). Negative beliefs about self and illness: a comparison of individuals with psychosis with or without comorbid social anxiety disorder. *Australian and New Zealand Journal of Psychiatry, 38*(11&12), 960-964.

Haddock, G., McCarron, J., Tarrier, N. & Faragher, E.B. (1999) (1999). Scales to measure dimensions of hallucinations and delusions: the psychotic symptom rating scales (PSYRATS). *Psychological Medicine, 29*, 879-889.

Hammersly, P., Anton, D., Todd, G., Bowen-Jones, K., Reilly, B. & Bentall, R. (2003). Childhood trauma and hallucinations in bipolar affective disorder: preliminary investigation. *British Journal of Psychiatry*, 182, 543-547.

Hardy, A., Fowler, D., Freeman, D., Smith, B., Steel, C., Evans, J., Garety, P., Kuipers, E., Bebbington, P. & Dunn, G. (2005). Trauma and hallucinatory experience in psychosis. *The Journal of Nervous and Mental Disease*, 193(8), 501-507.

Harvey, A.G. & Bryant, R.A. (1998). The effect of attempted thought suppression in acute stress disorder. *Behaviour Research and Therapy*, 36, 583-590.

Heim, C., Newport, D.J., Heit, S., Graham, Y.P., Wilcox, M. & Bonsall, R. et al. (2000). Pituitary-adrenal and autonomic responses to stress in women after sexual and physical abuse in childhood. *Journal of the American Medical Association*, 284, 592-597.

Hill, L.L., Levy, K.N., Meehan, K.B. & Reynoso, J.S. (2007). Reliability of a multidimensional measure for scoring reflective function. *Journal of the American Psychoanalytic Association*, 55, 309-313.

Holowka, D., King, S., Saheb, D., Pukall, M. & Brunet, A. (2003). Childhood abuse and dissociative symptoms in adult schizophrenia. *Schizophrenia Research*, 60, 87-90.

Jackson, C. (2000). *The trauma of early psychosis: Is PTSD a relevant concept for people recovering from a first episode of psychosis?* Unpublished conference proceedings. New York: 2<sup>nd</sup> International Early Psychosis Conference.

- Jackson, C., Knott, C., Skeate, A. & Birchwood, M. (2004). The trauma of first episode psychosis: the role of cognitive mediation. *Australian and New Zealand Journal of Psychiatry*, 38, 327-333.
- Janssen, I., Krabbendam, L., Bak, M., Hanssen, M., Vollebergh, W., de Graaf, R. & van Os, J. (2004). Childhood abuse as a risk factor for psychotic experiences. *Acta Psychiatrica Scandinavica*, 109, 38-45.
- Jones, E.E. (2000). *Therapeutic action. A guide to psychoanalytic therapy*. Northvale, NJ: Aronsson.
- Karlsson, R. (2004). Collusions as interactive resistances and possible stepping-stones out of impasses. *Psychoanalytic Psychology*, 21, 567-579.
- Karlsson, R. & Kermott, A. (2006). Reflective-functioning during the process in brief psychotherapies. *Psychotherapy: Theory, Research, Practice, Training*, 43(1), 65-84.
- Kay, S.R., Fiszbein, A. & Opler, L.A. (1987). The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bulletin*, 13, 261-276.
- Kendell, R.E. (1991). The major functional psychoses: are they independent entities or part of a continuum? Philosophical and conceptual issues underlying the debate. In A. Kerr & H. McClelland (Eds.) *Concepts of mental disorder: A continuing debate*. London, UK: Gaskell.

Kendell, R.E. & Brockington, I.F. (1980). The identification of disease entities and the relationship between schizophrenic and affective psychoses. *British Journal of Psychiatry*, 137, 324-331.

Kernberg, O.F. (1984). *Severe personality disorders: psychotherapeutic strategies*. New Haven, CT: Yale University Press.

Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M. & Nelson, C.B. (1995). Posttraumatic stress disorder in the national comorbidity survey. *Archives of General Psychiatry*, 52, 1048-1060.

Kilcommons, A.M. & Morrison, A.P. (2005). Relationships between trauma and psychosis: an exploration of cognitive and dissociative factors. *Acta Psychiatrica Scandinavica*, 112, 351-359.

Kiser, L.J., Heston, J., Millsap, P.A. & Pruitt, D.C. (1991). Physical and sexual abuse in childhood: relationship with post-traumatic stress disorder. *American Academy of Child and Adolescent Psychiatry*, 30(5), 776-783.

