DOCTOR OF PHILOSOPHY

Experiential avoidance in paranoia

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Award date:
2012

Awarding institution:
Bangor University

[Link to publication](#)

Experiential avoidance in paranoia

by

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A dissertation submitted in partial fulfilment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

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School of Psychology

Bangor University

2012

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ABSTRACT

It is thought that experiential avoidance (EA), conceptualised as avoidance of unpleasant mental experiences, lies at the heart of psychopathology. The studies included into this thesis investigated the role of EA in the paranoid process using a range of methodologies (experience sampling, questionnaire and experimental) in patient and nonclinical populations. Part of this thesis explored the dynamic relationships between paranoia, self-esteem and EA using the Experience Sampling Method (ESM), a structured diary technique which allows the assessment of symptoms, mood and behaviour in the context of daily life. This thesis also examined the role of early experiences with parents in the paranoid process and explored developmental roots of EA. Finally, it examined the use of avoidant strategies in nonclinical and patient populations using both questionnaire and behavioural measures of EA.

The data collected suggest that paranoid individuals are highly intolerant of unpleasant mental states and habitually engage in attempts to avoid them. The results indicate that avoidance may be particularly successful in paranoid patients who believe that their persecution is underserved. There was some evidence that although avoidant strategies may be fruitful when cognitive demands are relatively low, their success is significantly compromised by the additional demands leaving paranoid individuals vulnerable to stress. Finally, the results of this thesis also indicate that the roots of EA can be traced to early experiences with parents and suggest that suboptimal parenting may foster EA and paranoid thinking later in life.

These results are compatible with the attributional model of paranoia which suggests that persecutory delusions arise a result of dysfunctional attempts to avoid unpleasant thoughts about the self. They highlight the dynamic nature of psychological processes involved in paranoia and suggest that psychological interventions targeting EA may alleviate paranoia.

ACKNOWLEDGEMENTS

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Chapter 1

Introduction

1.1 Paranoia and paranoid delusions

1.1.1. Evolution of paranoia concept

In the past decade the term *paranoia* has become almost interchangeable with paranoid delusions. However, this has not always been the case. The word *paranoia* (παράνοια) originates in ancient Greece and the Greek word *paranoos* means *mad* or *demented* (para= *beyond* and noos=*mind)*. Since its emergence, the definition of paranoia has undergone significant transformations (Manschreck, 2000; Munro, 1982).

In modern psychiatry the term *paranoia* was first introduced by a German psychiatrist Karl Ludwig Kahlbaum (1863) who used it to refer to a type of persistent delusional illness characterised primarily by cognitive deficits. Emil Kraepelin (Kraepelin, 1907/2007) later argued that the use of the term *paranoia* should be confined to an uncommon, insidious, chronic illness characterized by a fixed delusional system in the absence of hallucinations or a deterioration of personality. A variety of delusional beliefs came under this category, including persecutory, grandiose and jealous delusions (Kraepelin, 1907/2007; Manschreck, 2000). Eugen Bleuler (1911) broadened the definition to include cases with hallucinations, describing a paranoid form of dementia praecox (which he renamed using the modern term *schizophrenia*). Bleuler's contributions reinforced a trend toward the diagnosis of paranoid illness as a form of schizophrenia (Heckers, 2008). In contrast, the work of another German psychiatrist, Ernst Kretschmer (1927), emphasized that certain sensitive personalities characterized by depressive, pessimistic, and narcissistic traits developed paranoid features acutely following critical life events. He argued that these individuals did not develop schizophrenia and had a favourable prognosis.

A significant move towards our more recent understanding of paranoia occurred with the arrival of DSM-III (APA, 1980), according to which paranoia must involve a stable persecutory delusional system. This has signified a shift towards the definition of paranoia as a synonym for persecutory delusions. Both paranoid delusions and paranoid ideation feature in DSM-IV-TR (APA, 2000), although a deliberate distinction is made between the two forms of psychopathology. Persecutory delusions are defined as beliefs that the person is being

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tormented, followed, tricked, spied on, maliciously maligned, harassed, or ridiculed. There is also a *Paranoid Personality Disorder*, defined as a pattern of distrust and suspiciousness such that others' motives are usually interpreted as malevolent. The Schedules for Clinical Assessment in Neuropsychiatry, issued by the Wold Health Organisation (1992) for diagnosing mental illness, assumes that a person is suffering from paranoid delusions if she or he "believes that someone, or some organisation, or some force or power is trying to harm them in some way; to damage their reputation, to cause them bodily injury, to drive them mad or to bring about their death." Finally, in popular and literary usage the term *paranoid* has come to mean irrationally suspicious or distrustful (Manschreck, 2000; Manschreck & Khan, 2006).

This brief historical overview highlights the fact that clear definitions of paranoia and persecutory delusions have been elusive. Recently, Freeman and Garety (2000) made an attempt to clarify the meaning of persecutory delusions by suggesting an individual could be said to suffer from them if (i) she/he believes that harm is occurring, or is going to occur, to him or her; and (ii) she/he believes that the persecutor has the intention to cause harm.

Most researchers would probably agree that both paranoia and paranoid delusions reflect concerns about others causing harm to the self but there is no current agreement as to how exactly paranoia relates to persecutory delusions. In this thesis, the term *persecutory delusions* will be reserved for beliefs with more extreme content (e.g., threat of physical harm) and *paranoia* will be used to refer to milder beliefs of persecutory content as well as to more extreme delusional beliefs. Admittedly, this distinction is fairly arbitrary as it is assumed that milder and less bizarre suspicious beliefs and fully formed persecutory delusions lie on a paranoid continuum (D. Freeman, Garety, Bebbington, Smith, et al., 2005).

1.1.2. Epidemiology

Persecutory delusions are one of the most common type of delusion in psychotic illness. A study commissioned by the World Health Organisation involving hundreds of first-contact psychotic patients in ten different countries found that almost half of these patients presented with persecutory delusions (Sartorius, et al., 1986). The prevalence of persecutory

delusions was also investigated in 111 consecutively admitted patients diagnosed with schizophrenia in the US (Andreasen, 1987). The study found that 85% of them were delusional and 66% of all delusional patients suffered from persecutory delusions. Another study measured the frequency and characteristics of delusions in 160 acute psychiatric inpatients in Western Sydney, Australia, and found that more than half of all patients were delusional (Brakoulias & Starcevic, 2008). Although multiple delusions were common, persecutory beliefs were encountered most frequently with 80% of deluded patients reporting persecutory beliefs. Finally, the data collected from a cohort of 255 first-episode schizophrenia spectrum patients recruited for a trial of cognitive-behavioural therapy for early psychosis (Tarrier, et al., 2004) suggests that as many as 90% of patients experienced significant levels of paranoia (Moutoussis, Williams, Dayan, & Bentall, 2007). Despite the fact that paranoid delusions are commonly associated with diagnosis of schizophrenia, there is good evidence to suggest that they also occur in the context of other diagnosable psychiatric disorders such as major depression (Frangos, Athanassenas, Tsitourides, Psilolignos, & Katsanou, 1983), bipolar disorder (Goodwin & Jamison, 1990), post-traumatic stress disorder (David, Kutcher, Jackson, & Mellman, 1999; Kozaric-Kovacic & Borovecki, 2005), and neurological disorders such as dementia (Rubin, Drevets, & Burke, 1988) and epilepsy (Trimble, 1992).

Although paranoid delusions are often associated with diagnosable psychiatric disorders, epidemiological research suggests that the same abnormal beliefs can be observed in non-clinical populations. A Netherlands Mental Health Survey and Incidence Study (NEMESIS) has found that the lifetime prevalence of broadly defined persecutory delusions, which include non-distressing experiences and experiences with plausible origin was 10%, while the lifetime prevalence of narrowly defined persecutory delusions (i.e. causing distress and help-seeking behaviour) was about 1% (Rutten, van Os, Dominguez, & Krabbendam, 2008). New onset of persecutory delusions over a period of one year was observed in 0.2% using the narrow criteria and in 1% of the sample when the broad definition was used. Approximately a third of individuals identified as suffering from psychotic disorder experienced narrowly defined persecutory delusions but this proportion increased two-fold to 65% when persecutory delusions were defined more broadly.

In Switzerland, a general population cohort was followed for 20 years and participants were interviewed on six separate occasions between ages of 20 and 40 (Rossler, et al., 2007). Although the endorsement of paranoid beliefs varied at different time points, on average, about 5% of respondents felt that, over the past week, others were to blame for their troubles, 7% believed that most people cannot be trusted and nearly 9% reported feeling taken advantage of. All three types of beliefs were associated with at least moderate levels of distress. A British study assessed several thousands of individuals from general population using the Psychosis Screening Questionnaire; individuals with identifiable psychotic disorder were deliberately excluded from the study (Johns, et al., 2004). The results showed that around 9% of individuals felt that, over the past year, others were deliberately trying to harm them or their interest and 1.5% believed that in the past year people were plotting against them to cause harm or injury. Finally, Freeman and colleagues (2005) investigated the relationships between different paranoid beliefs in a large population of British students. Similar to other studies, significant variations in frequency of endorsement of different beliefs was found. Milder beliefs such as "Strangers and friends look at me critically" (on a weekly basis, endorsed by 21% of the sample) were more common than less plausible convictions such as "There is a possibility of a conspiracy against me" (on a weekly basis, endorsed only by 1% of the sample). The results also showed that the odder beliefs characteristic of clinical presentations occurred in tandem with more common and plausible experiences: individuals with more extreme beliefs also tended to endorse the more common suspicions.

Overall, evidence indicates that paranoia is not a rare phenomenon: a large proportion of the population regularly experience paranoid thoughts, although milder suspicions are much more common than more extreme ideas. Neither do persecutory beliefs necessarily occur in the context of psychiatric disorders. The evidence showing that paranoid ideation lies on a continuum with persecutory delusions has an important implication for research: it suggests that studying subclinical paranoia may aid our understanding of clinically relevant beliefs.

1.1.3. Theoretical models of paranoia

1.1.3.1. "Paranoia as defence" hypothesis

One influential model of paranoia suggests that abnormalities of self-concept are causal in paranoid ideation. An early version of this model (Bentall, Kinderman, & Kaney, 1994) proposed that paranoid delusions arise as a result of attempts to avoid negative self-evaluations and consequent depression by making excessively external explanations for negative events – a bias that exists in psychologically healthy individuals (Zuckerman, 1979) but is exaggerated in paranoid patients. Specifically, it suggested that paranoid individuals have a negative latent self-schema which gets activated when the individual is faced with a threat to a preferred self-view, an event that would normally lead to activation of discrepancies between the person's ideals and actual self-perceptions and thus depression. Paranoid individuals escape the activation of this discrepancy and associated unpleasant feelings by making external personal explanations for negative events, i.e. blaming other people for their misfortunes. Such explanations close the discrepancy between self-actual and self-ideal domains alleviating depression. However, such attributions have a less desirable effect in that they open the discrepancy between self-perceptions and other-perceptions, activating beliefs that others view them more negatively than they view themselves and leading to paranoia. The model proposed that persecutory delusions arise as a result of repeated engagement of this defensive strategy in the face of recurrent threats. Such an account is in keeping with earlier Colby et al.'s (1979) proposition that paranoid patients "mislocate" the distress associated with feelings of self-inadequacy to other people resulting in paranoid beliefs. It is also consistent with a theoretical proposal by Zigler & Glick (1988) who argued that paranoia is essentially a camouflaged depression and that paranoid beliefs allow individuals to avoid negative self-evaluations.

Several lines of enquiry support Bentall et al.'s (1994) hypothesis. One of them concerns the type of inferences that paranoid patients make for social events. Kaney and Bentall (1989) examined attributional style in paranoid patients, depressed patients, and nonclinical controls using the Attributional Style Questionnaire (ASQ; Peterson, et al., 1982). The ASQ is a questionnaire which requires participants to generate causal statements for

positive and negative hypothetical events before self-rating them on 7-point scales on three dimensions: internality (the degree to which the events are attributed to self or external causes such as circumstances or other people), stability (the degree to which causes are likely to persist in the future) and globalness (the degree to which the causes are likely to influence other events). The results of the study showed that compared to nonclinical controls, paranoid and depressed patients made more global and stable attributions. However, paranoid participants made excessively external attributions for negative events and internal attributions for positive events, showing an exaggeration of the self-serving bias. Fear et al. (1996) subsequently replicated Kaney and Bentall's findings with paranoid patients diagnosed with delusional disorder.

Comparable results were also obtained by Candido and Romney (1990) who assessed attributional judgements of non-depressed paranoid patients, non-paranoid depressed patients and paranoid patients who were also depressed. The data showed that paranoid individuals manifested an attributional style opposite to that of depressed individuals in terms of internality: they tended to attribute positive events to themselves and negative events to external causes. Depressed patients, on the other hand, tended to attribute negative events to themselves and positive events to external causes. Patients who were both paranoid and depressed fell between the two other groups with respect to attributions for positive events but did not differ from the paranoid group in attributions for negative events. Krstev and colleagues (1999) used the ASQ to examine the attributional style of psychotic patients who recently recovered from their first episode of psychosis. The results showed that more external attributions for negative events were predicted by higher levels of suspiciousness.

Similar findings were obtained in another study in which paranoid patients, depressed patients, and nonclinical controls were asked to estimate the degree of control over positive and negative outcomes in a computerised game (Kaney & Bentall, 1992). Compared to nonclinical controls and the depressed patients, paranoid patients showed an excessive self-serving bias, attributing positive outcomes to themselves and negative outcomes to external causes. In an attempt to address some of the psychometric shortcomings of the ASQ, Kinderman and Bentall (1996a) developed a new measure of attributional style: the Internal

Personal and Situational Attributions Questionnaire (IPSAQ). Similar to the ASQ the IPSAQ also requires individuals to make causal judgements for hypothetical events. However, whilst the ASQ does not distinguish external-personal causes from external-situational, the IPSAQ is specifically designed to do so, offering three attributional loci: internal causes, external-personal causes, and external-situational causes. Using the IPSAQ, Kinderman and Bentall (1997) found that paranoid patients tend to explain negative outcomes in terms of other people's actions (external-personal attributions) rather than circumstances (external-situational attributions).

A second line of evidence pertaining to the attributional model concerns self-representations of paranoid patients. Lyon et al. (1994) examined self-esteem in patients suffering from persecutory delusions, depressed patients and nonclinical controls and found that consistent with the attributional model, normal self-esteem in the paranoid patients. In another study, self-esteem of paranoid, depressed-paranoid, and depressed patients was investigated (Candido & Romney, 1990). The results showed high self-esteem compared to norms in the paranoid group, low self-esteem in the depressed group, and intermediate level of self-esteem in the depressed-paranoid group. Taking a multi-dimensional perspective on self-esteem, Kinderman and Bentall (1996b) examined discrepancies between different types of self-representations in paranoid patients, depressed patients, and controls using the framework of self-discrepancy theory (Higgins, Klein, & Strauman, 1985). Participants were asked to describe their actual self, their ideal self, and the believed views of their parents about them. Similar to the controls, but unlike the depressed patients, paranoid patients reported actual self-representations that were consistent with their ideals. However, considerable discrepancies were observed between their actual self-representations and the believed views of their parents: paranoid individuals thought that their parents judged them excessively harshly. The authors concluded that these results were consistent with the attributional model of paranoia and suggested that paranoid individuals maintain consistency between their beliefs about themselves and their ideals at the expense of the attributing negative beliefs about the self to others.

One of the implications of Bentall et al.'s (1994) model was that paranoid patients should display a discrepancy between explicit and implicit self-views. In one study, paranoid patients, depressed patients and controls were asked to rate the degree to which they endorsed as self-descriptive low and high self-esteem adjectives (Kinderman, 1994). The results showed that paranoid and control participants endorsed more positive than negative adjectives, while the depressed patients endorsed approximately equal numbers of both. However, on a subsequent emotional Stroop test, the paranoid patients showed a marked degree of interference when colour-naming both positive and negative words, indicating that paranoid participants were particularly bothered by these types of words.

On the assumption that implicit attributional judgements reflect latent self-representations, Lyon et al. (1994) employed the Pragmatic Inference Test (PIT; Winters & Neale, 1985), which uses a mask of a memory test to divert the attention away from the attributional questions, to investigate covert negative self-representations in paranoid and depressed patients, and nonclinical controls. Explicit attributions were measured using the ASQ. The analyses revealed that on an overt questionnaire measure, paranoid patients showed a self-serving bias, making excessively external attributions for negative events and internal attributions for positive events. However, on the PIT, similar to the depressed patients, paranoid participants made excessively internal attributions for negative events and external attributions for positive events.

Despite the evidence favouring the attributional model of paranoia, the findings of some studies clearly contradicted the model's predictions. For example, Martin and Penn (2001) found that higher levels of paranoid ideation were associated with greater depressed mood and lower self-esteem in a nonclinical population. In a group of psychotic individuals taking part in a trial of cognitive behaviour therapy Freeman and colleagues (1998) observed low explicit self-esteem in the majority of patients.

Partly in response to these criticisms and partly in the light of the new evidence showing that attributions are influenced by current self-esteem (Kinderman & Bentall, 2000) and are highly labile in paranoid patients (Bentall & Kaney, 2005), the original attributional model of paranoia was revised (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001).

In its revised form it suggests dynamic and non-linear relationships between attributions and self-representations: attributions for the events change the stored knowledge about the self and the knowledge about the self affects the type of attributions that are made for the events in the future. This account therefore predicts highly unstable self-esteem in paranoid patients as their attempts to protect self-esteem are successful only intermittently. These predictions were supported by the data of Thewissen and colleagues (2008; 2007b). In one study, the analyses of the data involving thousands of participants from the Dutch general population showed that paranoia was associated with unstable self-esteem over a period of years (Thewissen, et al., 2007b). These results were replicated and extended by a further study in which a group of individuals ranging on the paranoia continuum were assessed using the Experience Sampling Method (ESM), a structured diary technique which allows the assessment of emotions and symptoms in the daily lives of participants (Thewissen, et al., 2008). The data showed that *fluctuations* in self-esteem rather than low self-esteem per se were associated with paranoia.