Koren D., Seidman L.J., Poyurovsky M., Goldsmith M., Viksman P., Zichel S. & Klein E. (2004). The neuropsychological basis of insight in first-episode schizophrenia: A pilot metacognitive study. *Schizophrenia Research*. 70(2-3), 195-202.

Koriat, A., Lichtenstein, S., & Fischhoff, B. (1980). Reasons for confidence. *Journal of Experimental Psychology: Human Learning and Memory*, 6, 107-118.

Koustaal, W. & Schacter, D. (1997). Intentional forgetting and voluntary thought suppression: two potential methods for coping with childhood trauma. In L.J. Dickstein, M.B. Riba & J.M. Oldham (Eds.) *American psychiatric review of psychiatry* (pp.79-121). Washington, DC: American Psychiatric Press.

Krabbendam, L. (2008). Childhood psychological trauma and psychosis. *Psychological Medicine*, 38, 1405-1408.

Langdon, R., Coltheart, M., Ward, P.B. & Catts, S.V. (2001). Mentalising, executive planning and disengagement in schizophrenia. *Cognitive Neuropsychiatry*, 6(2), 81-108.

Larkin, W. & Read, J. (2008). Childhood trauma and psychosis: Evidence, pathways, and implications. *Journal of Postgraduate Medicine*, 54(4), 287-293.

Lataster, T., van Os, J., Drukker, M., Henquet, C., Feron, F., Gunther, N., *et al.* (2006). Childhood victimisation and developmental expression of non-clinical delusional ideation and hallucinatory experiences. *Social Psychiatry and Psychiatric Epidemiology*, 41, 423-428.

Lecomte, T., Spidel, A., Leclerc, C., MacEwan, G.W., Greaves, C. & Bentall, R. (2008). Predictors and profiles of treatment non-adherence and engagement in services problems in early psychosis. *Schizophrenia Research*, 102, 295-302.

Levy, K.N., Meehan, K.B., Kelly, K.M., Reynoso, J.S., Weber, M. & Clarkin, J.F. *et al.* (2006). Change in attachment patterns and reflective function in a randomised control trial of Transference-Focused Psychotherapy for Borderline Personality Disorder. *Journal of Consulting & Clinical Psychology*, 74(6), 1027-1040.

Liem, J.H. & Boudewyn, A.C. (1999). Contextualising the effects of childhood sexual abuse on adult self- and social functioning: an attachment theory perspective. *Child Abuse & Neglect*, 23, 1141-1157.

Lis, A., Zennaro, A. & Mazzeschi, C. (2000). Application of the reflective self-function scale to the clinical interview for couples during pregnancy. *Psychological Reports*, 87, 901-918.

Lysaker, P.H., Beattie, N.L., Strasburger, A.M. & Davis, L.W. (2005). Reported history of child sexual abuse in schizophrenia: associations with heightened symptoms levels and poorer participation over four months in vocational rehabilitation. *Journal of Nervous and Mental Disease*, 193, 790-795.

Main, M. (1991). Metacognitive knowledge, metacognitive monitoring, and singular (coherent) versus multiple (incoherent) models of attachment: findings and directions for future research. In C.K. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.) *Attachment across the life cycle* (pp.127-159). London: Tavistock-Routledge.

May-Chahal, C. & Cawson, P. (2005). Measuring child maltreatment in the United Kingdom: a study of the prevalence of child abuse and neglect. *Child Abuse & Neglect*, 29, 969-984.

McGlashan, T.H. (1987). Recovery style from mental illness and long-term outcome. *Journal of Nervous and Mental Disease*, 175, 681-685.

McGorry, P.D., Chanan, A., McCarthy, E., Van Riel, R., McKenzie, D. & Singh, B.S. (1991). Post-traumatic stress disorder following recent onset psychosis. *Journal of Nervous and Mental Disease*, 179, 245-258.

- Meehan, K.B., Levy, K.B., Reynoso, J.S., Hill, L.L. & Clarkin, J.F. (2009). Measuring reflective function with a multidimensional rating scale: comparison with scoring reflective function on the AAI. *Journal of the American Psychoanalytic Association*, 57(1), 208-213.
- Mecalfe, J. & Shimamura, A.P. (1994). *Metacognition*. Cambridge, MA: MIT Press.
- Meyer, H., Taiminen, T., Vuori, T., Äijälä, A. & Helenius, H. (1999). Posttraumatic stress disorder symptoms related to psychosis and acute involuntary hospitalisation in schizophrenic and delusional patients. *Journal of Nervous and Mental Disease*, 187(6), 343-352.
- Meyer, I., Muenzenmaier, K., Cancienne, J. & Struening, E. (1996). Reliability and validity of a measure of sexual and physical abuse histories among women with serious mental illness. *Child Abuse & Neglect*, 2, 213-219.
- Morgan, C. & Fisher, H. (2007). Environmental factors in schizophrenia: Childhood trauma - a critical review. *Schizophrenia Bulletin*, 33(1), 3-10.
- Morrison, A.P. (2001). The interpretation of intrusions in psychosis: an integrative cognitive approach to hallucinations and delusions. *Behavioural and Cognitive Psychotherapy*, 29, 257-276.
- Morrison, A.P., Frame, L. & Larkin, W. (2003). Relationships between trauma and psychosis: A review and integration. *The British Journal of Clinical Psychology*, 42, 331-353.