1.1.3.2. *"Paranoia as extension of emotion" hypothesis*

A competing psychological model of paranoia has been advanced by Daniel Freeman and colleagues (D. Freeman, 2007; D. Freeman & Garety, 2003; D. Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002) who argue that, rather than being a form of defence, paranoid delusions are a direct extension of emotional concerns of the individual. Freeman and colleagues emphasise the central role of emotions at different stages of the paranoid process. It is suggested that at the delusion formation stage, stressful life event and/or drug use combined with pre-existing emotional vulnerability, may produce unusual experiences (e.g., abnormally high arousal may lead to anomalous experiences), which drive the search for meaning. In this search individuals are likely to draw upon pre-existing beliefs about the self, others, and the world (D. Freeman, et al., 2002). In addition, individuals will be more likely to develop a paranoid explanation if their earlier experiences (such as trauma) produced beliefs about personal vulnerability and accompanying feelings of anxiety and depression. Pre-existing anxiety is considered to be particularly relevant here as it reflects expectations about

impeding danger – a concern that is central to paranoia. Although anxiety is viewed as the key emotion in causing persecutory beliefs, other emotions such as anger and depression may add to the contents of the delusional system. The explanations considered in the search for meaning will also be influenced by cognitive factors such as jumping to conclusions bias, and theory-of-mind deficits. Similar to the attribution-self-representation model of paranoia, this account also implicates the externalizing of causes for negative events in paranoia. However, the role of attributions in this case is much more limited.

Freeman and colleagues further argue that the processes associated with emotion are also likely to be involved in the delusion maintenance. Persecutory delusions are thought to be maintained by attentional biases implicated in emotional disorders such as hypervigilance to threat, biased interpretations of ambiguous events, self-focused cognitive style and memory biases, supplying evidence consistent with the threat belief. Safety-seeking behaviours, on the other hand, will prevent paranoid individuals from examining potentially disconfirming evidence. Finally, distress associated with the content of paranoid beliefs may further reinforce them. For example, depression and anxiety caused by inability to control paranoid thoughts may lead the individual to believe that she is powerless and is a target.

Several lines of enquiry support the importance of affect in paranoia. First, evidence suggests that anxiety precedes in time the development of psychosis. Jones et al. (1994) gathered data from five thousand people born in the same week in 1946 who were followed from birth as part of a national population survey. The analyses revealed that, compared to the children who did not develop psychotic illness in later life, children who did felt less socially confident at 13 years of age and were judged as more socially anxious by the teachers at age 15. A Dutch study which has followed up a population sample of several thousands of individuals with no history of psychosis at baseline, found that baseline anxiety, depression, and low self-esteem predicted first-ever onset of psychotic symptoms 3 years later (Krabbendam, et al., 2002). Research has also shown that in a majority of cases, symptoms of anxiety, depression, and irritability precede by two to four weeks the appearance of positive symptoms (Docherty, Vankammen, Siris, & Marder, 1978; Yung & McGorry, 1996).

Anxiety is also extremely common among paranoid patients. For example, one study examined the levels of anxious affect in 60 consecutive psychotic inpatients and found that 43% of them also fulfilled the criteria for an anxiety disorder (Cosoff & Hafner, 1998). Similarly, Nebioglu and Altindag (2009) reported that 67% of outpatients diagnosed with schizophrenia were also diagnosed with at least one lifetime comorbid anxiety disorder. Startup et al. (2007) investigated catastrophising worry characteristic of patients diagnosed with Generalised Anxiety Disorder (GAD) in currently paranoid patients and found that paranoid individuals exhibited levels of anxiety comparable to those reported by GAD patients. The results also showed that worry and catastrophising were associated with higher levels of distress and delusion persistence. Consistent with these findings, paranoia was also linked to anxiety in a large sample of student participants (Fowler, et al., 2006).

Recent studies also suggest that paranoia produced in experimental manipulations is associated with pre-manipulation levels of anxiety. Freeman and colleagues (2005; 2003) carried out experiments in which nonclinical participants entered a virtual reality scene populated by five computer characters programmed to behave neutrally. The results of both studies revealed that although most people appraised avatars in a positive or neutral way, approximately one third of individuals reported paranoid thoughts about avatars and in both studies these thoughts were predicted by anxiety and interpersonal sensitivity.

There is also good evidence that anxiety-related processes such as biased attention and memory for material associated with threat are also present in paranoid individuals. In one study, participants listened to stories that differed in terms of threatening content (Kaney, Wolfenden, Dewey, & Bentall, 1992). When they were asked to recall as many propositions from the stories as possible, paranoid patients recalled more of the threatening propositions from the stories than nonclinical controls. Similarly, Bentall et al. (1995) asked paranoid patients, depressed patients, and nonclinical controls to recall items from a list of threat-related, depression-related and neutral words. Paranoid patients showed a recall bias toward both threat-related and depression-related words and demonstrated a significant tendency to repeat threat-related words during recall.

Safety-seeking behaviours characteristic of anxiety disorders are also extremely common among paranoid individuals. Freeman et al. (2001) examined safety behaviours in a group of currently paranoid patients and found that all of the participants reported at least one safety behaviour in the last month. These results were almost fully replicated in another study by Freeman et al. (2007) . In both of these studies, higher levels of safety behaviours were associated with more severe anxiety, suggesting that such behaviours were aimed at the reduction of perceived threat and consequent feelings of anxiety.

Finally, evidence indicates that severe paranoid delusions build upon common emotional concerns. Freeman et al. (2005) examined the relationships between different paranoid beliefs in a large nonclinical sample and found that paranoid thoughts were distributed in a hierarchical way in non-clinical population, with social anxiety being the most common type of suspicion. Moreover, individuals who endorsed more rare and psychotic-like beliefs such as others plotting against them also endorsed milder beliefs reflecting interpersonal concerns.

1.1.1.3 *Poor-me and Bad-me paranoia*

The key point of disagreement between the two rivalling theories of paranoia concerns the nature of the relationship between paranoia and affect. While the attribution-self-representation model proposes that paranoia is motivated by a possibility of escape from negative emotions, Freeman and colleagues' account sees paranoia as a direct extension of affect. An interesting approach that could potentially resolve this conflict was put forward by Trower and Chadwick (Chadwick, Trower, Juusti-Butler, & Maguire, 2005; Trower & Chadwick, 1995) who propose that there is not one but two fundamentally different types of paranoia: 'poor-me' (PM) and 'bad-me' (BM). According to this account, while both PM and BM patients believe that they are being persecuted, they differ in their response to this persecution. PM individuals tend to blame others for their mistreatment, see others as bad, and see themselves as innocent victims. BM individuals accept the blame for the punishment, see themselves as bad, and view others as justifiably punishing them. It is hypothesised that

paranoid attributional style as a defence against depression operates in PM but not BM patients in whom self-serving bias is reversed.

Few studies have examined perceived deservedness of persecution in paranoid patients but available findings generally support the notion that PM and BM beliefs are associated with different psychological profiles. Freeman et al. (2001) investigated the relationships between perceived deservedness of persecution, self-esteem, and depression in a sample of paranoid patients. The results revealed that individuals who were convinced that harm was deserved were more depressed and had lower self-esteem then those who thought their harm was unjustified. Chadwick and colleagues (2005) replicated these results by showing that in comparison to PM patients, BM patients were more depressed, more anxious, and held more negative self-views.

One study explored implicit attributional style in BM and PM patients using the Pragmatic Inference Test (Peters & Garety, 2006). Although the sample was very small precluding confident conclusions, the results showed that, when acutely ill, the two groups differed markedly: while the PM patients showed a self-serving bias, the BM patients displayed a depressive attributional style, which was due to BM patients making significantly more internal attributions for negative events. In remission however, BM and PM's attributional style did not differ as both groups showed self-serving bias. Similar results were obtained by Melo and colleagues (2006a) who observed that PM beliefs were associated with greater externalising bias and less depression than BM beliefs[1]. However, Melo et al. (2006a) also found that patients switched between BM and PM beliefs in the course of several weeks, calling into the two-type paranoia account. Instead, it suggested that, rather than being fixed, the beliefs about the deservedness of persecution fluctuate *within* the paranoid patients and these fluctuations appear to be accompanied by changes in self-esteem and affect. With regard

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[1] In relation to this, it is interesting to note that a careful examination of attributional research suggests that only those investigations which recruited relatively depression-free paranoid patients (e.g., Bentall & Kaney, 2005; Diez-Alegria, Vazquez, Nieto-Moreno, Valiente, & Fuentenebro, 2006) (presumably PM) or statistically controlled for the effect of depression on attributional style (Langdon, Corner, McLaren, Ward, & Coltheart, 2006; Mehl, et al., 2010) observed an externalising bias in the paranoid patients. In contrast, those studies which have used paranoid participants experiencing significant depression (presumably BM) and did not control for depression in the analyses (e.g., Humphreys & Barrowclough, 2006; Martin & Penn, 2002) failed to observe this bias.

to the two rivalling models of paranoia, this evidence implies that paranoia may manifest itself in two different forms: some stages of the paranoid process may be viewed as a defence against low self-esteem and negative affect, while at other times paranoia could be conceptualised as an augmentation of emotional distress.

1.1.4. Paranoia and threat processing

Perception of current or future threat is part of the definition for paranoid delusions (D. Freeman & Garety, 2000). Studies which have explored threat perception in paranoia have asked paranoid patients to estimate the frequency with which positive, negative and neutral events had happened to them in the past, and the likelihood of these events happening to them in the future (Bentall, et al., 2008; Corcoran, et al., 2006; Kaney, Bowen-Jones, Dewey, & Bentall, 1997). The results of these studies showed that paranoid patients make extreme estimates for the frequency of threatening events happening to them both in the past and in the future – a phenomenon which can be broken down into three different components. First of all, objectively, paranoid patients seem to have experienced more adverse life events such as victimisation and discrimination (Burns, Jhazbhay, Esterhuizen, & Emsley, 2011; Fuchs, 1999; Janssen, et al., 2003; Mirowsky & Ross, 1983). As research suggests that people rely on their recollections of past events to predict what will happen to them in the future – a bias known as availability heuristic, (Kahneman, Slovic, & Tversky, 1982), – the inflated future threat estimates among paranoid patients would be expected due to this bias alone. Second, paranoid patients also preferentially recall threat-related information (Bentall, et al., 1995; Kaney, et al., 1992), further biasing the future estimates via the availability heuristic. Third, the probability estimates for negative events produced by paranoid patients remain inflated even after controlling for the history of adverse events as well as concurrent anxiety and depression (Bentall, et al., 2008). The latter observation points at specific abnormality in the mechanisms responsible for threat processing in paranoid patients.

In a recent paper, Moutoussis et al. (2007) argue that threat-related aversive learning, such as the Conditioned Avoidance Response (CAR) paradigm may provide valuable insights

into the abnormal threat processing observed in paranoid patients. The CAR paradigm was designed to account for learning and performance of behaviours motivated by aversion. In the animal CAR paradigm, the subject (e.g., a rat) is placed in a shuttle box with two compartments. An animal learns that the neutral warning stimulus (e.g., a sound) is closely followed by an unconditioned aversive stimulus (e.g., electric shock). After the onset of the warning stimulus, the subject can avoid the aversive stimulus by shuttling to the other compartment of the box. Shuttling before the onset of the aversive stimulus avoids the shock and also interrupts the warning stimulus (an avoidance response). Shuttling after aversive stimulus onset also averts the shock (an escape response). It is thought that subjects first learn to fear the aversive states associated with the shocks and then discover the neutral value of the "safe" compartment. The neural substrate of the avoidant response is similar to that observed following the receipt of reward and therefore avoidance is reinforced (Kim, Shimojo, & O'Doherty, 2006). Once the subject has learned to successfully avoid the shocks, the avoidance response becomes highly resistant to extinction.

Moutousis and colleagues draw a number of parallels between behavioural and biological mechanisms involved in the CAR on the one hand, and those implicated in paranoia on the other. First, they point out that the CAR paradigm is considered a reliable and widely used test of antipsychotic properties of drugs (Wadenberg, 2010). Antipsychotic drugs block dopamine D2 receptors and disrupt performance of well-learned avoidance response at doses much lower than needed to affect the escape response (Wadenberg & Hicks, 1999). In contrast, dopamine agonists affect the prediction-error related brain activations during aversive learning by activating wider and more distributed brain networks (Menon, et al., 2007); they also produce paranoid syndromes in humans (Satel, Southwick, & Gawin, 1991).

Research shows that in rats, social threat and defeat are associated with increased levels of dopamine in mesolimbic system (Selten & Cantor-Graae, 2005; Tidey & Miczek, 1996). Incidentally, the experiences of social threat and defeat are comparable to discrimination, victimisation (Burns, et al., 2011; Fuchs, 1999; Janssen, et al., 2003; Mirowsky & Ross, 1983) and intrusion by powerful others (Harris, 1987; Raune, Kuipers, & Bebbington, 2009) which are thought to confer vulnerability to psychosis. Related to this is the observation

that hypersensitivity of the dopamine system to stress is implicated in the emotional reactivity observed in individuals at high risk of psychosis (Myin-Germeys, Marcelis, Krabbendam, Delespaul, & van Os, 2005). The increased expectation of socially mediated harm as well as low self-esteem are likely psychological consequences of repeated social defeat accompanied by increased dopamine reactivity (Moutoussis, et al., 2007).

Second, as already noted, overt avoidance or *safety behaviours* are ubiquitous among paranoid patients (D. Freeman, et al., 2001; D. Freeman, et al., 2007). It is thought that safety behaviours prevent the patients from disconfirming their beliefs leading to the unusual fixicity of delusions. Similarly, in the CAR, established avoidant responses are difficult to reverse as avoidance learning continues even when the aversive stimulus has been removed and blocking is often necessary to achieve extinction. Third, and perhaps a more subtle analogy, concerns the avoidance of internal aversive states in paranoia. In the CAR paradigm, subjects learn to respond to the warning signal which precedes the electric shock by shuttling to the "safe" compartment of the box thus avoiding the painful shock. Similarly, the attribution-self-representation model of paranoia (Bentall, et al., 2001) suggests that paranoid patients may learn to avoid threats to self-esteem by attributing the causes for negative events to other people. In this case, threats to self-esteem can be regarded as a warning stimulus and external-personal attributions made by the paranoid individuals can be conceptualised as a form of covert avoidant response.

1.2. Emotion regulation and avoidance of negative mental states

Although the notion that maladaptive ways of regulating emotions lead to psychopathology has a long history dating back to Freud's idea of repression (Freud, 1926/1959), the term *emotion regulation* in its contemporary sense is relatively new. Emotion regulation is commonly defined as people's attempts to manage their emotional responses which may lead to changes in which emotions individuals have, when they have them, and how these emotions are experienced and expressed (Gross, Richards, & John, 2006). It is thought that regulation efforts may be relatively automatic or controlled, conscious or

unconscious. Notably, not all such efforts produce the desired effect, with some strategies bringing individuals further away from their regulatory goals (Koole, 2009).

The process of emotion regulation is typically viewed as distinct from the emotion generation process. It is assumed that people's primary emotional response reflects their emotional sensitivity, while their secondary emotional response presumably reflects emotion regulation (Chambers, Gullone, & Allen, 2009; Koole, 2009). However, there is a lack of agreement about the point where an emotion ends and regulation begins and some authors have even argued against the ontological validity of such distinction (Campos, Frankel, & Camras, 2004; Davidson, 1998; Koole, 2009). Nevertheless, such a distinction undoubtedly has a useful heuristic value (Chambers, et al., 2009; Gross, 1998b). Research shows that effective emotion regulation is vital for adaptive functioning and chronic inability to regulate emotions leads to compromised psychological functioning (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Gross & Munoz, 1995; Papadakis, Prince, Jones, & Strauman, 2006).

According to Ochsner and Gross (2005), the history of emotion regulation research can be traced back to three separate lines of study. The first one originates from psychoanalysis and the idea of defence against anxiety (Freud, 1926/1959). In psychoanalytic tradition, anxiety regulation consists of relegating to the unconscious of threatening anxiety-provoking cognitive contents or emotional reactions that are pressing for expression. The second strand of research stems from stress and coping research that sprang out from psychodynamic approach in the 1960's (Lazarus, 1993). This tradition focused on possibility of emotional change through cognitive reappraisal and generated a classic study which showed that stress reaction to surgical procedure featured in a film can be reduced if it is viewed in a detached way (Lazarus & Alfert, 1964). The third line of research is rooted in developmental research on emotion regulation (Mischel, Shoda, & Rodriguez, 1989). This research has shown that children can delay gratification with a treat by thinking about the available treat in an abstract way (e.g., by imagining a picture-frame around a cookie) that decreased their immediate impulse to eat it.

While emotion regulation research has evolved as a separate line of enquiry, distinct from investigations into coping, thought suppression, repression, and mood regulation, it has

been suggested that since all these types of regulation are aimed at changing the core affect, it is most productive to view emotion regulation broadly, as relating to the management of all emotionally charged states, including discrete emotions, mood and stress (Koole, 2009).

The view that emotion regulation strategies involving avoidance produce psychological disorders was pioneered by psychoanalytic theorists. Since then, this idea has found its revival – albeit in different guises and at different times – in many other accounts of psychopathology. What follows is a brief overview of the different theoretical approaches that relate avoidance of aversive internal states to mental health problems.

1.2.1 *Repressive coping*

Repressive coping is defined as a form of distancing oneself from psychologically threatening emotions, memories, or experiences and is characterised by a marked discrepancy between subjective (self-reported) anxiety and objective (implicit) anxiety (Weinberger, Schwartz, & Davidson, 1979). The idea of repression originates in psychoanalysis. Freud (1926/1959) argued that repression (keeping something at a distance from conscious awareness) is used by everyone to some extent, although some individuals may rely on it to the exclusion of other defences. From a cognitive perspective, repressive coping is viewed as a perceptual defence whereby the individual engages in biased information processing at the point of initially encoding or retrieval of the information about the event (Mendolia, 2002).

Most evidence pertaining to repressive coping is derived from research with individuals with so-called *repressive personality style*, defined by low manifest anxiety combined with a tendency toward socially desirable responding. The most striking observation made by repression research is that while repressors report themselves to be largely unaffected by negative emotional material, implicit measures of distress (both physiological and behavioural) repeatedly show their hypersensitivity to upsetting material. Specifically, studies have found that repressive coping is associated with low accessibility of emotionally threatening material (Davis, 1987), diminished and less elaborated associative network of negative emotional memories (Hansen & Hansen, 1988), and less time spent reading and poorer subsequent memory for negative personality feedback (Baumeister &

Cairns, 1992). At the same time, repressors are rated as more anxious than low-anxious individuals during major dental surgery (Fox, Oboyle, Barry, & McCreary, 1989) and individuals who know repressors very well rate them as significantly higher in trait anxiety than the repressors do themselves (Eysenck & Derakshan, 1999). Research suggests that repression of negative thoughts is physiologically effortful, resulting in increased autonomic reactivity and studies have found elevated daily cortisol levels (Brown, et al., 1996) and enhanced skin-conductance response during surgery (Benjamins, Schuurs, & Hoogstraten, 1994) in repressors. Repressive coping style is also associated with increased rates of coronary heart disease, asthma, cancer and diabetes (Myers, et al., 2009).

Studies highlighting the discrepancy between self-reported and more objectively measured distress in repressors suggest that repressive coping involves the manipulation of conscious attention to avoid threatening material and to limit the contents of awareness to information that is suitably favourable (Boden & Baumeister, 1997; Derakshan, Myers, Hansen, & O'Leary, 2004). The results of at least one study suggest that repressors avoid processing unpleasant material by summoning up pleasant thoughts and memories as a distraction from such unwanted stimuli (Boden & Baumeister, 1997).

1.2.2. Thought suppression

Thought suppression is commonly defined as an attempt to rid the content of one's consciousness of unwanted or upsetting thoughts and is probably one of the most thoroughly researched forms of avoidant emotion regulation. Although thought suppression is a common form of mental control which affords a temporary relief leading to fewer intrusions and better mood, it can be counterproductive in the long-term, helping to assure the very state of mind one had hoped to avoid (Abramowitz, Tolin, & Street, 2001; Wenzlaff & Wegner, 2000). Research also suggests that longer suppression periods are associated with larger initial resurgence of unwanted thoughts, indicating that efforts to suppress become less successful over time (Abramowitz, et al., 2001). While earlier studies were not interested in the origins of thought suppression, later research suggests that it is likely to be motivated by negative beliefs about intrusions, such as the danger of unwanted thoughts and responsibility for

thoughts (Garcia-Montes, Perez-Alvarez, & Fidalgo, 2003; S. R. Jones & Fernyhough, 2006; Rassin, Muris, Schmidt, & Merckelbach, 2000).

A dominant account for the paradoxical effects of thought suppression is the *ironic process theory* (Wegner, 1994; Wenzlaff & Wegner, 2000). This theory proposes that thought suppression involves two components: (i) a monitoring system that continuously scans the content of consciousness for undesirable material and signals failure to achieve a desired state and (ii) the *intentional operating process*, which seeks thoughts that will promote the preferred state. It is thought that the monitoring system is automatic and operates outside of awareness and is therefore relatively effortless. The intentional operating system, on the other hand, is a conscious and effortful process which is more cognitively demanding. Each of the two components enhances the cognitive accessibility of the mental contents for which they are searching and under the normal circumstances the simultaneous operation of the two processes ensures efficiency in warding off unwanted thoughts. However, when the cognitive resources are taxed, the less effortful monitoring system continues to scan for unwanted material while the more cognitively demanding intentional operating system ceases to supply positive distractor thoughts, resulting in hyperaccessibility of the very thoughts that are being avoided.

The predictions of the ironic process theory have been largely borne out by the empirical data. Consistent with its predictions, additional cognitive demands in the form of stress disrupt successful thought suppression. One longitudinal study followed up people scoring high and low on dispositional thought suppression (Beevers & Meyer, 2004). It emerged that at high levels of life stress thought suppression was associated with greater depression at follow-up, whereas at low levels of life stress thought suppression was associated with lower levels of depression. This evidence was corroborated by the findings of another study which followed up a group of high and low suppressors with low levels of depression and rumination at baseline (Wenzlaff & Luxton, 2003). The authors found that two months later, the deleterious effects of thought suppression were most prominent under stress, with suppressors reporting stressful life events displaying most dysphoria and rumination.

A series of studies have also demonstrated that additional demands in the form of concurrent cognitive tasks undermine thought suppression in individuals vulnerable to

depression, revealing patterns of thinking characteristic of currently depressed individuals. Wenzlaff and Bates (1998) asked currently depressed, remitted-depressed, and never depressed individuals to unscramble sentences that could form either positive or depressive statements. Half of the participants were asked to retain a six-digit number in memory (cognitive load condition). The results revealed that without a load, remitted individuals showed little evidence of depressive thinking, producing a similar rate of positive statements as did the controls and a lower percentage of negative statements than the depressed participants. However, the cognitive load caused an increase in the remitted participants' production of negative statements, revealing a previously undetected tendency toward negative thinking that made them resemble depressed participants; this effect was especially pronounced among individuals who routinely engaged in thought suppression. These results were later replicated by van der Does (2005). In a different study, Wenzlaff and colleagues (2001) asked the participants to identify negative, positive, and neutral words imbedded in a letter grid and found that a cognitive load in the form of a memory task caused a negative attentional shift among previously depressed individuals, leading them to identify negative words at a rate equivalent to currently depressed participants. These findings suggest that life stress and cognitive demands may disrupt the intentional operating system and thus lead to hyperaccessibility of the very thoughts that are being avoided.

There is good evidence that high levels of thought suppression are associated with a range of psychological and psychiatric problems, including anxiety (Gaskell, Wells, & Calam, 2001), obsessive-compulsive symptoms (Purdon, 2004), phobias (Muris, Merckelbach, Horselenberg, Sijsenaar, & Leeuw, 1997), depression (Wenzlaff, et al., 2001), disordered eating (Oliver & Huon, 2001), paranoia (Spinhoven & van der Does, 1999), and auditory hallucinations (Garcia-Montes, Perez- Alvarez, & Fidalgo, 2004; S. R. Jones & Fernyhough, 2006). Thought suppression also predicts the severity of depressive symptoms over time (Rosenthal, Cheavens, Compton, Thorp, & Lynch, 2005). Preliminary data also indicate that suppression of unwanted thoughts may be implicated in psychotic symptoms. Garcia-Montes et al. (2003) examined the effects of suppression of negative and neutral self-relevant thoughts on the occurrence of hallucination-like experiences in nonclinical participants and found that

individuals who were instructed to suppress negative self-relevant thoughts were more likely to report hallucination-like experiences when listening to a pattern of noise post-suppression. In line with this, Jones and Fernyhough (2006) observed that in a large nonclinical sample thought suppression was associated with hallucinatory experiences. Finally, among 254 consecutive psychiatric outpatients with a variety of diagnoses thought suppression was associated with paranoid symptoms (Spinhoven & van der Does, 1999).

1.2.3 *Response-focussed coping*

The temporal model of emotion regulation proposed by Gross and colleagues (Gross, 1998a, 1998b; Gross & Munoz, 1995; Gross, et al., 2006) assumes that emotions are temporal events and that the trajectory of emotional experience can be modified at different stages of emotional experience. This model distinguishes between *antecedent-focussed emotion regulation strategies* which occur early in the emotion generative process and involve the manipulation of the input into the system and *response-focussed emotion regulation strategies* which occur relatively late and involve manipulating output. Within these two broad categories, more fine-grained distinctions can be made. *Antecedent-focussed* strategies include *situation selection* which involves approach or avoidance of certain people or places on the basis of their likely emotional impact; *situation modification* which involves tailoring of the situation to change its emotional impact; *attentional deployment* which refers to selection and focusing on particular aspects of the situation; *cognitive change* which involves deciding on the meaning of the situation. *Response-focussed* emotion regulation includes strategies that modify the ongoing emotional experience, expression, or physiological responding (Gross, 1998a, 1998b). To study the effects of these emotion regulation strategies Gross and colleagues (Gross, 2002) have explicitly manipulated reappraisal and suppression by instructing participants to either reappraise or suppress their emotional responses and then measured the experiential and physiological consequences of these strategies. They also carried out individual difference studies in which participants were administered a the

Emotion Regulation Questionnaire (Gross & John, 2003) which enquires about the use of different emotion regulation strategies.

Research findings suggest that antecedent-focussed strategies are advantageous in comparison to response-focussed strategies (Gross, 2002). Response-focussed suppression of emotional expression appears to have little impact on negative emotional experience but it diminishes positive emotional experience (Gross, 1998a). it is also associated with increased sympathetic activation of cardiovascular system and impaired memory for information presented during emotion suppression (Richards & Gross, 1999, 2000). In the social domain, suppression is associated with poorer interpersonal functioning and less well-being (Gross & John, 2003). By contrast, antecedent-focussed reappraisal decreases negative emotions and their expression, while increasing positive emotion experience and expression.

1.2.4 Metacognition

Metacognition can be defined as "beliefs about one's own cognitive system and knowledge about factors that affect the functioning of the system; the regulation and awareness of the current state of cognition, and appraisal of the significance of thoughts and memories" (p. 302; Spada, Nikcevic, Moneta, & Wells, 2008; Wells, 1995). Two broad types of metacognitions are identified: (i) the knowledge that individuals hold about their internal states, including negative beliefs concerning the significance, controllability, and danger of particular types of thought (e.g., "It is bad to think thought X"); and (ii) the knowledge about coping strategies that impact on these internal states, including maladaptive beliefs about coping (e.g., "Worrying will help me solve the problem") (Wells, 2000). The self-regulatory executive function (S-REF; Wells & Matthews, 1996) theory offers a detailed account of how metacognitive factors are involved in development and maintenance of psychological disorders. According to S-REF metacognitions predispose individuals to develop response patterns to thoughts and internal events that are characterised by heightened self-focused attention, cyclical thinking patterns, threat monitoring, avoidance and thought suppression. In other words, metacognitions are thought to determine the choice of coping strategies.

The role of metacognitions in psychopathology has been explored using the Metacognitions Questionnaire (Cartwright-Hatton & Wells, 1997; Wells & Cartwright-Hatton, 2004). This questionnaire consists of five distinct factors: (1) positive beliefs about worry, which reflects the extent to which a person believes that perseverative thinking is useful; (2) negative beliefs about worry concerning uncontrollability and danger, which reflects the extent to which a person thinks that perseverative thinking is uncontrollable and dangerous; (3) cognitive confidence, which reflects confidence in attention and memory; (4) beliefs about the need to control thoughts, which reflects the extent to which a person believes that certain types of thoughts need to be suppressed; and (5) cognitive self-consciousness, which reflects the tendency to monitor one's own thoughts and focus attention inwards. Metacognition appears to be a generic factor in vulnerability to psychopathology as numerous studies have shown that particular facets of metacognition are associated with a wide range of psychological disturbances, including generalized anxiety disorder (e.g., Cartwright-Hatton & Wells, 1997), obsessive-compulsive symptoms (Wells & Papageorgiou, 1998), hypochondriasis (Bouman & Meijer, 1999), post-traumatic stress disorder (Holeva, Tarrier, & Wells, 2001), depression (Papageorgiou & Wells, 2003), problem drinking (e.g., Spada & Wells, 2009, 2010) and auditory and visual hallucinations (Morrison, Wells, & Nothard, 2000). However, comorbidity between these different symptoms makes it unclear which are specifically related to meta-cognitive beliefs. For example, in a meta-analysis of the research findings on hallucinations Verese & Bentall (2011) found that an often-reported association between hallucinations and meta-cognitive beliefs disappeared once comorbid mood symptoms were controlled for.

1.2.5 Experiential avoidance

This brief overview suggests that the concept of avoidance of internal mental states has been recycled by the researchers of diverse theoretical orientations on multiple occasions. Despite the many theoretical variations, the basic core principle that avoidance of aversive mental phenomena is associated with poor psychological outcomes has remained. In the past decade, Steven Hayes and colleagues have proposed a term *experiential avoidance (EA)* as an umbrella concept consolidating all types of avoidance (Hayes, et al., 2004; Hayes, Strosahl, &

Wilson, 1999; Hayes, Wilson, Gifford, Follette, & et al., 1996). EA is conceptualised as unwillingness to endure unpleasant mental states, such as thoughts, emotions, bodily sensations and memories, and active efforts to avoid them (Hayes, Wilson, et al., 1996). EA is not a theory but rather a unifying first-order concept which purports to integrate avoidance strategies in all their forms into a theoretically coherent construct which would subsume second-order emotion-regulation strategies such as repression and thought suppression (Hayes, et al., 2004; Hayes, Wilson, et al., 1996).

Hayes et al. (1996) suggest that the origins of EA and, indeed, the very possibility of its existence, lie in the evaluative function of human language described by the Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). According to the RFT, non-human animals have evolved to avoid distress by escaping external stimuli which are threatening. However, the arrival of the human language changed this situation dramatically. Because language affords the generation of symbolic representations for aversive stimuli it creates associations between these symbols and aversive events. As linguistic representations carry an inherently evaluative function, the aversive value of the external stimulus is transferred on to the internal state associated with this stimulus. So, for example, fear which initially referred to a particular situation which was experienced as traumatic, acquires an aversive value. In this way, the emotional response (fear) becomes a cue in and of itself, triggering avoidance. Because of this, for example, a survivor of trauma may re-experience pain simply as a result of the verbal report of that trauma; representational awareness of the trauma and feelings associated with trauma may become the focus of avoidance (Hayes, Wilson, et al., 1996). In this way, language vastly expands the number of potential cues for threats as the existence of symbolic representations permits cognitive contact with aversive experiences in almost any setting and such experiences can no longer be avoided purely by avoiding external situations. The more a person takes thoughts literally, the more likely she or he is to engage in suppression of aversive mental events and the less likely she is to take action and change the contingencies in the environment that cause difficulties (Hayes, et al., 1999).

Unfortunately, the immediate effects of EA are often positive and lead to alleviation of the aversive mental state. However, over time the suppressed internal experiences increase in

frequency. It is suggested that this pattern of a short-term reduction leading to a long-term increase can easily establish a self-amplifying loop that is resistant to change. Hayes et al. (2004) propose that it is the short-term reduction in distressing mental events that makes EA critical for the development of psychopathology.

To stimulate research in the area, Hayes et al. (1996) designed the Acceptance and Action Questionnaire (AAQ) as measure of EA. The AAQ was developed as a broad self-report measure, which cuts across the components hypothesized to relate to EA. Since its introduction in 1996, it has undergone several transformations. The most recent version, the AAQ-II (AAQ-II; Bond, et al., submitted) contains 10 items which reflect inability to take action in the face of distressing inner experiences ("My painful memories prevent me from having a fulfilling life"), emotional entanglement with inner experiences (e.g., "I'm afraid of my feelings") and intolerance towards negatively evaluated mental states (e.g., "It's OK to remember something unpleasant", reverse scored).

Hayes et al. (2004) reviewed the literature on the relationships between the EA as measured by the AAQ and various forms of psychopathologies. The results highlighted the associations between EA and depression, anxiety, social phobia agoraphobia, as well as with impaired quality of life. The AAQ was also associated with more specific measures of avoidant coping such as thought suppression. More recent studies have also found associations between AAQ ratings and eating disorders (Rawal, Park, & Williams, 2010), OCD symptoms (Briggs & Price, 2009), general anxiety (Lee, Orsillo, Roemer, & Allen, 2010) and depression (Berking, Neacsiu, Comtois, & Linehan, 2009; Bjornsson, et al., 2010; Tull & Gratz, 2008).

1.3. Experiential avoidance and paranoia

Hayes' proposition that EA plays a major role in the development of psychological problems closely resembles the account of paranoia advanced by Bentall et al. (2001). Briefly, Bentall's attribution-self-representation model suggests that paranoid individuals avoid negative thoughts and feelings about themselves by making external-personal attributions for

negative events. While this strategy alleviates self-blame, it implies that other people have malevolent intentions towards the self, producing persecutory delusions. Although Hayes and colleagues provide a broad description of the role of EA in psychopathology, they refrain from giving a comprehensive explanation of the exact mechanisms involved (Hayes, et al., 2004). As EA was designed as an umbrella term for various types of avoidance, however, it is reasonable to suggest that similar or even identical processes and assumptions will govern different forms of avoidance and that a theory applicable to one form of avoidance should extrapolate to all other avoidance strategies. Examination of the literature suggests that, in this respect, thought suppression stands out as the most extensively researched and theoretically developed form of EA. The ironic process theory (Wegner, 1994; Wenzlaff & Wegner, 2000) designed to provide a theoretical account of the effects of thought suppression, has been repeatedly tested and its predictions have been generally borne out by the data. Under the assumption that similar mechanisms underlie all forms of avoidance it is reasonable to suppose that the ironic process theory could provide a valid account for EA. To recap, the ironic process theory assumes that thought suppression is executed with the help of two separate processes: a cognitively effortless monitoring system that scans the content of consciousness for undesirable material and a relatively more demanding 'distractor' system that seeks thoughts that will promote the preferred state (Wenzlaff & Wegner, 2000).

Conceptualised in terms of the ironic process theory, threats to self-esteem occasionally experienced by the paranoid individuals could be reframed as the unpleasant mental content encountered during the routine monitoring, and external-personal attributions could be construed as 'distractor' thoughts. As mentioned previously, a number of parallels can also be drawn between the conditioned avoidance response (CAR) paradigm designed to assess the learning and behaviours motivated by aversion. Table 1.1. represents an attempt to integrate the various processes observed across the CAR paradigm, the ironic process theory, and the attribution-self-representation model of paranoia into one coherent structure.

Table 1.1. The mapping of the processes from the perspective of the Conditioned Avoidance Response paradigm, the ironic process theory and the attribution-self-representation model of paranoia.

Paradigm	Aversive stimulus	Warning stimulus	Avoidance response
Conditioned Avoidance Response (CAR)	Unpleasant physical stimulus (e.g. electric shock)	Light or tone	Behavioural response (e.g., shuttling to the other compartment of the box)
Ironic process theory	Depression	Undesirable thought	Replacement of undesirable thought with a "distractor" thought
Attribution-self-representation model of paranoia	Low self-esteem	Threat to self-esteem	Replacement of internal attribution for negative event with external-personal attribution

The ironic process theory and the data corroborating it suggest that the success of thought suppression is highly dependent on availability of cognitive resources. Therefore, it would be expected that paranoid individuals would be able to externalise blame when cognitive resources are plentiful, leading to improvements in self-esteem. However, the generation of external-personal attributions would be less likely to occur when cognitive resources are taxed, uncovering highly negative self-views in paranoid individuals. Consistent with these predictions, in daily life paranoid patients display highly variable self-esteem, presumably reflecting the variability of avoidance success (Thewissen, et al., 2008; Thewissen, et al., 2007b).