Morrison, A.P., French, P. & Wells, A. (2007). Metacognitive beliefs across the continuum of psychosis: Comparisons between patients with psychotic disorders, patients at ultra-risk and non-patients. *Behaviour Research and Therapy*, *45*, 2241-2246.

Morrison, A.P., Haddock, G. & Tarrier, N. (1995). Intrusive thoughts and auditory hallucinations: a cognitive approach. *Behavioural and Cognitive Psychotherapy*, *23*, 265-280.

Morrison, A.P. & Peterson, T. (2003). Trauma, metacognition and predisposition to hallucinations in non-patients. *Behavioural and Cognitive Psychotherapy*, *31*, 235-246.

Morrison, A.P. & Wells, A. (2003). A comparison of metacognitions in patients with hallucinations, delusions, panic disorder, and non-patient controls. *Behaviour Research and Therapy*, *42*, 251-256.

Morrison, A.P. & Wells, A. (2007). Relationships between worry, psychotic experiences and emotional distress in patients with schizophrenia spectrum diagnoses and comparisons with anxious and non-patient groups. *Behaviour Research and Therapy*, *45*, 1593-1600.

Morrison, A.P., Wells, A. & Nothard, S. (2000). Cognitive factors in predisposition to auditory and visual hallucinations. *British Journal of Clinical Psychology*, *39*, 67-78.

Muenzenmaier, K., Castille, D. & Shelley, A. (2005). Comorbid PTSD and schizophrenia. *Psychiatric Annals*, *35*, 51-56.

Mueser, K.T., Goodman, L.B., Trumbetta, S.L., Rosenberg, S.D., Osher, F.C., Vidaver, R., *et al.* (1998). Trauma and posttraumatic stress disorder in severe mental illness. *Journal of Consulting and Clinical Psychology, 66*(3), 493-499.

Mueser, K.T., Salyers, M., Rosenberg, S.D., Ford, J.D., Fox, L. & Carty, P. (2001). Psychometric evaluation of trauma and posttraumatic stress disorder assessments in persons with severe mental illness. *Psychological Assessment, 13*, 110-117.

Mueser, K.T., Rosenberg, S.D., Goodman, L.A. & Trumbetta, S.L. (2002). Trauma, PTSD, and the course of severe mental illness: an interactive model. *Schizophrenia Research, 53*, 123-143.

Mullen, P., Martin, J., Anderson, J., Romans, S. & Herbison, G. (1993). Childhood sexual abuse and mental health in adult life. *British Journal of Psychiatry, 163*(721), 732

Müller, C., Kaufhold, J., Overbeck, G. & Grabhorn, R. (2006). The importance of reflective functioning to the diagnosis of the psychic structure. *Psychology and Psychotherapy: Theory, Research and Practice, 79*, 485-494.

Pansky, A.; Goldsmith, M.; Koriati, A. & Pearlman-Avinon, S. (2009). Memory accuracy in old age: Cognitive, metacognitive, and neurocognitive determinants. *European Journal of Cognitive Psychology. Vol.21*(2-3), 303-329.

Papageorgiou, C. & Wells, A. (2003). An empirical test of clinical metacognitive model of rumination and depression. *Cognitive Therapy & Research, 27*, 261-177.

Phillips, L.J., Francey, S.M., Edwards, J. & McMurray, N. (2007). Stress and psychosis: Towards the development of new models of investigation. *Clinical Psychology Review*, 27, 307-317.

Posey, T.B. & Losch, M.E. (1983). Auditory hallucinations of hearing voices in 375 normal subjects. *Imagination, Cognition and Personality*, 2, 99-113.

Power, P., Elkins K., Adlard, S., Curry, C., McGorry, P. & Harrigan, S. (1998). Analysis of the initial treatment phase in first-episode psychosis. *British Journal of Psychiatry Supplement*, 172(33), 71-76.

Priebe, S., Bröker, M. & Gunkel, S. (1998). Involuntary admission and post-traumatic stress disorder symptoms in schizophrenia patients. *Comprehensive Psychiatry*, 39, 220-224.

Read, J., Morrison, A.P. & Ross, C.A. (2005). Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica*, 112, 330-350.

Read, J., Perry, B.D., Moskowitz, A. & Connolly, J. (2001). The contribution of early traumatic events to schizophrenia in some patients: a traumagenic neurodevelopmental model. *Psychiatry*, 64(4), 319-345.

Read, J., Mosher, L.R. & Bentall, R.P. (2004). *Models of madness: psychological, social and biological approaches to schizophrenia*. Hove: East Sussex: Brunner-Routledge.

Reeder, C., Rexhepi-Johansson, T. & Wykes, T. (2010). Different components of metacognition and their relationship to psychotic-like experiences. *Behavioural and Cognitive Psychotherapy*, 38, 49-57.

Ross, C. (2005). *Schizophrenia: innovations in diagnosis and treatment*. New York: Haworth Press.

Roussis, P. & Wells, A. (2006). Post-traumatic stress symptoms: Tests of relationships with thought control strategies and beliefs as predicted by the metacognitive model. *Personality and Individual Differences*, 40, 111-122.

Rudden, M., Milrod, B., Target, M., Ackerman, S. & Graf, E. (2006). Reflective functioning in panic disorder patients: A pilot study. *Journal of the American Psychoanalytic Association*, 54(4), 1339-1343.

Sainsbury Centre for Mental Health (1998). *Keys to engagement: review of care for people with severe mental illness who are hard to engage with services*. London: Sainsbury Centre Publications.

Salmon, K. & Bryant, R.A. (2002). Posttraumatic stress disorder in children: The influence of developmental disorders. *Clinical Psychology Review*, 22, 163-188.

Sautter, F., Brailey, K., Uddo, M.M., Hamilton, M.F., Beard, M.G. & Borges, A.H. (1999). PTSD and comorbid psychotic disorder. *Journal of Traumatic Stress*, 12(1), 73-88.

- Scherer-Dickson, N. (2004). Current developments of metacognitive concepts and their clinical implications: mindfulness-based cognitive therapy for depression. *Counselling Psychology Quarterly*, 17(2), 223-234.
- Schraw, G., Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19, 460-475.
- Scott, J., Chant, D., Andrews, G., Martin, G. & McGrath, J. (2007). Association between trauma exposure and delusional experiences in a large community-based sample. *British Journal of Psychiatry*, 190, 339-343.
- Seedat, S., Stein, M., Oosthuizen, P., Emsley, R. & Stein, D. (2003). Linking PTSD and psychosis: a look at epidemiology, phenomenology, and treatment. *Journal of Nervous Mental Disease*, 191, 675-681.
- Segal, Z.V., Williams, J.M.G. & Teasdale, J.D. (2002). *Mindfulness-based cognitive therapy for depression: a new approach to preventing relapse*. New York: Guilford Press.
- Shaner, A., & Eth, S. (1989). Can schizophrenia cause post-traumatic stress disorder? *American Journal of Psychotherapy*, 43, 588-597.
- Shaw, K., McFarlane, A. & Bookless, C. (1997). The phenomenology of traumatic reactions to psychotic illness. *Journal of Nervous and Mental Disease*, 185, 434-441.
- Shevlin, M., Dorahy, M. & Adamson, G. (2007). Childhood traumas and hallucinations: an analysis of the National Comorbidity Survey. *Journal of Psychiatric Research*, 41, 222-228.

- Slade, A. (2005). Parental reflective functioning: An introduction. *Attachment & Human Development*, 7(3), 269-281.
- Spada, M.M., Mohiyeddini, C. & Wells, A. (2008). Measuring metacognitions associated with emotional distress: Factor structure and predictive validity of the metacognitions questionnaire 30. *Personality and Individual Differences*, 45, 238-242.
- Spataro, J., Mullen, P.E., Burgess, P.M., Wells, C.L. & Moss, S.A. (2004). Impact of child sexual abuse on mental health: prospective study in males and females. *British Journal of Psychiatry*, 184(416), 421
- Spauwen, J., Krabbendam, L., Lieb, R., Wittchen, H.U. & van Os, J. (2006). Impact of psychological trauma on the development of psychotic symptoms: relationship with psychosis proneness. *British Journal of Psychiatry*, 188, 527-533.
- Sprong, M., Schothorst, P., Vos, E., Hox, J. & van Engeland, H. (2007). Theory of mind in schizophrenia. *British Journal of Psychiatry*, 191, 5-13.
- Steel, C., Garety, P.A., Freeman, D., Craig, E., Kuipers, E. & Bebbington, P. et al. (2007). The multidimensional measurement of the positive symptoms of psychosis. *International Journal of Methods in Psychiatric Research*, 16(2), 88-96.
- Stein, N.L., Wade, E. & Liwag, M.D. (1997). A theoretical approach to understanding and remembering emotional events. In N. Stein, P.A. Ornstein, B. Tversky, & C.J. Brainerd (Eds.) *Memory for everyday and emotional events*. New Jersey: Lawrence Erlbaum and Associates.