The applicability of the ironic process theory to paranoia and the role of EA in paranoia were recently tested by Udachina et al. (2009a). In this study, the associations between EA, paranoia, and self-esteem were first estimated using questionnaire data from a large sample of university students. In the second phase of the study, a selected group of participants were also assessed using the experience sampling method – a structured diary

technique which allows to measure emotions and symptoms in the daily lives of participants. At this stage, a measure of life stress was also included. The data gathered at both stages of the study was tested with respect to the following hypotheses. It was hypothesised that both low self-esteem and EA would be associated with higher paranoia and that the relationship between self-esteem and EA would be bidirectional: unpleasant self-beliefs would trigger mental control and vice-a-versa. It was expected that in low stress conditions when cognitive resources are free, avoidance would lead to a temporary improvement in self-esteem. However, avoidance would be unsuccessful under stress, leading to even more unfavourable self-views. The results generally supported this model, although the evidence for the benefits of avoidance was lacking even in the low stress conditions.

This thesis presents a programme of research aimed at extending this work and elucidating the role of EA in paranoia.

1.4. Outline of the thesis

The distribution of participants recruited and data collected at different stages of research along with measures analysed in different chapters of the thesis are shown in Table 1.2.

To explore the potential role of EA in paranoia, we first collected data using the Experience Sampling Method (ESM). ESM is a structured diary technique which allows the assessment of symptoms, mood and behaviour in the context of daily life (Palmier-Claus, et al., 2010). We recruited currently paranoid patients, patients with remitted paranoid delusions, and healthy controls. Healthy controls were recruited through a community panel. Participants with current or past psychiatric history were recruited from in- and outpatient facilities, university psychosis research panel, as well as through voluntary organisations in the UK. Using ESM we collected data on participants' self-esteem, deservedness of persecution, paranoid symptoms, EA, and stress. In addition, we asked participants to complete questionnaires measuring paranoia, perceived deservedness of persecution, self-esteem and depression. These data were subsequently analysed and described separately in Chapters 2 and 3 of this thesis.

In Chapter 2, for some analyses we divided patient participants with current or past paranoia into several groups according to their questionnaire scores: (i) individuals who believed that their persecution was underserved ('Poor-me'; PM), (ii) individuals who believed that their persecution was justified ('Bad-me'; BM) and (iii) remitted patients. In this study we examined the psychological profiles of PM and BM paranoid patients. We also investigated the relative stability of beliefs regarding the deservedness of persecution over the period of 6 days. Finally, we examined the temporal relationships between self-esteem and paranoia in the whole sample and in different participant subgroups.

In Chapter 3 we examined the role of EA in paranoid thinking and specific mechanisms underlying EA. In this chapter, we attempted to replicate the previous finding that both low self-esteem and EA predict higher paranoia (Udachina, et al., 2009b). However, in this study our population included patient participants as well as non-clinical controls. We also re-examined the moderating effect of stress on the relationship between EA and self-esteem in this sample. Finally, we expanded on previous research by investigating the association between EA and self-esteem instability to test the hypothesis that EA is involved in regulation of self-esteem.

To test our hypotheses further we also collected questionnaire data online from a large group of non-clinical student participants. Participants were recruited from Bangor University and the University of Manchester and were asked to complete a battery of questionnaires measuring general parental style, emotional invalidation in childhood, negative self-views, attachment, EA and paranoid beliefs. These data were later used to inform research described in Chapters 4 and 5.

In Chapter 4 these data were used to test a model in which developmental history represented by general parental style and childhood experiences of emotional invalidation predicted negative self-esteem and EA, respectively.

In Chapter 5 the data collected online from the students of Bangor University were used to identify two groups of participants: students who scored high on paranoia scale (paranoid students) and those who scored low on paranoia (controls). These participants were contacted and invited to participate in a follow-up study which used both questionnaire and

behavioural measures to investigate EA. The aim of the study was to circumvent self-presentation bias inherent in the use of self-report measures of EA by using a behaviour measure of EA. The behavioural measure of EA was a modified version of the emotional Stroop task which was designed to assess the accessibility of self-threatening information in conditions of high and low cognitive load.

Finally, to further explore the role of EA in severe paranoid delusions using a behavioural measure of EA, we recruited currently paranoid patients, patients with remitted paranoid delusions and healthy controls. Healthy controls were recruited through a community panel whilst patient participants were recruited from in- and outpatient facilities, university psychosis research panel, as well as through voluntary organisations in the UK. The obtained data are analysed and described in Chapter 6. As in Chapter 5, we employed a Stroop-like task to measure accessibility of threatening and non-threatening information in the two groups in different cognitive load conditions.

Table 1.2. The distribution of recruited participants and data collected at different stages of research across chapters of the thesis.

Recruitment			Analyses		
Recruited participants	Measures collected	Ethics approvals	Chapter	Participants used in this chapter	Measures used in the analyses in this chapter
Recruitment wave 1. 41 patient participants 23 controls	Persecution and Deservedness Scale Self-Esteem Rating Scale Beck Depression Inventory-PC Positive and Negative Syndrome Scale ESM measures: *Paranoia* *Deservedness* *Self-esteem* *Depression* *EA* *Social stress* *Activity-related stress*	Personality, mood and coping with thoughts and feelings Proposal 1041	**Chapter 2**: Dynamics of self-esteem in 'Poor-me' and 'Bad-me' paranoia	41 patient participants 23 controls	Persecution and Deservedness Scale Self-Esteem Rating Scale Beck Depression Inventory-PC Positive and Negative Syndrome Scale ESM measures: *Paranoia* *Deservedness* *Self-esteem* *Depression*
			Chapter 3: The role of experiential avoidance in paranoid delusions: an Experience Sampling Study	41 patient participants 23 controls	ESM measures: *Paranoia* *EA* *Self-esteem* *Social stress* *Activity-related stress*
Recruitment wave 2. 170 Bangor University students	Persecution and Deservedness Scale Persecutory Ideation Questionnaire Acceptance and Action Scale-II	Personality and childhood experiences Proposal 1077	**Chapter 4**: Developmental pathway to paranoia is mediated by negative self-concept and experiential avoidance	170 Bangor University students 132 University of Manchester students	Persecution and Deservedness Scale Persecutory Ideation Questionnaire Acceptance and Action Scale-II Parental Bonding Inventory Socialisation to Emotion Scale Relationship Questionnaire

					Self-Esteem Rating Scale
132 University of Manchester students	Parental Bonding Inventory Socialisation to Emotion Scale Relationship Questionnaire Self-Esteem Rating Scale Hospital Anxiety and Depression Scale (only Bangor students)	Personality and cognitive processing Ethics proposal 1263	**Chapter 5**: An experimental investigation of experiential avoidance in nonclinical paranoia	170 Bangor University students	Acceptance and Action Scale-II Hospital Anxiety and Depression Scale Self-Esteem Rating Scale Experimental measures
Recruitment wave 3. 32 patient participants[2] 25 controls	Persecution and Deservedness Scale Acceptance and Action Scale-II Hospital Anxiety and Depression Scale Relationship Questionnaire Socialisation to Emotion Scale Self Concept Checklist	Personality, mood & cognitive processing. Ethics proposal 1412./Childhood experiences, unpleasant mental states and their role in mental health problems	**Chapter 6**: Experiential avoidance in patient participants with persecutory delusions: An experimental study	32 patient participants 25 controls	Persecution and Deservedness Scale Acceptance and Action Scale-II Hospital Anxiety and Depression Scale Relationship Questionnaire Socialisation to Emotion Scale SCC Experimental measures

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[2] Twelve patient participants were also tested during the first wave of recruitment. However, the waves of data collection were separated in time.

1.5. References

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Chapter 2

Dynamics of self-esteem in 'Poor-me' and 'Bad-me' paranoia

2.1. Abstract

Dynamics of self-esteem and paranoia were examined in 41 patients with past or current paranoia and 23 controls using questionnaires and the Experience Sampling Method (a structured diary technique). For some analyses, patients were further divided into 3 groups: (i) individuals who believed that persecution is underserved ('Poor-me'; PM), (ii) individuals who believed that persecution is justified ('Bad-me'; BM) and (iii) remitted patients. The results revealed that perceived deservedness remained relatively stable over a period of 6 days. BM beliefs were associated with low self-esteem and depression. Both BM and PM patients showed highly unstable psychological profiles. Measured concurrently, paranoia predicted *lower* self-esteem in the BM patients. Prospectively, paranoia predicted *lower* subsequent self-esteem in BM patients but *higher* subsequent self-esteem in PM patients. Our results suggest that paranoia can serve a defensive function in some circumstances. The reasons for inconsistencies in self-esteem research in relation to paranoia are discussed.

2.2. Introduction

Paranoid delusions are one of the most common symptoms of psychosis, and are present in up to 90% of first-episode schizophrenia spectrum patients (Moutoussis, et al., 2007). Both emotional and cognitive processes seem to play an important role in their genesis (Bentall, et al., 2009). An early psychological model of paranoia argued that paranoid patients are able to counter feelings of low self-esteem by generating external (other-blaming) explanations for negative events – a bias that exists in psychologically healthy individuals but is exaggerated in people with paranoid delusions (Bentall, et al., 1994). However, the validity of this attributional account has been questioned by some studies which have reported a negative association between paranoia and self-esteem (e.g., D. Freeman, et al., 1998). The attributional model was later revised to suggest dynamic and non-linear relationships between attributions and self-views (Bentall, et al., 2001). This modification allows for either low or normal self-esteem, depending on recent experiences and predicts highly unstable self-esteem in paranoid patients. In line with this proposition, two recent studies reported that instability of self-esteem rather than negative self-beliefs *per se* is characteristic of paranoia (Thewissen, et al., 2008; Thewissen, et al., 2007b).

Trower & Chadwick (1995) argued that there is not one, but two distinct types of paranoia: 'poor-me' (PM) and 'bad-me' (BM). While both PM and BM patients believe that they are being persecuted, PM individuals blame others for their mistreatment and see themselves as innocent victims, whereas BM individuals accept the blame for the persecution and see themselves as bad. According to this view, the defensive paranoid attributional style operates in PM but not in BM patients. Although stability of PM and BM beliefs was initially implied (Trower & Chadwick, 1995), Chadwick et al. (2005) later accepted the possibility of change in these beliefs. This account is compatible with the revised attributional model (Bentall, et al., 2001) as both propose that, at least in some circumstances, paranoid beliefs may confer protection against low self-esteem.

To date, only a small number of studies have examined perceived deservedness of persecution but available findings have generally supported the notion that PM and BM beliefs

are associated with distinct psychological profiles. Freeman and colleagues (2001) found that paranoid individuals who were convinced that harm was deserved were more depressed and had lower self-esteem then those who thought their harm was unjustified. Chadwick and colleagues (2005) found that, in comparison to PM patients, BM patients were more depressed, more anxious, and held more negative self-views. Similarly, Morris et al. (2011) found that BM patients reported more shame and depression than PM patients; PM patients were also more grandiose. Only one study to date has examined the development of perceived deservedness over time (Melo, et al., 2006a). In line with previous evidence this study found that PM beliefs were associated with less depression than BM beliefs. However, the most interesting observation was that in the course of several weeks some patients switched between BM and PM beliefs, pointing to the dynamic nature of the psychological processes underlying paranoid delusions.

Although these findings confirm the importance of distinguishing between PM and BM paranoia, many issues pertaining to deservedness beliefs remain unresolved. First, while early research indicates that perceived deservedness may fluctuate over time (Melo, et al., 2006a), no studies to date have examined its stability in a systematic way. Second, psychological profiles of PM and BM have been investigated using cross-sectional questionnaire designs but these methods lack ecological validity. Third, self-esteem research in relation to paranoia has largely ignored the proposition that the paranoid process is dynamic in nature and specifically that paranoid attributions may influence future self-representations, as proposed by Bentall and colleagues (2001). Finally, no studies have investigated a possibility that the relationship between paranoia and self-esteem may vary depending on beliefs about deservedness of persecution.

In our study, in addition to conventional questionnaire measures, we used an Experience Sampling Method (Hektner, Schmidt, & Csikszentmihalyi, 2007; Oorschot, Kwapil, Delespaul, & Myin-Germeys, 2009), which is ideally suited for addressing these issues. An array of psychological factors implicated in paranoia was assessed in a sample comprising PM patients, BM patients, remitted patients, and healthy controls. ESM is a structured diary technique which allows the assessment of symptoms, mood and behaviour in

the context of daily life (Palmier-Claus, et al., 2010). It has high ecological validity as it takes into account a wide range of environmental factors influencing behaviour. Because the variables are measured repeatedly and with high frequency, this method allows the systematic examination of changes in variables of interest over time and permits the estimation of temporal relationships between variables.

Based on previous work (Chadwick, Trower, et al., 2005; S. Melo, J. L. Taylor, & R. P. Bentall, 2006b) we predicted that BM patients would be more depressed and would have lower self-esteem than the PM patients. Therefore, we expected that BM patients would obtain higher scores on both questionnaire and diary measures of depression than the PM patients. We also expected that BM patients would obtain lower scores on both questionnaire and diary measures of self-esteem than the PM patients.

As earlier studies also suggest that paranoia is associated with dramatic fluctuations in self-esteem (Thewissen, et al., 2008; Thewissen, et al., 2007b), we expected that both deservedness beliefs and self-esteem would be highly unstable in acutely paranoid patients. Therefore, we predicted that day-to-day changes in self-esteem and deservedness would be greater in currently paranoid patients (both PM and BM) than in the remitted patients or healthy controls. However, we did not make specific predictions about PM and BM groups and these analyses were exploratory in nature.

Finally, we predicted that the relationship between paranoia and self-esteem would vary depending on the participant group. Specifically, we expected that paranoia would be associated with lower self-esteem in BM patients as beliefs that one is being persecuted and deserves it are bound to be detrimental for self-esteem. In the PM group, on the other hand, we expected that paranoia would be associated with higher self-esteem as beliefs that the malevolence of others is undeserved may alleviate the distress associated with thinking that one is a target. We expected that this PM/BM dissociation would be especially pronounced when the effect of paranoia on subsequent self-esteem would be examined, as the attributional model specifies a causal role of paranoid thinking on beliefs about the self (Bentall, et al., 2001).

Whilst questionnaire data were analysed using traditional statistical techniques such as

correlational analyses and the analyses of variance, the diary data were analysed predominantly using multilevel linear modelling techniques. Multilevel modelling is ideally suited for the analysis of the diary data in which data at level two (beep level) are nested within persons (participant level) and the observations from the same individual are more similar than observations from different individuals. In contrast with conventional regression techniques multilevel regression techniques takes into account the fact that the residuals are not independent (Oorschot, et al., 2009).

2.3. Methods

Participants

Fifty-four patients with DSM-IV (APA, 1994) diagnosis of schizophrenia, schizoaffective, or delusional disorder with either currently paranoid or a past history of persecutory ideation were recruited from local in- and out-patient facilities. Twenty-three healthy controls with no current or past psychiatric problems requiring treatment were recruited through a community panel. Patients' diagnoses and current or past paranoid status were confirmed by clinical staff. Current paranoid status was also confirmed using the persecutory subscale of the Persecution and Deservedness Scale (PaDS; S. Melo, R. Corcoran, N. Shryane, & R. P. Bentall, 2009b) (> 1.5).

Of 77 participants who were invited to participate, 9 patients did not return the booklets, 3 patients completed fewer than 20 valid reports and 1 patient did not comply with the research protocol. The final study sample comprised 41 patients (11 in-patients and 30 out-patients) and 23 controls. Written informed consent was obtained from all participants.

For the purpose of some analyses, the patients were divided into 3 separate groups according to their PaDS scores at the initial assessment. Those with PaDS persecution scores < 1.5 were considered remitted. The remaining patients were divided into 'Poor-me' (PM) and 'Bad-me'(BM) according to a median split of their PaDS deservedness scores. Sociodemographic and clinical characteristics of the participants in the final sample are

summarized in Table 2.1. The groups were comparable for age and gender. However, there was a significant difference for IQ and years of education. Post-hoc Bonferroni tests showed that PM patients had a lower mean IQ than the controls ($p <.01$) and all patient groups had fewer years of education than the controls ($p <.05$).

Table 2.1. Sociodemographic and clinical characteristics of the study sample (N=64).

	Poor-me N=14	Bad-me N=15	Remitted N=12	Controls N=23	F/ X^2	P value of F/X^2	Group differences
Age (*SD*)	39.36 (15.37)	39.93 (11.84)	41.67 (12.20)	37.78 (15.21)	F(3,60)=0.21	.89	-
Gender (Female)	7	6	4	10	X^2(3)=0.78	.85	-
Years in education (*SD*)	12.00 (1.92)	12.53 (2.00)	12.83 (2.04)	15.04 (2.36)	F(3,60)=7.68	<.001	PM, BM, R < C
IQ (*SD*)	100.68 (14.30)	107.00 (13.93)	110.80 (12.59)	117.61 (11.12)	F(3,57) =5.78	<.01	PM < C
Marital status							
Married or living together	2	2	0	6	-	-	-
Widowed	0	1	0	1	-	-	-
Divorced	4	2	3	0	-	-	-

Never married	8	10	9	16	-	-	-

Work situation

Unemployed	11	11	10	3	-	-	-
Paid employment	1	2	1	9	-	-	-
Studying	1	2	1	8	-	-	-
Retired	1	0	0	3	-	-	-

PANSS(*SD*)

PANSS-Positive	2.44 (0.82)	2.49 (0.68)	1.59 (0.47)	1.06 (0.12)	$F(3,57)=27.44$	<.001	PM, BM > R, C
PANSS-Negative	2.01 (0.82)	1.96 (0.66)	1.73 (0.90)	1.05 (0.07)	$F(3,57)= 9.58$	<.001	PM, BM, R > C
PANSS-General	1.96 (0.58)	2.07 (0.43)	1.77 (0.69)	1.11 (0.12)	$F(3,57)=17.32$	<.001	PM, BM, R > C

Medication

Antipsychotic	13	14	12	-	-	-	-
Antidepress	5	1	2	-	-	-	-
Mood stabilizing	1	1	3	-	-	-	-

Note. PANSS=Positive and Negative Syndrome Scale.