Streeck-Fischer, A. & van der Kolk, B. (2000). Down will come baby, cradle and all: diagnostic and therapeutic implications of chronic trauma on child development. *Australian and New Zealand Journal of Psychiatry*, 34(6), 903-918.

Tait, L., Birchwood, M. & Trower, P. (2003). Predicting engagement with services for psychosis: insight, symptoms and recovery style. *British Journal of Psychiatry*, 182, 123-128.

Tait, L., Birchwood, M. & Trower, P. (2004). Adapting to the challenge of psychosis: personal resilience and the use of sealing-over (avoidant) coping strategies. *British Journal of Psychiatry*, 185, 410-415.

Tarrier, N. (2007). What's in the name? A commentary on Valmaggia et al.'s "Attention training with auditory hallucinations". *Cognitive and Behavioural Practice*, 14, 144-146.

Teasdale, J.D. & Barnard, P. (1993). *Affect, cognition and change: remodelling depressive thought*. Hove: Erlbaum.

Teicher, M.H., Andersen, S.L., Polcari, A., Anderson, C.M., Navalta, C.P. & Kim, D.M. (2003). The neurobiological consequences of early stress and childhood maltreatment. *Neuroscience and Biobehavioural Reviews*, 27, 33-44.

Valmaggia, L.R., Bouman, T.K. & Schuurman, L. (2007). Attention training with auditory hallucinations: a case study. *Cognitive and Behavioural Practice*, 14, 127-133.

van der Kolk, B.A. (2005). Developmental Trauma Disorder. *Psychiatric Annals*, 35(5), 401-408.

Van Os, J., Krabbendam, L., Myin-Germeys, I. & Delespaul, P. (2005). The schizophrenia envirome. *Current Opinion in Psychiatry*, 18, 141-145.

van Winkel, R., Stefanis, N.C. & Myin-Germeys, I. (2008). Psychosocial stress and psychosis: A review of the neurobiological mechanisms and the evidence for gene-stress interaction. *Schizophrenia Bulletin*, 20, 1-11.

Vasey, M. (1993). Development and cognition in childhood anxiety: the example of worry. *Advances in Clinical Child Psychology*, 15, 1-3.

Walker, E. & DiForio, D. (1997). Schizophrenia: A neural diathesis-stress model. *Psychological Review*, 104, 667-685.

Ward, A., Ramsay, R., Turnbull, S., Steele, M., Steele, H. & Treasure, J. (2001). Attachment in anorexia nervosa. *British Journal of Medical Psychology*, 74, 497-505.

Ward, M.J. & Carlson, E.A. (1995). The predictive validity of the adult attachment interview for adolescent mothers. *Child Development*, 66, 69-79.

Weiss, D.S. & Marmar, C.R. (1997). The Impact of Events Scale-Revised. In J. Wilson, T. Keane (Eds.) *Assessing Psychological Trauma and PTSD* (pp. 399-411). New York: Guilford.

- Wells, A. (2000). *Emotional disorders and metacognition: Innovative cognitive therapy*. Chichester, UK: Wiley.
- Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. New York: Guilford Press.
- Wells, A. (1995). Meta-cognition and worry: a cognitive model of generalised anxiety disorder. *Behavioural and Cognitive Psychotherapy*, 23(301), 320
- Wells, A. (1997). *Cognitive therapy of anxiety disorders: a practice manual and conceptual guide*. Chichester, UK: Wiley.
- Wells, A. (2005). Detached mindfulness in cognitive therapy: a metacognitive analysis and ten techniques. *Journal of Rational-Emotive & Cognitive-Behaviour Therapy*, 23(4), 337-355.
- Wells, A. (2007). The Attention Training Technique: theory, effects, and a metacognitive hypothesis on auditory hallucinations. *Cognitive and Behavioural Practice*, 14, 134-138.
- Wells, A. & Carter, K. (2001). Further tests of a cognitive model of Generalized Anxiety Disorder: Metacognitions and worry in GAD, panic disorder, social phobia, depression, and non-patients. *Behavior Therapy*, 32, 85-102.
- Wells, A. & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: properties of the MCQ-30. *Behaviour Research and Therapy*, 42, 385-396.