2.3.1. Measures

2.3.1.1. Questionnaire Measures

The *Persecution and Deservedness Scale* (PaDS; Melo, et al., 2009b) assesses paranoid ideation and perceived deservedness of persecution. The *persecution sub-scale* includes 10 statements implying that the individual is an object of malevolence (e.g., "There are times when I worry that others might be plotting against me") rated on 5-point Likert scales (0-4) averaged to yield a *persecution score (PaDS-Persecution)*. Each persecution item is followed by a deservedness item (e.g., "Do you feel like you deserve others to plot against you?"; 5-point Likert scale [0-4]) which participants are instructed to answer only if they score >1 on the related persecution item. A total *deservedness score (PaDS-Deservedness)* was calculated as the mean score on all completed deservedness items. The subscales have excellent reliability (Melo, et al., 2009b).

The *Self Esteem Rating Scale-Short Form* (SERS-SF; T. Lecomte, Corbière, & Laisné, 2006) is a 20-item self-report measure of self-esteem. Half of the items assess negative self-esteem (e.g., "I wish I were someone else") and half measure positive self-esteem (e.g., "I feel that I am a very competent person"), rated on 7-point Likert scales (1-7). Cronbach's alpha was 0.93 for negative and 0.95 for positive self-esteem.

The *Beck Depression Inventory for Primary Care* (BDI-PC; Beck, Guth, Steer, & Ball, 1997) is a 7-item screening instrument which reflects DSM-IV (APA, 1994) criteria for Major Depressive Disorder. Respondents are asked to describe their mood in the past 2 weeks. Each item is rated on a 4-point scale (0-3). Cronbach's alpha was .92 in the current sample.

The *Quick Test* (Ammons & Ammons, 1962) was used to estimate the pre-morbid intelligence of the participants. The adult version comprises a list of 50 words presented in a successive order of increasing complexity, which have to be matched to pictures.

The *Positive and Negative Syndrome Scale* (PANSS; Kay, Fiszbein, & Opler, 1987; Kay, Opler, & Lindenmayer, 1988), administered in the form of a semi-structured interview, is a widely used measure of psychopathology in schizophrenia. It has three sub-scales: a Positive

Syndrome, a Negative Syndrome, and a General Psychopathology Scale and has a good reliability and validity (Kay, et al., 1988).

The Experience Sampling Method (ESM) is a within-day self-assessment technique (Hektner, et al., 2007; Oorschot, et al., 2009; Palmier-Claus, et al., 2010). Each participant received a digital wristwatch and a set of self-assessment diaries for each day. The wristwatch was programmed to emit a signal (beep) at unpredictable times 10 times a day on six consecutive days from 7.30 a.m. to 10:30 p.m. and participants were asked to complete the diary report immediately after each beep in order to minimize memory distortions. The time at which participants indicated they completed each report was compared to the actual time of the beep. Reports completed more than 15 min after the beep and participants who completed <20 valid reports were excluded from the analyses. The ESM has previously been employed with psychotic patients in general (for a review, see Myin-Germeys, et al., 2009) and with paranoid patients in particular (Thewissen, et al., 2008) and has been shown to be a feasible, reliable, and valid methodology.

2.3.1.2. ESM Measures

All ESM items were rated on a 7-point Likert scales (1 to 7). *ESM Paranoia* was assessed as the mean score on three statements derived from the PaDS-Persecution ("I worry that others are plotting against me", "I feel that I can trust no-one", "I believe that some people want to hurt me deliberately"; Cronbach's alpha=.94). Principal components analysis (PCA) of the items identified 1 factor (eigenvalue >1) explaining 90% of the variance.

ESM Deservedness was calculated as the mean score on three statements derived from the PaDS-Deservedness, each associated with one of the paranoia items ("Do you feel you deserve others to plot against you?", "Do you feel you deserve to have no-one you can trust?", "Do you feel you deserve to be hurt?"). For each item, scores were recorded only if a score on a related ESM persecution item was >1.

ESM Self-esteem was assessed as the mean score on four statements ("I like myself", "I am a good person", "I am ashamed of myself" [reverse-scored], "I am a failure" [reverse-

scored]; Cronbach's alpha=.84). PCA of the items identified one factor (eigenvalue >1) accounting for 67% of the variance.

Depression was defined as a mean score of three statements ("I feel sad", "I feel lonely", "I feel guilty"; Cronbach's alpha=.82) forming one PCA factor (eigenvalue >1) explaining 73% of the variance.

The temporal organisation of the diary measures is shown in Fig. 2.1.
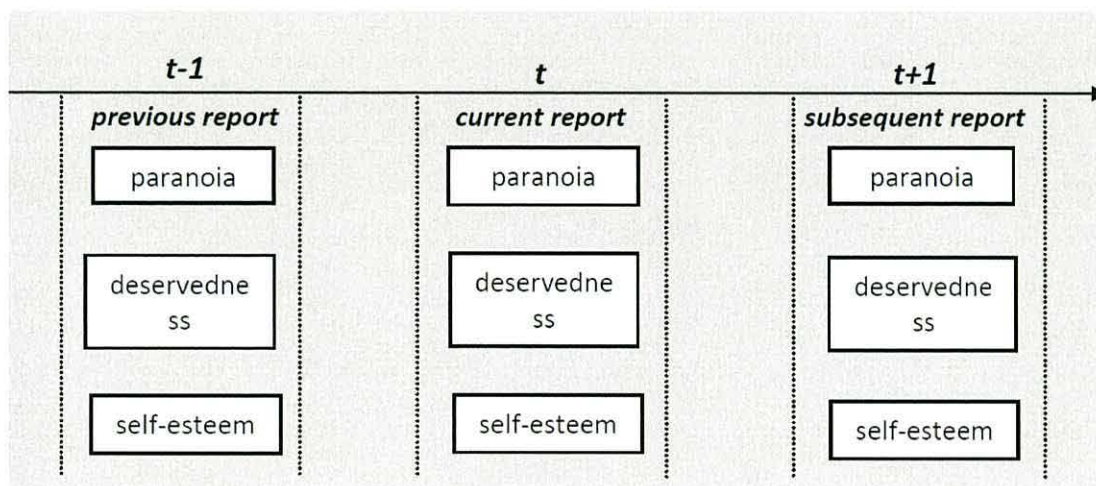
Figure 2.1. Temporal organisation of diary measures.

2.3.2. Procedure

Participants met a researcher twice, with an interval of seven to eleven days. At the initial meeting, participants completed the PaDS, the Quick Test and received the diary booklets and a digital watch along with the instructions about how to fill in the diaries. At the second meeting, participants handed back the diaries, completed the SERS-SF, the BDI-PC and underwent the PANSS.

2.3.3. Statistical Analyses

1. In order to examine the convergent validity of the questionnaire and ESM measures of paranoia, deservedness, self-esteem, and depression, we calculated Spearman correlations between these measures. Spearman correlations were also calculated to estimate the relationships between perceived deservedness of persecution, paranoia, self-esteem, and depression. For these analyses we calculated mean scores on each ESM variable for every participant and analysed them as participant-level variables.

2. To estimate the validity of patient groups, and to examine their psychological profiles we (i) assessed group differences on PANSS subscales and questionnaire ratings using one-way ANOVAs with post-hoc Bonferroni tests; (ii) estimated group differences on ESM measures using multilevel linear regressions. Multilevel linear modelling techniques are a variant of the more often used unilevel linear regression analyses. Multilevel modelling is ideally suited for the analysis of ESM data, in which repeated observations (beep level) are nested within persons (participant level). This is because in ESM data the observations from the same individual are more similar than observations from different individuals and the residuals are not independent. Unlike conventional regression techniques, multilevel regression techniques take this into account (Oorschot, et al., 2009). Regressions were performed with the categorical variable group (controls; PM; BM; remitted; with controls as the reference category) as the predictor and the ESM variables as the dependent variables in separate models.

3. In order to investigate group differences in instability of deservedness and self-esteem we performed multilevel regressions using group as the predictor and ESM instability of deservedness and ESM instability of self-esteem as dependent variables. We defined instability as the average absolute difference in ESM scores between two succeeding reports for each individual over 60 reports (indicating the mean change from moment to moment).

4. Finally, we investigated association between self-esteem and paranoia. First, we examined the effect of current ESM paranoia on current ESM self-esteem in the entire sample. This model was then modified by entering group and group x current ESM

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paranoia interaction as additional predictors. The temporal relationship between ESM paranoia and ESM self-esteem examined in these analyses is shown in Figure 2.2.
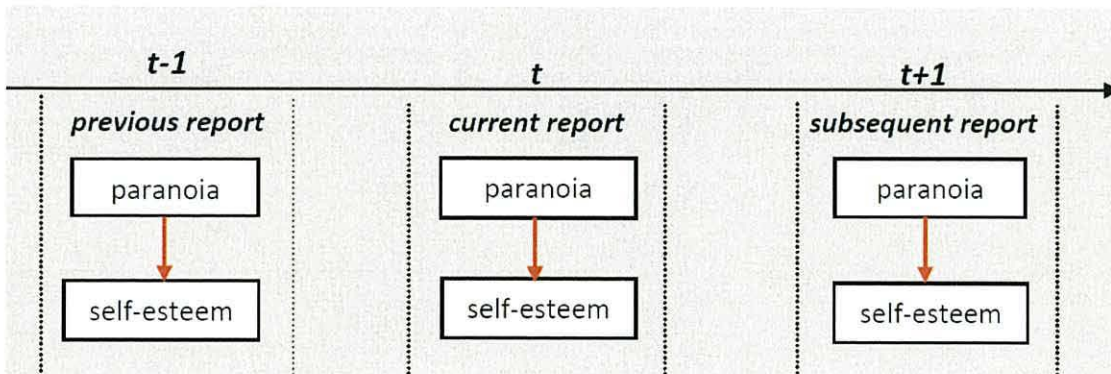
Figure 2.2. Temporal organisation of the variables used to estimate the relationship between current ESM paranoia and current ESM self-esteem.

5. Second, we examined whether current ESM paranoia predicted ESM self-esteem at the next moment (t+1) in the entire sample; current ESM self-esteem was entered as a possible confounder. This model was then modified by entering group and group x current ESM paranoia interaction as additional predictors. The temporal relationship between ESM paranoia and ESM self-esteem examined in these analyses is shown in Figure 2.3.
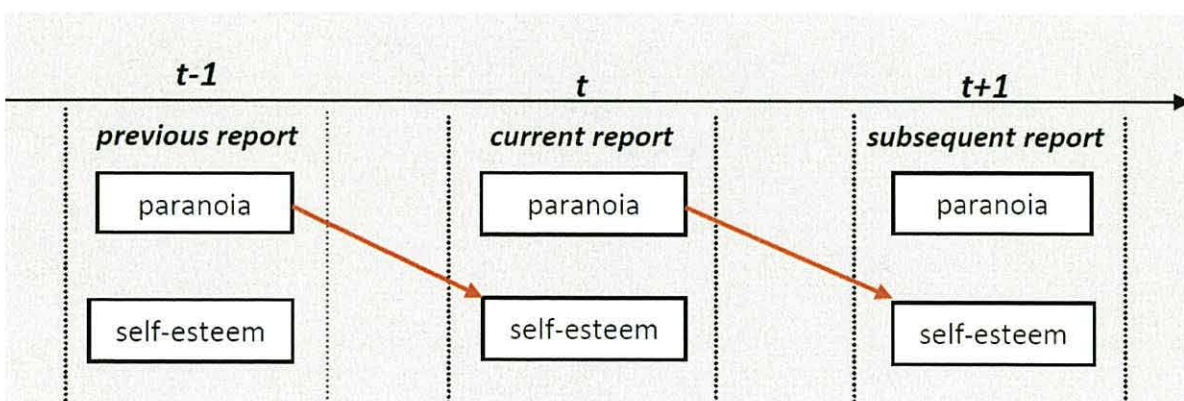
Figure 2.3. Temporal organisation of the variables used to estimate the relationship between current ESM paranoia and ESM self-esteem at the next moment.

Main effects and interactions were estimated using Wald test. Multilevel regressions were performed using standardized scores of ESM variables using the XTREG command of Stata 9.0.

2.4. Results

1.1.1. *Correlations*

Strong associations between questionnaire and averaged ESM measures of paranoia (r_S =.82), deservedness (r_S=.69), self-esteem (r_S= .76 for SERS pos; r_S= -.72 for SESRS neg), and depression (r_S=.70), (p <.001 for all relationships) support the convergent validity of the two forms of assessment. The belief that persecution was deserved was associated with higher paranoia, lower self-esteem, and more depression; these findings were consistent when either questionnaire or ESM measures were used (Table 2.2), further supporting the convergent validity of the two assessment methods.

2.4.1. *Group differences*

Mean scores on study variables stratified by group together with the results of statistical analyses are presented in Table 2.3 (except PANSS shown in Table 2.1). By design, both PM and BM patients reported more positive symptoms and higher PaDS persecution than remitted patients and controls (all p <.01) and BM patients reported higher PaDS deservedness than individuals from all other groups (all p <.001). All the patient groups showed more negative symptoms and general psychopathology than the controls (all p <.05).

On questionnaire measures, PM and BM patients reported higher negative self-esteem, lower positive self-esteem and more depression than controls (all p <.01). BM patients also showed higher negative self-esteem, lower positive self-esteem, and more depression than remitted patients (all p <.05) who in turn reported lower positive self-esteem than healthy

controls ($p <.01$). Although the mean negative self-esteem score for the BM patients was higher than that for the PM patients, this difference was not significant ($p=.58$).

On the ESM variables (also Table 2.3) PM and BM patients reported higher levels of paranoia than the remitted patients and controls (all $p <.001$). As regards deservedness of persecution, BM patients reported higher levels than individuals from all other groups (all $p <.001$). Patterns of group differences for self-esteem and depression were virtually identical. BM patients reported lower self-esteem and more depression than participants from all other groups, including PM patients (all $p <. 001$), while PM patients showed lower self-esteem and more depression than the controls (all $p <.05$).

Table 2.2. Correlations between deservedness of persecution, paranoia, self-esteem, and depression.

	Deservedness of Persecution	
	PaDS-Deservedness (N obs.=43)	ESM Deservedness (N obs.=41)
Paranoia		
PaDS-Persecution	.40**	.52**
ESM Paranoia	.37*	.49**
Self-esteem		
SERS Negative Self-esteem	.42**	.56**
SERS Positive Self-esteem	-.38*	-.51**
ESM Self-esteem	-.59**	-.54**
Depression		
BDI-PC	.34*	.48**
ESM Depression	.46**	.59**

Note. Spearman rho. *$p <.05$, **$p <.01$. For ESM measures separate means were calculated for each participant. PaDS= Persecution and Deservedness Scale; ESM=Experience Sampling Method; SERS=Self Esteem Rating Scale-Short Form; BDI-PC=Beck Depression Inventory for Primary Care.

Table 2.3. Mean scores (*SD*) for study variables (stratified by group) and group differences.

	Mean (SD)				F/ X^2	P value of F/X^2	Group differences
	Poor-me N=14	Bad-me N=15	Remitted N=12	Controls N=23			
Questionnaire measures							
PaDS-Persecution	2.58 (0.56)	2.83 (0.86)	0.78(0.46)	0.54 (0.51)	$F(3,60)=61.83$	<.001	PM, BM > R, C
PaDS-Deservedness	0.31(0.30)	2.09 (0.82)	0.44(0.44)	0.74 (0.99)	$F(3,43)=20$	<.001	BM > PM, R, C
N obs.	14	15	9	9			
SERS Negative Self-esteem	3.82(1.41)	4.51(1.39)	2.87(0.97)	2.28(0.48)	$F(3,57)=14.99$	<.001	PM, BM > C BM > R
SERS Positive Self-esteem	3.69 (1.25)	3.01(1.15)	4.29(1.24)	5.67(0.61)	$F(3,57)=22.84$	<.001	PM, BM, R < C BM < R
BDI-PC	1.03(0.69)	1.40(0.80)	0.56(0.53)	0.11(0.22)	$F(3,59)=17.19$	<.001	PM, BM > C BM > R
ESM measures							
ESM valid reports	46.73(6.96)	46.46(7.68)	46.83(9.70)	50.42(5.40)	$X^2(3)=50.84$	.11	-
ESM Paranoia	3.28(2.31)	3.93(2.17)	1.20(0.47)	1.06(0.18)	$X^2(3)=50.84$	<.001	PM, BM > R, C

ESM Deservedness	1.34(0.87)	2.91(1.54)	1.29(0.52)	1.28(0.63)	$X^2(3)=30.08$	<.001	BM > PM, R, C
N obs.	438	575	118	146			
ESM Self-Esteem	5.46(1.35)	3.94(1.26)	5.79(0.98)	6.21(0.69)	$X^2(3)=59.37$	<.001	BM < PM, R, C
							PM < C
ESM Depression	2.26(1.26)	3.62(1.74)	1.69(1.11)	1.29(0.59)	$X^2(3)=50.16$	<.001	BM > PM, R, C
							PM > C
Instability							
ESM Deservedness Instability	0.31(0.79)	0.58(0.75)	0.33(0.46)	0.10(0.33)	$X^2(3)=8.68$	<.05	BM > PM, C
ESM Self-Esteem Instability	0.47(0.70)	0.62(0.64)	0.30(0.35)	0.25(0.47)	$X^2(3)=22.17$	<.001	BM, PM > R, C

Note. For ESM measures separate means were calculated for each participant and subsequently aggregated to obtain group means. ESM=Experience Sampling Method. PaDS= Persecution and Deservedness Scale; SERS=Self Esteem Rating Scale-Short Form; BDI-PC=Beck Depression Inventory for Primary Care.

2.4.2. Instability of deservedness and self-esteem

The intra-individual ranges of ESM deservedness ratings in currently paranoid patients identified as BM and PM by the PaDS are depicted in Figure 2.4. While the median deservedness scores remained typically close to 1 in the PM group and were typically >1 in the BM group, three PM patients showed median deservedness ratings >1 and six BM patients had a median deservedness rating of 1. The range of deservedness scores for BM patients suggests considerable fluctuation in deservedness judgements over the 6 days of assessment.

Mean scores for instability of deservedness and self-esteem together with the results of statistical analyses are presented in Table 2.3. To investigate group differences in instability of deservedness and self-esteem we performed multilevel regressions using group as the predictor and ESM instability of deservedness and ESM instability of self-esteem as dependent variables in two separate regressions. The results revealed that BM patients reported greater instability of deservedness than PM patients and healthy controls (both $p < .05$). However, the analyses for instability of self-esteem showed that the PM and BM groups did not differ on this variable, $X^2[1] = 1.20$, $p=.27$. Instead, currently paranoid patients in general (PM and BM) showed greater fluctuations than either remitted patients or controls (all $p < .05$).