Wells, A. & Matthews, G. (1994). *Attention and emotion: A clinical perspective*. Hove, UK: Erlbaum.

Wells, A. & Matthews, G. (1996). Modelling cognition in emotional disorders: the S-REF model. *Behaviour Research and Therapy*, 34(11/12), 881-888.

Wells, A. & Papageorgiou, C. (1998). Relationships between worry, obsessive-compulsive symptoms and metacognitive beliefs. *Behaviour Research and Therapy*, 36, 899-913.

Whitfield, C., Dube, S., Felitti, V. & Anda, R. (2005). Adverse childhood experiences and hallucinations. *Child Abuse & Neglect*, 29, 797-810.

Winnicott, D.W. (1965). *Maturational processes and the facilitating environment*. New York: International Universities Press.

Winnicott, D.W. (1971). *Playing and reality*. London: Tavistock.

Zubin, J. & Spring, B. (1977). Vulnerability: A new view of schizophrenia. *Journal of Abnormal Psychology*, 86, 103-126.

Website:

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## Appendices

### Appendix I: Participant Information Sheet



## PARTICIPANT INFORMATION SHEET

Title of Project: The effects of early trauma on thoughts and beliefs

Name of Researcher: Nicole Scherer-Dickson

### **What is the study about?**

This study will explore the thoughts and beliefs people might have about the difficulties and problems they are experiencing. The way people think about their difficulties can be influenced by negative or traumatic events that may have happened in the past. This study will compare the way of thinking of people who have experienced a negative event in the past with those people who have not.

The secondary aim of this study will be to test a quicker tool for measuring reflective functioning which refers to a person's ability to recognise thoughts and feelings in other people and how this influences how people behave in social situations. This study will further explore how the level of reflective functioning is linked with past negative experiences and people's thoughts and beliefs about their difficulties.

The study has been reviewed by the South East Scotland Research Ethics Committee 3 (SESREC03) and the University of Edinburgh.

### **Do I have to take part?**

It is up to you whether or not to take part. If you decide to take part I will ask you to sign a consent form. This is to make sure that you know what you have agreed to. If you decide to take part you are still free to change your mind without giving a reason. The support you receive from your clinician will not be affected if you decide that you do not want to take part.

### **What do I have to do?**

If you decide to take part, your clinician will pass on your contact details to me and I will be in touch to arrange a convenient time and place for us to meet once. When we meet, I will first answer any questions and concerns that you may have. You can still decide not to go ahead with the research even during our meeting. I will then ask you to sign a consent form to partake in the study. During our meeting I will ask you a number of questions about negative experiences that you may have had in the past. Some of these questions might be very personal. I will ask you, for example, whether you have been attacked or burgled, or whether you have been involved in a serious accident, such as a road traffic accident. If you feel that you don't want to continue with the study, you are free to withdraw at any time.

I will also ask you to fill in a questionnaire with questions about the way you think. To finish, I will ask you two questions about your relationship with your parents or carer. Your answers will be audio recorded. The purpose of recording your answers is because one of the measures I will use relies on your exact words that you use in your answers. Your answers will be transcribed, any personal information will be taken out and the recording will be destroyed.

### **Confidentiality**

If you decide to take part in this study, your GP and your clinician will be informed that you are taking part. The interview questions and the questionnaire will be confidential and pseudonyms will be used to ensure anonymity.

**What will happen to the results of the research study?**

The results of this study will be within my doctoral thesis and a copy will be held within the University of Edinburgh library. A short summary of results will also be made available to your clinician who will be happy to share with you the findings if you were interested to find out more.

**Contact details:**

If you would like any further information, please contact: Nicole Scherer-Dickson, Early Psychosis Support Service, Child and Adolescent Mental Health Service, Royal Edinburgh Hospital, Tipperlinn Road, Edinburgh EH10 5HF, Telephone: 0131- 537 6364

Appendix II: Consent Form



**CONSENT FORM**

Title of Project: The effects of early trauma on thoughts and beliefs

Name of Researcher: Nicole Scherer-Dickson

Please  
initial  
box

- 1 I confirm that I have read and understand the Participant Information Sheet dated (26<sup>th</sup> November 2009, Version 3) for the above study and that I have had the opportunity to ask questions.
- 2 I understand that my participation is voluntary.
- 3 I understand that am free to withdraw from the study at any time, without giving a reason.
- 4 I understand that my participation has no effect on any treatment I may be receiving.
- 5 I understand that the information obtained from all measures that I complete as part of the research study will be anonymised.
- 6 I understand that part of the interview will be recorded solely for the purposes of the research study as described in the Participant Information Sheet (26<sup>th</sup> November 2009, Version 3). My answers will be transcribed and then the recording will be deleted.
- 7 I understand that my GP will be informed that I have consented to take part in the study.
- 8 I agree to take part in the above study.

\_\_\_\_\_  
Name of participant                      Date                      Signature



Appendix III: Trauma History Questionnaire

**TRAUMA HISTORY QUESTIONNAIRE (THQ)**

The following is a series of questions about serious or traumatic life events. These types of events actually occur with some regularity, although we would like to believe they are rare, and they affect how people feel about, react to, and/or think about things subsequently. Knowing about the occurrence of such events, and reactions to them, will help us to develop programs for prevention, education, and other services. The questionnaire is divided into questions covering crime experiences, general disaster and trauma questions, and questions about physical and sexual experiences.

For each event, please indicate (circle) whether it happened, and if it did, the number of times and your approximate age when it happened (give your best guess if you are not sure). Also note the nature of your relationship to the person involved, and the specific nature of the event, if appropriate.

**Crime-Related Events**

		<u>        If Yes        </u>	
		# of	Approx.
		Times	Age
1.	Has anyone ever tried to take something directly from you by using force or the threat of force, such as a stick-up or mugging?	No	Yes
		_____	_____

2. Has anyone ever attempted to rob you or actually robbed you (i.e. stolen your personal belongings)?
- No Yes \_\_\_\_\_
3. Has anyone ever attempted to or succeeded in breaking into your home when you weren't there?
- No Yes \_\_\_\_\_
4. Has anyone ever tried to or succeeded in breaking into your home while you were there?
- No Yes \_\_\_\_\_

**General Disaster and Trauma**

5. Have you ever had a serious accident at work, in a car or somewhere else?
- No Yes \_\_\_\_\_
- If yes, please specify
- \_\_\_\_\_
6. Have you ever experienced a natural disaster such as a tornado, hurricane, flood, major earthquake, etc., where you felt you or your loved ones were in danger of death or injury?
- No Yes \_\_\_\_\_
- If yes, please specify
- \_\_\_\_\_

7. Have you ever experienced a "man-made" disaster such as a train crash, building collapse, bank robbery, fire, etc., where you felt you or your loved ones were in danger of death or injury? No Yes \_\_\_\_\_  
If yes, please specify  
 \_\_\_\_\_
8. Have you ever been exposed to dangerous chemicals or radioactivity that might threaten your health? No Yes \_\_\_\_\_
9. Have you ever been in any other situation in which you were seriously injured? No Yes \_\_\_\_\_  
If yes, please specify  
 \_\_\_\_\_
10. Have you ever been in any other situation in which you feared you might be killed or seriously injured? No Yes \_\_\_\_\_  
If yes, please specify  
 \_\_\_\_\_
11. Have you ever seen someone seriously injured or killed? No Yes \_\_\_\_\_  
If yes, please specify who  
 \_\_\_\_\_

12. Have you ever seen dead bodies (other than at a funeral) or had to handle dead bodies for any reason? No Yes \_\_\_\_\_  
If yes, please specify  
 \_\_\_\_\_
13. Have you ever had a close friend or family member murdered, or killed by a drunk driver? No Yes \_\_\_\_\_  
If yes, please specify  
 relationship (e.g.mother, grandson,etc.)\_\_\_\_\_
14. Have you ever had a spouse, romantic partner, or child die? No Yes \_\_\_\_\_  
If yes, please specify  
 relationship\_\_\_\_\_
15. Have you ever had a serious or life-threatening illness? No Yes \_\_\_\_\_  
If yes, please specify  
 \_\_\_\_\_
16. Have you ever received news of a serious injury, life-threatening illness or unexpected death of someone close to you? No Yes \_\_\_\_\_  
If yes, please indicate  
 \_\_\_\_\_

17. Have you ever had to engage in combat while in military service in an official or unofficial war zone?  
 If yes, please indicate where.
- No Yes \_\_\_\_\_
- 