2.4.1. Relationship between paranoia and self-esteem

In the entire sample, current paranoia was associated with *low* self-esteem ($\beta[SE]=-0.22[0.03]$, $p < .001$). However, when a regression was performed with group, paranoia, and group x current paranoia as the independent variables and current self-esteem as the dependent variable, the results revealed a significant group x current paranoia interaction $X^2(3) = 40.68$, $p < .001$. When the association between paranoia and self-esteem was examined in each participant group independently, the results revealed that paranoia was associated with *low* self-esteem in BM patients ($\beta[SE]= -0.38[0.04]$, $p < .001$) while there was no association between self-esteem and paranoia in other groups (Table 2.4).
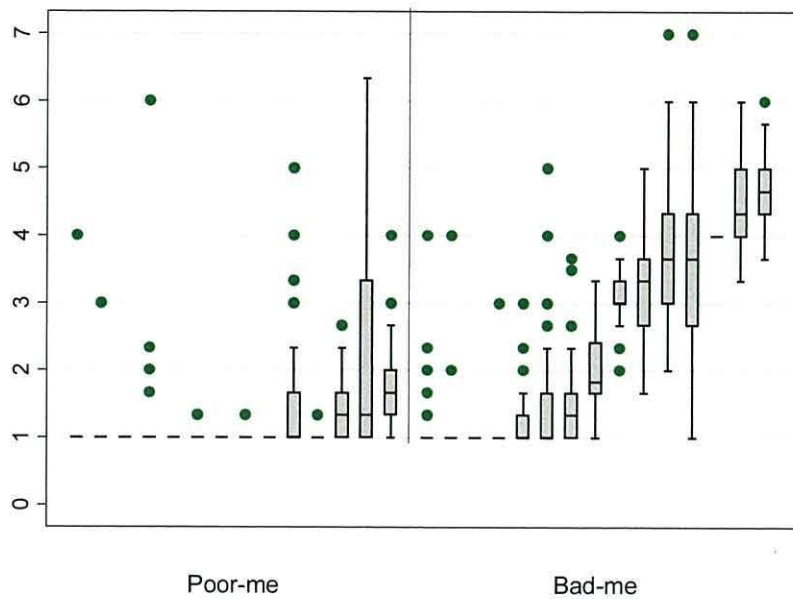
Figure 2.4. The intra-individual ranges of ESM deservedness scores over 6 days of assessment in patients identified as Poor-me and Bad-me. Each column represents a single participant. Thick horizontal line represents the median ESM deservedness score for the participant. Tinted column represents interquartile range and dots represent outliers.

Table 2. 4. Multilevel model estimates B (*SE*) (stratified by group).

	Poor-me N=14	Bad-me N=15	Remitted N=12	Controls N=23	Group differences
Effect of current paranoia on current self-esteem	-0.03 (0.04)	-0.38** (0.04)	0.07 (0.14)	-0.08 (0.17)	BM < PM, R

Note. * *p* <.05, ** *p* <.01.

When the association between current paranoia and subsequent self-esteem was examined, paranoia predicted lower self-esteem in the whole sample (β[SE]= -0.09 [0.03], *p* < .001). However, controlling for current self-esteem eliminated this effect (β[SE]= -0.01 [0.03], *p*=.78).

When a regression was performed in which current paranoia, group, their interaction, and current self-esteem were entered as the independent variables and

subsequent self-esteem as the dependent variable, the results revealed a significant group x current paranoia interaction, $X^2(3) = 12.30$, $p < .001$. When the effect of current paranoia on subsequent self-esteem was examined in each participant group independently, the results showed that paranoia predicted *lower* subsequent self-esteem only in BM patients, whereas it predicted *higher* self-esteem in PM patients, suggestive of a defensive function of paranoia in the PM group specifically (Table 2.5).

Table 2. 4. Multilevel model estimates β (*SE*) (stratified by group).

	Poor-me N=14	Bad-me N=15	Remitted N=12	Controls N=23	Group differences
Effect of current paranoia on subsequent self-esteem	0.09* (0.04)	-0.08* (0.04)	0.14 (0.11)	0.09 (0.08)	BM < PM, R

Note. * *p* <.05, ** *p* <.01.

2.5. Discussion

Currently paranoid patients showed elevated levels of negative self-esteem and depression. Consistent with previous research (Chadwick, Trower, et al., 2005; D. Freeman, et al., 2001; Melo, et al., 2006a), low self-esteem and depression were especially strongly associated with BM beliefs. Most patients initially classified as PM and BM according to the PaDS tended to maintain this position over the study period, although a few changed their stance. The most dramatic fluctuations in perceived deservedness were observed among BM patients. This observation is in line with the results of Melo et al. (2006a) who found that in a sample of acutely paranoid patients, BM beliefs were associated with greater fluctuations in deservedness. Also consistent with previous research (Thewissen, et al., 2008; Thewissen, et al., 2007b) we found that self-esteem was highly unstable in currently paranoid patients (PM and BM). Overall, these results suggest that acute paranoia involves a markedly unstable psychological profile. This observation is

consistent with Bentall and colleagues' (2001) account which predicts highly unstable psychological functioning in paranoid individuals as they are constantly engaged in self-regulation. The particularly high levels of instability in the BM patients may reflect the fact that these individuals hold profoundly negative views about themselves and therefore are extremely motivated to escape them.

Our results also paint a complex picture of the relationship between paranoia and self-esteem. Measured concurrently in the entire sample, current paranoia was associated with *lower* self-esteem, as found in some previous studies (D. Freeman, et al., 1998; Humphreys & Barrowclough, 2006). However, when we examined the variations in the relationship between concurrent paranoia and self-esteem across different participant groups, we found that this relationship was entirely accounted for by the BM patients and there was no association between concurrent paranoia and self-esteem in the other groups.

Even more interesting results emerged when we investigated the temporal relationship between paranoia and self-esteem. Paranoia predicted *lower* subsequent self-esteem in the BM patients but this relationship was reversed in the PM patients, in whom paranoia resulted in *higher* self-esteem. Consistent with our results for BM patients, research has found that in non-clinically paranoid individuals who normally hold BM beliefs (Fornells-Ambrojo & Garety, 2005) paranoia is associated with low self-esteem (Combs & Penn, 2004; Martin & Penn, 2001). It is possible that the discrepancy between the concurrent and prospective relationships observed in PM patients is due to the fact that recruitment of paranoia in response to negative self-views requires time; this is why the increase in self-esteem is evident only with some delay.

The observation that paranoia had beneficial effect for self-esteem in PM patients is consistent with Trower and Chadwick's account of paranoia which asserts that only PM beliefs defend against negative self-evaluations. Our results are also compatible with the revised attributional model which suggests that PM beliefs may serve a protective function for self-esteem (Bentall, et al., 2001). Consistent with this account, Melo et al. (2006a) found that external attributions for negative events (the proposed mechanism for protecting against negative self-thoughts) are only found in PM patients.

Some limitations of our study must to be acknowledged. First, we sought to explore heterogeneity in paranoid patients and had a large number of participant groups but the number of participants in each group was limited. Second, our longitudinal assessments

were demanding for the patients resulting in some drop-outs and a relatively short assessment period which precluded us from establishing the stability of deservedness over longer time frames. Melo et al. (2006a) observed patients for up to 52 days and found that some patients changed from PM to BM in that time. Finally, we used self-report measures, which may be open to self-presentation bias.

2.6. Conclusions

In sum, our results confirm that emotional processes and self-esteem play an important role in paranoid delusions as found in previous research (Bentall, et al., 2009) but demonstrate the limitations of examining the relationship between emotion, cognition and psychosis by cross-sectional designs alone. The relevant psychological processes, and presumably the biological mechanisms that underpin them, are dynamic in nature. Our findings show that BM and PM beliefs are associated with distinct psychological profiles, with BM beliefs characterized by more depression and low self-esteem. While deservedness judgements remain relatively stable in the short-term, acute paranoia, and especially BM paranoia, is associated with a highly unstable psychological presentation. Finally, the relationship between paranoia and self-esteem varies across subgroups and time. Measured concurrently, BM but not PM paranoia is associated with lower self-esteem. Measured prospectively, paranoia predicts *lower* self-esteem in individuals with BM beliefs but *higher* self-esteem in those with PM beliefs. The evidence that PM paranoia protects against negative self-views over time is consistent with the hypothesis that attributional mechanisms play an important role in paranoid symptoms (Bentall et al. 2001).

It is likely that previous inconsistencies in psychological research in relation to paranoia might be explained by failure to account for deservedness of persecution and disregard for the dynamic nature of paranoid process. Future research should address these issues and concentrate on investigating factors determining perceived deservedness of persecution.

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Chapter 3

The role of experiential avoidance in paranoid delusions:

an Experience Sampling Study

3.1. Abstract

The study examined the role of experiential avoidance (EA) in paranoid delusions and the mechanisms underlying EA. Currently paranoid patients (N=29), remitted patients (N=12) and healthy controls (N=23) were studied using the Experience Sampling Method (ESM), a structured diary technique, assessing psychopathology and current context and in daily life. The results showed that both EA and low self-esteem predicted greater paranoia over time. There was a bi-directional relationship between low self-esteem and EA: negative self-views triggered EA and EA led to more negative self-views. The detrimental effect of EA on self-esteem was more pronounced under high activity-related stress but was less severe under high social stress. Our results implicate mental control strategies in the development of paranoia and are compatible with the attributional model of paranoia (Bentall et al., 2001) which suggests that persecutory delusions arise a result of dysfunctional attempts to avoid unpleasant thoughts about the self.

3.2. Introduction

It has been suggested that experiential avoidance (EA), conceptualized as unwillingness to endure unpleasant thoughts and feelings and attempts to avoid them, lies at the heart of many psychiatric conditions (Hayes, et al., 2004; Hayes, Wilson, et al., 1996). The exact mechanisms through which EA operates are unclear, but one account (the ironic process theory) suggests that it involves two components: a cognitively effortless monitoring system that scans the content of consciousness for undesirable thoughts and a relatively more demanding 'distractor' system that seeks thoughts that will promote the preferred state (Wenzlaff & Wegner, 2000). Under normal circumstances the simultaneous operation of these two systems ensures efficiency in warding off unwanted mental states. However, when mental resources are taxed (e.g., under stress) the less effortful monitoring system continues scanning for negative thoughts while the more cognitively demanding intentional operating system ceases to supply positive distracting thoughts, thus resulting in enhanced accessibility of the very thoughts that are being avoided (e.g., Beevers & Meyer, 2004; Wenzlaff & Luxton, 2003).

Parallels may be drawn between the EA account of psychopathology and the attributional model of paranoia (Bentall, et al., 2001) as the latter suggests that paranoid delusions arise as a result of dysfunctional attempts to avoid feelings of low self-worth. The attributional model proposes that paranoid individuals struggle to avoid covertly held negative self-views by making excessively external personal attributions for negative events. Reframed in terms of the ironic process theory, the negative self-views experienced by the paranoid individuals could be conceptualised as the unpleasant mental content and external personal attributions as 'distractor' thoughts. According to the ironic process theory, it would be expected that plentiful cognitive resources would enable paranoid individuals to attribute negative events to external causes, fuelling paranoia and leading to a temporary improvement in self-esteem. However, additional demands, including life stress, would lead to the breakdown in this process and the uncovering of highly negative self-beliefs. Consistent with these predictions, highly unstable self-esteem has been observed in paranoid patients (Thewissen, et al., 2008; Thewissen, et al., 2007b).

A recent study with non-clinical participants (Udachina, et al., 2009b) tested a model based on the predictions of the attributional account of paranoia and the ironic

process theory. This model predicts that low self-esteem and EA lead to paranoia and that the relationship between self-esteem and EA is bidirectional: unpleasant mental states, including negative self-beliefs, trigger mental control strategies and mental control leads to even more aversive mental states. When cognitive resources are free, avoidance leads to a temporary improvement in self-esteem. However, avoidance fails under stress, leading to even more unfavourable self-views. The results generally supported this model, although no evidence for beneficial effect of EA for self-esteem even in low stress conditions was found. However, it is possible that higher levels of EA are required to produce the desired improvement in self-esteem and such levels may only be found in patient populations.

In the present study, we attempted to replicate the previous finding that both low self-esteem and EA lead to paranoia (Udachina, et al., 2009b). However, in this study our population included patient participants as well as non-clinical controls. We also re-examined the moderating effect of stress on the relationship between EA and self-esteem in this sample, predicting that EA would lead to more negative self-evaluations under stress. Finally, we extended previous research by examining the association between EA and self-esteem instability to test the hypothesis that EA is employed to regulate self-esteem.

We used the Experience Sampling Method (ESM) (Hektner, et al., 2007; Oorschot, et al., 2009) to test these predictions. ESM is a structured diary technique which allows the assessment of symptoms, mood and behaviour in the context of daily life. ESM has high ecological validity as it takes into account a wide range of environmental factors influencing behaviour. It also permits the estimation of causality as it yields longitudinal data (Palmier-Claus, et al., 2010).

3.3. Methods

3.3.1. Participants

Fifty-four patients with DSM-IV-TR (APA, 2000) diagnosis of schizophrenia, schizoaffective, or delusional disorder who ranged across the continuum of paranoia were recruited from in- and out-patient facilities. Twenty-three healthy controls with no current or past psychiatric problems were recruited through a community panel. Patients'

diagnoses and current/past paranoid status were confirmed by clinical staff. Current paranoid status was also confirmed using the persecutory subscale of the PaDS (S. Melo, R. Corcoran, N. Shryane, & R. Bentall, 2009a; see Measures for details). Those with PaDS persecution scores > 1.5 were considered currently paranoid and the remaining patients were considered remitted. Of 77 participants who were invited to participate, 9 patients did not return the booklets, 3 patients completed fewer than 20 valid reports and 1 patient did not comply with the research protocol. The final study sample therefore comprised 41 patients (11 in-patients and 30 out-patients) and 23 controls. Sociodemographic and clinical characteristics of the final sample are summarized in Table 3.1.

3.3.2. Measures

The *Persecution and Deservedness Scale* (PaDS; Melo, et al., 2009a) assesses paranoid ideation and perceived deservedness of persecution. The *persecution sub-scale* comprises 10 statements implying that the individual is an object of malevolence of others (e.g., "There are times when I worry that others might be plotting against me") rated on 5-point Likert scales (0-4) and totalled to yield a *persecution score (PaDS-P)*. The subscale has excellent reliability (Melo, et al., 2009a).

The *Positive and Negative Syndrome Scale* (PANSS; Kay, et al., 1987; Kay, et al., 1988), administered in the form of a semi-structured interview, is a widely used measure of psychopathology in schizophrenia. It has three sub-scales: a Positive Syndrome, a Negative Syndrome, and a General Psychopathology Scale and has a good reliability and validity (Kay, et al., 1988).

The *Experience Sampling Method (ESM)* is a within-day self-assessment technique (Hektner, et al., 2007; Oorschot, et al., 2009). Each participant received a digital wristwatch and a set of self-assessment diaries for each day. The wristwatch was programmed to emit a signal (beep) at unpredictable times 10 times a day on 6 consecutive days from 7.30 am to 10:30 pm and participants were asked to complete the diary report immediately after each beep in order to minimise memory distortions. The time at which participants indicated they completed each report was compared to the actual time of the beep. Reports completed more than 15 min after the beep and participants who completed

<20 valid reports were excluded from the analyses. The ESM has previously been employed with psychotic patients (Myin-Germeys, et al., 2009).

Table 3.1. Sociodemographic and clinical characteristics of the study sample.

	Currently paranoid patients N=29	Remitted patients N=12	Controls N=23
Age (*SD*)	39.66 (13.41)	41.67 (12.20)	37.78 (15.21)
Sex (Female)	13	4	10
Years in education (*SD*)	12.28 (1.94)	12.83 (2.04)	15.04 (2.36)
Marital status			
Married or living together	4	0	6
Widowed	1	0	1
Divorced	6	3	0
Never married	18	9	16
Work situation			
Unemployed	22	10	3
Paid employment	3	1	9
Studying	3	1	8
Retired	1	0	3
PANSS			
PANSS positive (SD)	2.46 (0.74)	1.59 (0.47)	1.06 (0.12)
PANSS negative (SD)	1.99 (0.73)	1.73 (0.90)	1.05 (0.07)

ESM Measures

All ESM items were rated on a 7-point Likert scales (1-7). *Paranoia* was assessed as the mean score on 3 statements derived from the PaDS-P ("I worry that others are plotting against me", "I feel that I can trust no-one", "I believe that some people want to hurt me deliberately"; Cronbach's alpha=.94). Principal components analysis (PCA) identified 1 factor (eigenvalue >1) explaining 90% of the variance.

EA was assessed as the mean score on 3 statements reflecting attempts to avoid unpleasant mental events ("Since the last beep my emotions have got in the way of things which I wanted to do", "Since the last beep I've tried to block negative thoughts out of my mind", "Since the last beep I've tried to avoid painful memories"; Cronbach's alpha= .89). PCA identified 1 factor (eigenvalue > 1) explaining 82% of the variance.

Self-esteem was assessed as the mean score on 4 statements ("I like myself", "I am a good person", "I am ashamed of myself" [reverse-scored], "I am a failure" [reverse-scored]; Cronbach's alpha=.84). PCA of the items identified one factor (eigenvalue > 1) accounting for 67% of the variance.

Social stress was assessed as a mean score on 3 items ("I like this company" [reverse scored], "Right now, I'd prefer to be alone," "I'm enjoying myself" [reverse scored]; Cronbach's alpha= .76). PCA identified 1 factor (eigenvalue>1) explaining 68% of the variance.

Activity-related stress was assessed as a mean score on 3 items ("I'd rather be doing something else", "This activity is difficult", and "I like this activity" [reverse scored], Cronbach's alpha = .59). PCA identified 1 factor (eigenvalue>1) explaining 59% of the variance.

The chronological organization of items in the ESM diary is shown schematically in Figure 3.1.

3.3.3. Statistical Analyses

Multilevel linear regressions (MLR) were performed to test (i) the relationships between EA, self-esteem, and paranoia (ii) the moderating effect of stress on the relationship between EA and self-esteem (ii) the relationship between EA and self-esteem instability. The analyses were carried out using the XTREG module of Stata 9.0. Multilevel linear modelling techniques are ideally suited for the analysis of ESM data, in which repeated observations (beep level) are nested within individuals (participant level). In ESM data the observations from the same individual are more similar than observations from different individuals and the residuals are not independent. Unlike unilevel regressions, multilevel regressions take this into account (Oorschot, et al., 2009).