**Physical and Sexual Experiences**

- |     |  | <u>_____</u> If Yes |           |
|-----|--|---------------------|-----------|
|     |  | Was it              | Approx.   |
|     |  | repeated?           | how often |
|     |  |                     | & what    |
|     |  |                     | Age(s)    |
| 18. | Has anyone ever made you have intercourse, oral or anal sex against your will?<br><u>If yes</u> , please indicate nature of relationship with person (e.g. stranger, friend, relative, parent, sibling)_____                       | No                  | Yes _____ |
| 19. | Has anyone ever touched private parts of your body, or made you touch theirs, under force or threat?<br><u>If yes</u> , please indicate nature of relationship with person (e.g. stranger, friend, relative, parent, sibling)_____ | No                  | Yes _____ |

20. Other than incidents mentioned in Questions 18 and 19, have there been any other situations in which another person tried to force you to have unwanted sexual contact? No Yes \_\_\_\_\_
21. Has anyone, including family members or friends, ever attacked you with a gun, knife or some other weapon? No Yes \_\_\_\_\_
22. Has anyone, including family members or friends, ever attacked you without a weapon and seriously injured you? No Yes \_\_\_\_\_
- \_\_\_\_\_ If Yes  
# of Approx.  
Times Age
23. Has anyone in your family ever beaten, "spanked" or pushed you hard enough to cause injury? No Yes \_\_\_\_\_

**Other Events**

24. Have you experienced any other extraordinarily stressful situation or event that is not covered above? No Yes \_\_\_\_\_
- If yes, please specify.

\_\_\_\_\_

Appendix IV: Metacognitions Questionnaire 30 (MCQ-30)

METACOGNITIONS QUESTIONNAIRE 30 (MCQ-30)

*Adrian Wells and Samantha Cartwright-Hatton*

This questionnaire is concerned with beliefs people have about their thinking.

Listed below are a number of beliefs that people have expressed. Please read each item and say how much you *generally* agree with it by *circling* the appropriate number.

Please respond to all the items, there are no right or wrong answers.

Gender: \_\_\_\_\_ Age: \_\_\_\_\_

		Agree			
		Do not	Agree	Agree	very
		agree	slightly	moderately	much
1.	Worrying helps me to avoid problems in the future	1	2	3	4
2.	My worrying is dangerous for me.	1	2	3	4
3.	I think a lot about my thoughts.	1	2	3	4
4.	I could make myself sick with worrying.	1	2	3	4
5.	I am aware of the way my mind works when I am thinking through a problem.	1	2	3	4
6.	If I did not control a worrying thought, and then it happened, it would be my fault.	1	2	3	4
7.	I need to worry in order to remain organized.	1	2	3	4
8.	I have little confidence in my memory for words and names.	1	2	3	4
9.	My worrying thoughts persist, no matter how I try to stop them.	1	2	3	4
10.	Worrying helps me to get things sorted out in my mind.	1	2	3	4

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11. I cannot ignore my worrying thoughts.	1	2	3	4
12. I monitor my thoughts.	1	2	3	4
13. I should be in control of my thoughts all of the time.	1	2	3	4
14. My memory can mislead me at times.	1	2	3	4
15. My worrying could make me go mad.	1	2	3	4
16. I am constantly aware of my thinking.	1	2	3	4
17. I have a poor memory.	1	2	3	4
18. I pay close attention to the way my mind works.	1	2	3	4
19. Worrying helps me cope.	1	2	3	4
20. Not being able to control my thoughts is a sign of weakness.	1	2	3	4
21. When I start worrying, I cannot stop.	1	2	3	4
22. I will be punished for not controlling certain thoughts.	1	2	3	4
23. Worrying helps me to solve problems.	1	2	3	4
24. I have little confidence in my memory for places.	1	2	3	4
25. It is bad to think certain thoughts.	1	2	3	4
26. I do not trust my memory.	1	2	3	4
27. If I could not control my thoughts, I would not be able to function.	1	2	3	4
28. I need to worry in order to work well.	1	2	3	4
29. I have little confidence in my memory for actions.	1	2	3	4
30. I constantly examine my thoughts.	1	2	3	4

*Please ensure that you have responded to all items. Thank you.*

Appendix V: Demand Questions from AAI

**Demand Questions from AAI:**

1. Could you tell me to which parent (or carer) you felt the closest and why? (Why isn't there this feeling with the other parent?)

2. In general, how to do you think your overall experiences with your parents (carers) have affected your (adult) personality?

### D. Clin. Psychol. Declaration of own work

**Name:** Nicole Scherer-Dickson

**Assessed work:** Thesis

**Title of work:** The effects of early trauma on metacognitive functioning in psychosis

*I confirm that all this work is my own except where indicated, and that I have:*

- Read and understood the Plagiarism Rules and Regulations in the Programme Handbook
- Composed and undertaken the work myself
- Clearly referenced/listed all sources as appropriate
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