To examine the relationships between EA, self-esteem, and paranoia, two equivalent models were tested. In both models the extent to which previous low self-esteem and previous EA predicted current paranoia was assessed. However, in one model, low self-esteem was assumed to partially mediate the relationship between EA and paranoia. In the other, EA was assumed to partially mediate the relationship between low self-esteem and paranoia. The tested relationships are presented in Figure 3.1.

According to Baron & Kenny (1986), the mediation effect occurs when (1) the independent variable significantly affects the mediator, (2) the independent variable significantly affects the dependent variable in the absence of the mediator, (3) the mediator has a significant effect on the dependent variable in the presence of the independent variable, (4) the effect of the independent variable on the dependent variable is reduced when the mediator is added to the model. Sobel tests were used to formally test the mediation effects.
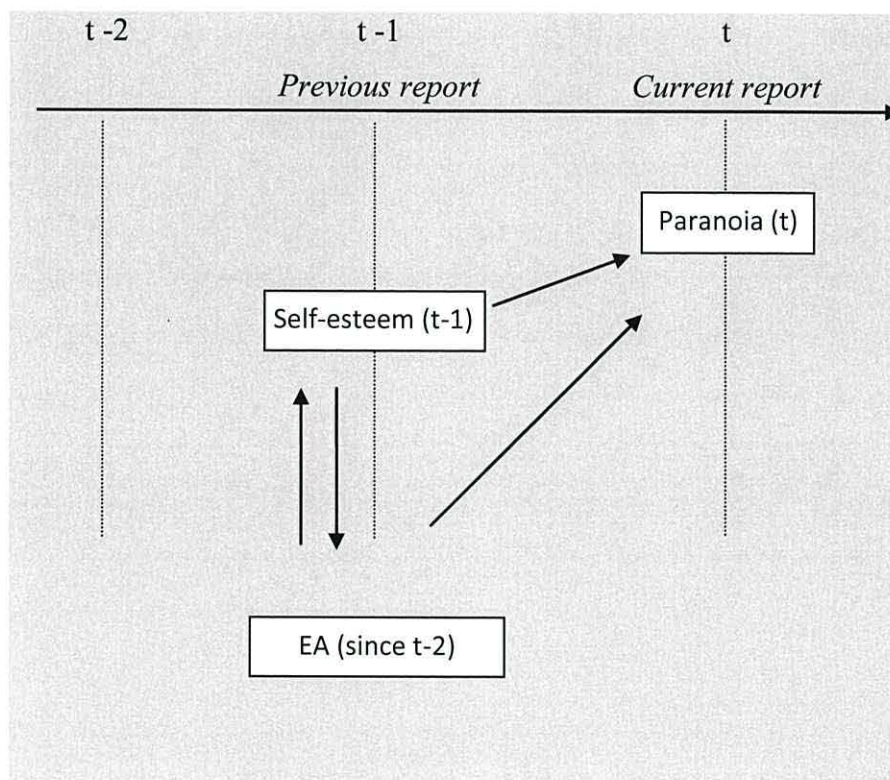
Figure 3.1. Conceptual model of the hypothesised relationships between EA, self-esteem, and paranoia.

With regards to the temporal structure of the variables used in mediational analyses, it is important to note that the relationship between outcome and predictor which is closer in time to the outcome is inflated compared to the relationship between the same outcome and a predictor which is further away in time (Kenny, Kashy, & Bolger, 1998). Although ESM EA estimates behaviours occurring between the last and the current report, participants are likely to be biased towards recording more recent avoidance behaviours. This means that the recorded avoidance will have occurred closer to the time of the current report than that of the previous report. Thus, the relationship between Paranoia (t) and EA (since t-1) would be inflated compared to the relationship between Paranoia (t) and Self-esteem (t-1), producing biased results. To overcome this bias we used the variable EA (since t-2) instead of EA (since t-1) when testing the relationships between EA, self-esteem and paranoia.

3.4. Results

(i) Relationships between EA, self-esteem and paranoia

1. *To test the association between previous EA and current paranoia*, a MLR was performed with EA at previous report as the predictor and current paranoia as the outcome variable. The model was corrected for a possible confounding effect of paranoia at previous report. The results showed that previous EA was positively associated with paranoia (B = 0.05, SE =0.01, *p* <.001).

2. *To test the association between previous self-esteem and current paranoia*, a MLR was performed with self-esteem at previous report as the predictor and current paranoia as the outcome variable. The model was corrected for a possible confounding effect of paranoia at previous report. The results revealed that previous self-esteem was negatively associated with paranoia (B = -0.05, *SE*=0.01, *p*<.001).

3. *To test the association between previous EA and previous self-esteem*, a MLR was performed with EA at previous report as the predictor and self-esteem at previous report as the outcome variable. The model was corrected for a possible confounding effect of self-

esteem at report before previous (t-2). The results showed that EA was associated with low self-esteem (B = - 0.14, SE =0.02, p <.001).

4. *To test the association between previous self-esteem and previous EA*, an MLR was performed with current self-esteem as the predictor and EA at current report as the outcome variable. The model was corrected for a possible confounding effect of EA at report before previous (since t-3). The results showed that self-esteem was negatively associated with EA (B = -0.27, *SE*=0.03, *p*<.001).

5. *To test the hypothesis that both previous self-esteem and previous EA predict current paranoia*, a MLR was performed with EA at previous report and self-esteem at previous report as the predictors and current paranoia as the outcome variable. The model was corrected for a possible confounding effect of paranoia at previous report. Consistent with previous research (Udachina, et al., 2009b), the results showed that both low self-esteem (B = -0.03, *SE* =0.01, *p* <.05) and higher EA (B =0.04, *SE* =0.01, *p* <.01) were associated with higher paranoia.

6. The results of the Sobel test testing *the hypothesis that previous self-esteem mediates the relationship between previous EA and current paranoia* showed that self-esteem was a significant mediator (Sobel *z* = 3.56, *p* <.001). The results of the Sobel test testing *the hypothesis that previous EA mediates the relationship between previous self-esteem and current paranoia* showed that EA was a significant mediator (Sobel *z* =- 4.22, *p*<.001).

(ii) Moderating effect of stress on the relationship between EA and self-esteem

To test the hypothesis that stress moderates the relationship between EA and self-esteem, a MLR was performed with EA at current report, current degree of activity-related stress and their interaction as the predictors, and current self-esteem as the outcome variable. The model was corrected for a possible confounding effect of self-esteem at previous report. For these analyses two new 3-level categorical variables were constructed by dividing reports into tertiles based on the scores for each type of stress: degree of activity stress (0=low; 1=moderate; 2=high) and degree of social stress with the similar levels. The

results revealed a significant stress x EA interaction, $X^2(2)=18.36$, $p <.001$. The effect sizes of EA on self-esteem stratified by stress level are shown in Table 3.2. *Post-hoc* Wald tests revealed that, consistent with the predictions, the detrimental effect of EA on self-esteem was greater under high activity stress, compared to that under low ($p <.001$) and moderate ($p <.001$) stress.

When similar analyses were carried out for the social stress, the results again revealed a significant stress x EA interaction, $X^2(2)=8.05$, $p <.001$. However, in contrast with our predictions, post-hoc tests showed that the reduction in self-esteem in response to EA was greater under moderate stress than under highest stress ($p <.01$).

Table 3.2. Multilevel model estimates (SE) for the effect of EA on self-esteem stratified by levels of stress.

	Low stress	Moderate stress	High stress	$X^2(3)$	Differences
Effect of activity-related stress	-0.08** (0.02)	-0.08** (0.02)	-0.15** (0.02)	14.02**	High < Low, Moderate
Effect of social stress	-0.12** (0.03)	-0.15** (0.02)	-0.09** (0.02)	8.05**	High > Moderate

Note. ** $p <.01$.

(iii) Relationship between EA and self-esteem instability

To test the association between EA and self-esteem instability, a MLR was performed with EA at current report as the predictor and self-esteem instability. We defined self-esteem instability as the average absolute difference in ESM self-esteem scores between two succeeding reports for each individual over 60 reports (indicating the mean change from moment to moment). The results revealed that EA was associated with more unstable self-esteem (B= 0.06, SE=.01, p <.001).

3.5. Discussion

Our results were generally consistent with our hypotheses and earlier findings in a non-clinical population (Udachina, et al., 2009b). They support the model in which both EA and negative views about the self lead to paranoia. The observation that EA was associated with unfavourable and unstable views about the self suggests that individuals may employ mental control strategies to regulate self-esteem. These results are consistent with previous research which found that, in a non-clinical population, lack of positive self-views was associated with greater reliance on EA (Udachina, et al., 2009b). Our results are also compatible with Bentall et al.'s (2001) model of paranoia which proposes that dramatic fluctuations in self-views observed in paranoid patients (Thewissen, et al., 2008; Thewissen, et al., 2007b) reflect the attempts to avoid feelings of low self-esteem.

Our results support the hypothesis that intolerance and avoidance of aversive mental states contributes to the development of paranoid ideas. This is consistent with previous research linking paranoid symptoms to avoidant safety behaviours and mental control strategies (Morrison, French, & Wells, 2007; Spinhoven & van der Does, 1999; Udachina, et al., 2009b). It is unclear why paranoid delusions would arise as a consequence of attempts to expel negative mental states from awareness. However, it is possible that cognitive content invoked by the paranoid individuals to distract themselves from thinking about own inadequacies includes external other-blaming attributions, as proposed by the attributional account of paranoia (Bentall, et al., 2001). The observation that the relationship between negative self-views and EA was bi-directional is also consistent with the attributional model as the latter proposes dynamic and non-linear relationships between self-representations and self-esteem regulation strategies.

Our results lend partial support for the idea that the ironic process theory (Wenzlaff & Wegner, 2000) provides an accurate account of the mechanisms underlying EA. This theory predicts that mental control strategies are cognitively demanding and that stressful situations should disrupt the successful operation of EA. In support of this view and consistent with earlier research (Udachina, et al., 2009b), we found that EA was especially damaging for self-esteem when activity-related stress was high. Contrary to our expectations, however, we found that EA was associated with more negative self-views in less stressful social situations compared to highly stressful social circumstances. It is

unclear why this should be the case but it is possible that in highly stressful social situations the effect of EA on self-esteem loses its potency as other factors take priority in determining self-views.

Although both the ironic process theory and the attributional model of paranoia suggest that the attempts to avoid negative mental states should be successful at least some of the time, neither the present study nor Udachina et al. (2009b) found any evidence for effective avoidance. It is unclear why people would engage in EA if it was not at least occasionally beneficial. One explanation would be that that avoidance operates outside of the individual's awareness, as suggested by some authors (e.g., Mikulincer, Dolev, & Shaver, 2004) and self-report measures may be unable to tap this process. An alternative explanation could be that the benefits of EA are so short lived that the frequency of sampling was not high enough to capture these benefits.

Our results should be interpreted with certain caveats in mind. In this study we used a self-report measure of EA. However, it is possible that avoidance operates outside of the individual's awareness (e.g., Mikulincer, et al., 2004), and self-report measures of EA are unable to tap this process. In addition, self-reflection abilities of psychotic patients in particular may be compromised. Due to high demands imposed by the experience sampling procedure some patients were unable to complete the study. It is possible that the individuals with the highest levels of EA were particularly likely to drop out from the study. Further, due to the nature of the constructs of interest and the way they were measured, there was no straightforward solution as to the temporal organisation of the variables included in mediation analyses. However, we believe that our analyses provide an adequate test of the model. With these limitations in mind, behavioural measures of EA may prove to be useful in future investigations.

Finally, in the current study we used a "continuum" approach to paranoid beliefs. This approach assumes that the processes involved in paranoid delusions also operate in individuals with milder forms of paranoia. This stance is supported by numerous studies demonstrating that although paranoid delusions are often associated with diagnosable psychiatric disorders, they exist on a continuum with less bizarre suspicious beliefs observed in normal population (e.g., Rossler, et al., 2007; Rutten, et al., 2008; van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). Consistent with this, Markon and colleagues (2011) analysed the relative reliability and validity of continuous and

categorical measures of psychopathology and found superior reliability and validity for the dimensional approach for a wide range of psychopathological presentations.

Despite this evidence, however, some authors have argued that psychotic individuals inside and outside of the mental health services may differ from each other on dimensions other than symptom intensity (e.g., premorbid social functioning, negative symptoms) (Kaymaz & van Os, 2010; Linscott & van Os, 2010). In addition, Freeman and colleagues (2005) proposed that a transition from non-clinical paranoid beliefs to full-blown psychosis may be accompanied by a qualitative shift in experience, with an implication that the processes governing clinical and non-clinical paranoid beliefs may diverge. Freeman et al. (2010) have recently examined the relationships between paranoia and a range of variables implicated in the paranoid process in a mixed sample of non-paranoid nonclinical participants, paranoid non-clinical participants and paranoid patients. The results showed that although there was a dose-response relationship between the intensity of paranoid experiences and some variables (e.g., anxiety, depression, interpersonal sensitivity, mild perceptual abnormalities), this was not the case for some other variables (e.g., severe perceptual abnormalities and reasoning style) for which discontinuity was observed instead.

It is therefore possible that in our study the relationships between paranoia, EA, and self-esteem would have differed according to the participant group. Due to the low number of participants in the control group we lacked the statistical power to explore this possibility further. However, it is important to note that the results obtained here in with a combination of currently paranoid patients, patients with remitted paranoia, and unselected controls are in all respects the same as those obtained in our previous comparison of low paranoia scoring and high paranoia scoring students, suggesting that we can be confident that the effects observed are present across the continuum.

3.6. Conclusions

Our results suggest that both unfavourable self-views and avoidance of unpleasant mental states are involved in the genesis of paranoid delusions. This is consistent with the attributional model of paranoia which proposes that paranoia arises as a result of dysfunctional attempts to avoid feelings of low self-esteem.

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Chapter 4

Developmental pathway to paranoia is mediated by negative self-concept and experiential avoidance

4.1. Abstract

Objectives. The study investigated the role of early interactions with parents in the paranoid process.

Design. A cross-sectional design was used.

Methods. Student participants (N=302) completed questionnaires measuring parental style, emotional invalidation, attachment, self-esteem, experiential avoidance (EA) and paranoia.

Results. Analyses using structural equation modelling confirmed a model in which cold and overprotective parenting predicted insecure attachment and negative self-views. Childhood emotional invalidation, including punishment, belittlement, and distress on the part of the parents in response to children's displays of negative emotions predicted EA in later life. Negative self-beliefs and avoidance of negative mental states, in turn, predicted paranoid ideation.

Conclusions. In line with previous research, our data suggest that suboptimal parenting fosters paranoid thinking later in life. Our findings are also consistent with the idea that paranoia arises as a result of dysfunctional attempts to maintain a positive view of the self.

4.2. Introduction

4.2.1. Paranoia and experiential avoidance

The attributional model of paranoia suggests that paranoid beliefs arise from attempts to protect self-esteem (Bentall, et al., 2001). According to this view, paranoid individuals have a negative latent self-schema which is highly vulnerable to threat. To avoid such threats paranoid individuals make external (other-blaming) explanations for adverse experiences. While such explanations help to avoid self-blame and protect self-esteem, they lead to paranoid beliefs because they implicate the intentions of others. This defence however is only partly successful, which explains why paranoia is generally associated with low self-esteem (Bentall, et al., 2009).

The idea that avoidance of negative self-views results in paranoia is compatible with a recent account of psychopathology which emphasises the role of experiential avoidance (EA), defined as intolerance of unpleasant mental experiences (e.g., thoughts, feelings, memories), in the development of psychological problems (Hayes, Wilson, et al., 1996). According to this view, it is not negative mental events *per se* that lead to psychological problems but the attempts to avoid and suppress them. Consistent with this, high levels of EA are reported by individuals with various forms of psychopathology, including anxiety and depression (Hayes, et al., 2004). The authors of this account propose that although EA can relieve distress in the short-term, it is unsustainable in the long-term and its effects are ultimately deleterious.

Parallels can be drawn between the attributional model of paranoia and the EA account of psychopathology. Emotionally aversive threats to self-esteem described by attributional model can be re-framed as unpleasant mental events and generation of other-blaming attributions for negative events could be conceptualised as active avoidance. Consistent with this idea, a recent study has found that non-clinically paranoid individuals rely heavily on EA to cope with negative internal states (Udachina, et al., 2009b). The results also showed that both negative self-concept and EA predicted paranoid beliefs and EA partially mediated the pathway between negative self-beliefs and paranoia.

4.2.2. Developmental origins of paranoia

Research suggests that the origins of psychotic experiences, including paranoid beliefs, may lie in early developmental history. In non-clinical populations, paranoia is associated with unfavourable relationships with parents and insecure adult attachment style (Berry, Wearden, Barrowclough, & Liversidge, 2006; Pickering, Simpson, & Bentall, 2008). Insecure attachment has also been observed in individuals diagnosed with schizophrenia (see Berry, Barrowclough, & Wearden, 2007, for a review). Other research has found that patients diagnosed with schizophrenia (Parker, Fairley, Greenwood, Jurd, & Silove, 1982) as well as acutely ill and remitted paranoid patients (Rankin, Bentall, Hill, & Kinderman, 2005) tend to report that their parents were emotionally cold and overcontrolling when they were growing up – a parental style known as 'affectionless control'. These data suggest that suboptimal parenting may foster the development of paranoid experiences in adulthood.

It is not obvious why unfavourable parenting experiences should engender paranoid worldview. However, it has been suggested that such parenting may lead individuals to develop negative representations about the self (Wearden, Peters, Berry, Barrowclough, & Liversidge, 2008) which in turn strongly predict paranoia (Pickering, et al., 2008). The idea that early interactions with primary caregivers shape a person's self-image was first put forward by Bowlby (1997) who thought that attachment experiences provide a source of knowledge about the self and others. Accordingly, a child who is unwanted by her parents is likely to grow up feeling that her parents are rejecting and believing that she is therefore unlovable. Consistent with this view, studies have shown that insecurely attached individuals have more negative self-views (e.g., Pickering, et al., 2008; Wearden, et al., 2008).

A separate line of research suggests that the developmental environment also determines the coping strategies individuals adopt towards negative emotions. Gottman and colleagues (1997) proposed that how parents feel about and relate to specific emotional displays by the child determines what the child learns to feel about her emotions and the attitudes she adopts towards emotion regulation. If parents view their child's negative emotions as an opportunity for intimacy, actively validating her emotions, then the fundamental message the child receives is that her emotions are acceptable and worthy

of expression and discussion. If parents punish the child or dismiss her displays of negative emotions, the underlying message is that negative feelings are harmful and the experience and/or the expression of such feelings should be avoided. Gottman and colleagues also suggested that through shaping the children's emotion regulation strategies, parental socialization of emotion has important implications for psychological well-being and social competence in later life.

Research generally supports this proposition by showing that parents who restrict their children's expression of negative feelings are especially likely to produce children with emotional problems (Klimes-Dougan, et al., 2007; Krause, Mendelson, & Lynch, 2003; Lunkenheimer, Shields, & Cortina, 2007). Krause et al. (2003) investigated the relationships between history of childhood emotional invalidation, chronic emotional inhibition and adult psychological distress in a large non-clinical sample. The results showed that emotional invalidation (i.e., parental punishment, minimization, and distress in response to negative emotion) was associated with chronic emotional inhibition in adulthood, including ambivalence over emotional expression, thought suppression, and avoidant stress responses. Emotional inhibition, in turn, predicted psychological distress. Another study examined the role of parental approaches to emotion socialization and adolescent emotional and behavioural problems (Klimes-Dougan, et al., 2007). The parents of non-problem adolescents were more likely to respond to their children's displays of negative emotions with comfort and empathy, whereas the parents of adolescents with emotional problems were more likely to be neglectful or punishing. Thus, it appears that by overtly discouraging the expression of negative feelings, parents may implicitly encourage children to suppress and avoid the offensive emotions leading to poor outcomes.

4.2.3. Current study

The evidence reviewed above suggests that the developmental environment determines the person's self-views and emotion regulation strategies in later life. Self-concept and emotion regulation strategies, in turn, predict paranoia. The resulting model is presented in Figure 4.1 in which developmental history is represented by (i) general parental style, which predicts negative self-esteem via adult attachment security and by (ii)
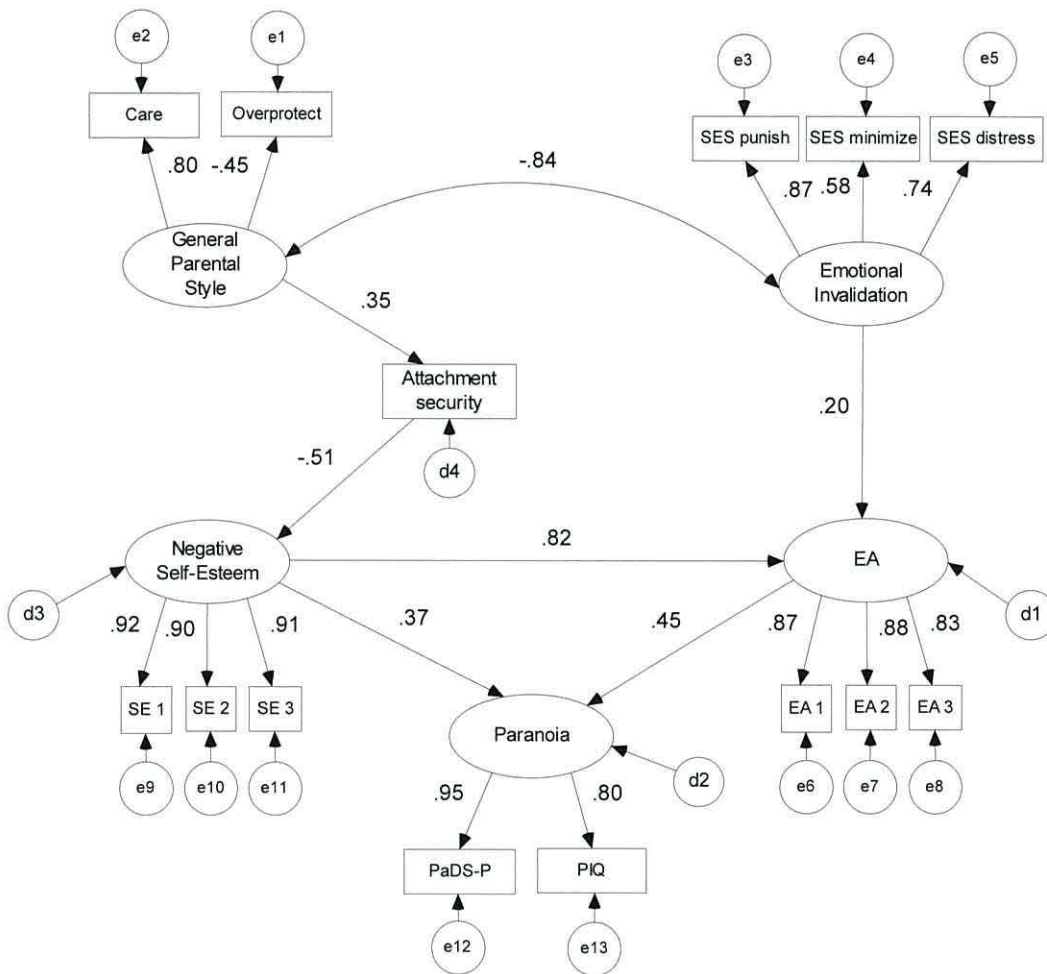
Figure 4.1. Structural model. Values on paths are standardized coefficients with standard errors in parentheses. All paths are significant at *p* <.001.

childhood emotional invalidation which predicts the individual's capacity to endure negative mental states. Because parental emotional socialisation strategies are not independent of general parenting (Gottman, et al., 1997), the model assumes a directionless association between them. Based on previous research (Pickering, et al., 2008; Udachina, et al., 2009b), negative self-esteem and EA predict paranoid beliefs and the effect of negative self-esteem on paranoia is partially mediated by EA.

We tested this model using structural equation modelling (SEM) in a large sample of non-clinical participants. SEM is advantageous compared with more conventional

regression approach as it allows analysis of multiple factors, minimizes measurement error, and provides overall goodness-of-fit estimates.

4.3. Method

4.3.1. Participants

302 students (71 males, 224 females, 5 unidentified; mean age=22.01, SD=4.70) from Bangor (170 participants) and Manchester (132 participants) Universities took part.

4.3.2. Measures

The *Persecution and Deservedness Scale* (PaDS; Melo, et al., 2009b). The *persecution sub-scale (PaDS-P)* includes 10 statements which imply that the individual is an object of malevolent intentions (e.g., "There are times when I worry that others might be plotting against me") rated on 5-point Likert scales (0-4). Here and for all other measures in this study, scores for participants who missed more than 10% of all items were set as missing.

The *Persecutory Ideation Questionnaire* (PIQ; McKay, Langdon, & Coltheart, 2006) is a 10-item measure scored on 5-point Likert scales (0-4) (e.g., "I sometimes feel as if I'm being followed").

The *Acceptance and Action Questionnaire-II* (AAQ-II; Bond, et al., 2011) is a revised version of the original Acceptance and Action Questionnaire (Hayes, et al., 2004). It is a 10-item measure of experiential avoidance, defined as intolerance towards unpleasant mental events such as bodily sensations, thoughts and emotions. Items are rated on 7-point Likert scales (1-7) (e.g. "I'm afraid of my feelings"). The scale has excellent reliability and AAQ-II ratings correlate with depression, anxiety, and paranoid ideation (Udachina, et al., 2009b).

General parental style in the first 16 years of life was assessed using the *Parental Bonding Instrument* (PBI; Parker, Tupling, & Brown, 1979) consisting of 25 items rated on 4-point Likert scales (0-3). Participants were asked to rate their mother (e.g., "[she] frequently smiled at me"). Twelve items form the Parental Care subscale, reflecting parental warmth, understanding, affection, empathy and closeness, with negatively loaded

items assessing indifference and rejection. Thirteen items of the Parental Overprotection subscale reflect parental control, intrusion, excessive contact, and encouragement of dependency, with negatively loaded items assessing independence and autonomy. The PBI is good measure of both perceived and actual parental behaviour (Mackinnon, Henderson, & Andrews, 1991; Parker, 1989).

Emotional invalidation was assessed using a mother version of the *Socialization of Emotion Scale* (SES; Krause, et al., 2003), describing 12 scenarios in which children express negative emotions such as anger, sadness, or worry. Participants are asked to rate each scenario on the extent to which their mother manifested different types of responses on 7-point Likert scales (1-7). Emotional invalidation was operationalised using the following subscales: (i) *SES Punish*, indicating the degree to which individuals report their mother punishing them in order to decrease their expression of negative emotions (e.g., "My mother would tell me that if I didn't stop [being upset], I wouldn't be allowed to go out anymore"); (ii) *SES Minimize*, reflecting the degree to which participants report their mother minimized or devalued their expressions of distress (e.g., "My mother would tell me to quit overreacting and being a baby"); (iii) *SES Distress*, reflecting the degree to which individuals report their mother expressing distress when they experience negative affect (e.g., "My mother would feel upset and uncomfortable because of my reactions").

Attachment security was measured using the secure style item from the *Relationship Questionnaire* (RQ; Bartholomew & Horowitz, 1991) which states: "It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me". Participants indicated the degree to which this style described their relationships on a 7-point Likert scale (1-7).

Negative self-esteem was assessed using the 10 items of the negative self-esteem subscale of the *Self-Esteem Rating Scale-Short Form* (SERS-SF; T. Lecomte, et al., 2006) (e.g., "I wish I were someone else"). Each item is rated on a 7-point Likert scales (1-7) and high scores indicate high negative self-esteem.

For all scales, scores were calculated as the mean score on all completed items.

4.3.3. Statistical Analysis

4.3.3.1. Preliminary Analyses

As the assumptions for parametric tests were unmet, Spearman rank tests were used to estimate zero-order correlations between all study variables.

4.3.3.2. Structural Equation Modeling

The hypothesized model was assessed using the two-step approach suggested by Hu & Bentler (1998): (i) evaluation of measurement model and (ii) simultaneous testing of the structural (path) and measurement model, enabling the identification of source of poor overall model fit. The first step corresponds with confirmatory factor analysis (CFA) and is focused on the relationships between observed variables (indicators) and the underlying unobserved (latent) constructs they are designed to measure. The second step consists of simultaneously testing the structural and measurement models and is focused on relationships of dependency between constructs (McDonald & Ho, 2002). The appropriateness of the models at both steps involved examination of (i) overall model fit and (ii) component fit (Tabachnick & Fidell, 2007).

As several variables were nonnormally distributed the model fit was assessed using a Tucker-Lewis Index (TLI), a comparative fit index (CFI) and a normed fit index (NFI) as these indices (in contrast to chi-square) are more robust to violations of normality (Lizardi & Klein, 2005). The model was considered well-fitting when the indices were larger or equal to 0.95 (Hu & Bentler, 1998).

Components examined in this study were factor loadings which estimate the direct effect of the factors on indicators. The magnitude of the relationships between latent constructs and their indicators provides evidence of the measurement model's validity. The squared multiple correlations of the indicators (R^2) reflect the amount of variance of an indicator that is uniquely attributable to the latent construct (reliability of the measure).

Because the data were incomplete, the analyses were carried out using the full information maximum likelihood (FIML) estimation algorithm in AMOS 16. FIML is preferable to listwise deletion approach as its estimates show less bias and are more

reliable even when data deviate from missing at random and are non-ignorable (Enders & Bandalos, 2001). The nonnormal distribution of the data did not preclude the use of the ML estimation as its associated statistics have been shown to be relatively robust against violations of normality (Lei & Lomax, 2005).

The model was fitted to the full sample data. The latent Paranoia variable was indicated by the scores on the PaDS-P and the PIQ. The latent variable Emotional Invalidation was indicated by the Punish, Minimize and Distress subscales of the SES, and the latent variable General Parental Style was indicated by the PBI Care and Overprotection subscales. The latent variable Negative Self-Esteem was indicated using the ''item-to-construct balance'' parceling method (Little, Cunningham, & Shahar, 2002). We first fitted a single-factor principal components model to the items of the negative self-esteem subscale of the SERS-SF. The results yielded a 1-factor solution (eigenvalue > 1), confirming that the scale is unidimensional, and the item factor pattern coefficients of the single-factor extraction were all positive. We then created three parcels of items using the item factor pattern coefficients as a guide. The indicators of the latent variable EA were determined in a similar way using AAQ-II items.

4.4. Results

4.4.1. Preliminary analyses

The means, SDs, and zero-order correlations for all variables are shown in Table 4.1. As predicted, measures of paranoid ideation were positively related to EA and negative self- esteem. EA was associated with higher levels of emotional invalidation, although not as strongly as expected. Both childhood emotional invalidation and EA positively correlated with lower levels of parental care and higher overprotection. Secure attachment was associated with better parenting and lower negative self-esteem.

4.4.2. Structural Equation Modelling

Step 1: Measurement model evaluation

Table 4.1. Descriptive statistics and correlations for study variables. Cronbach's alpha values are shown on the diagonal.

	M	SD	PaDS-P	PIQ	AAQ	Neg SE	Attach Security	SES Punish	SES Minim	SES Distress	PBI Care	PBI Overprot
PaDS-P	1.50	0.95	.88									
PIQ	0.84	0.73	.78**	.92								
AAQ	3.43	1.10	.67**	.57**	.92							
Neg SE	3.54	1.32	.68**	.54**	.78**	.92						
Attach Security	4.19	1.91	-.40**	-.25**	-.48**	-.47**	-					
SES Punish	2.71	0.96	.15*	.15*	.24**	.18**	-.19**	.87				
SES Minimize	3.67	0.92	.18**	.21**	.22**	.18**	-.15*	.57**	.78			
SES Distress	3.22	0.96	.25**	.24**	.36**	.29**	-.26**	.53**	.38**	.77		
PBI Care	2.32	0.68	-.36**	-.39**	-.42**	-.37**	.31**	-.44**	-.34**	-.41**	.94	
PBI Overprot	0.97	0.57	.32**	.24**	.24**	.20**	-.13	.22**	.19**	.30**	-.32**	.87

Two-tailed Spearman's correlation coefficient, ** $p<.01$. Internal consistency values displayed on the diagonal. PaDS-P= Persecution subscale of the Persecution and Deservedness Scale. PIQ=Persecutory Ideation Questionnaire. AAQ= Acceptance and Action Questionnaire. Neg SE=Negative self-esteem. SES=Socialization to Emotion Scale. PBI=Parental Bonding Instrument.

The measurement model included 12 observed measures and 5 latent constructs (Figure 4.2). As recommended by Anderson & Gerbin (1988), the latent factors were allowed to correlate freely. The overall fit was very good, TLI = 0.972; CFI = 0.983; NFI=0.961. Although the correlations between general parental style and emotional invalidation ($r = -.85$) and between negative self-esteem and EA ($r =.86$) were high, the confidence intervals (± two standard errors) for these correlations supported the discriminant validity for these constructs, insofar as none of the intervals included 1.0 (Anderson & Gerbin, 1988). Squared multiple correlations of each indicator (proportion of variance shared by indicator with latent variable) were moderate to high in magnitude, close to and exceeding .60, except for loading of Overprotection onto General Parental
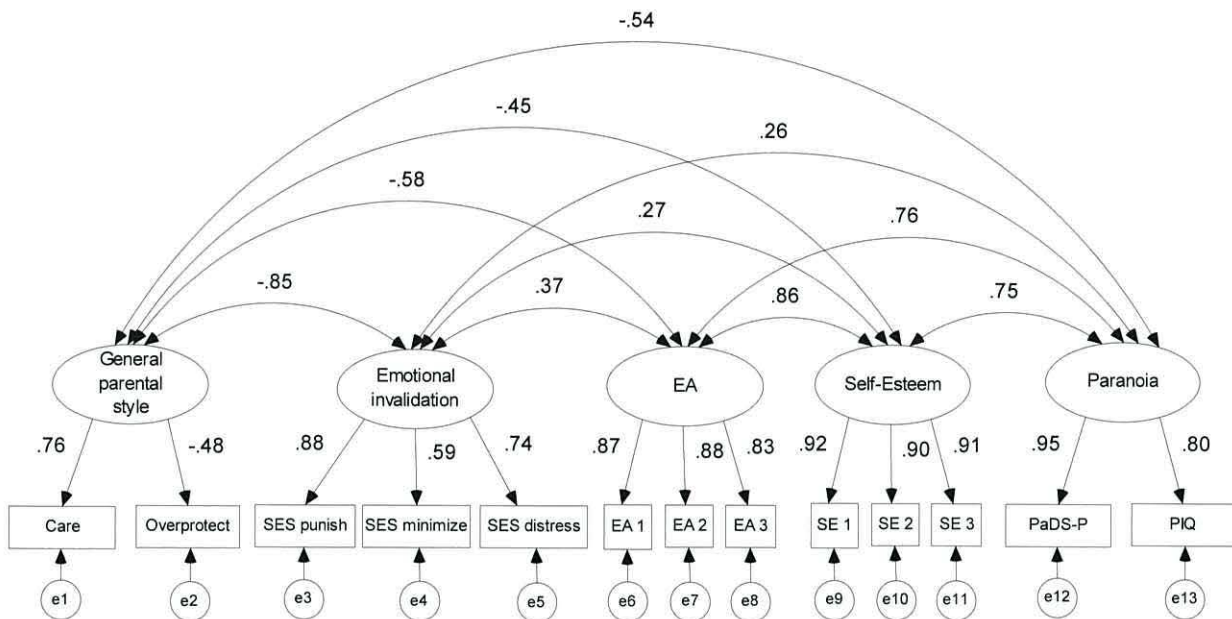
Figure 4.2. Measurement model. Values on paths are standardized coefficients with standard errors in parentheses. All paths are significant at $p < .001$.

Style ($R^2 = .23$) and the loading of SES Minimize on Emotional Invalidation ($R^2 = .34$). All 13 factor loadings however were moderate to strong (-.48 to .95) and statistically significant. Taken together, these results suggest that measurement model was adequate.

Step 2: Structural model evaluation

Overall, the model was well-fitting, TLI=0.960, CFI=0.973, NFI=0.945, although the NFI value fell slightly below the recommended 0.95. The model accounted for 12% of the variance in attachment style, 26% of the variance in self-esteem, 76% of the variance in EA and for 62% of the variance in paranoia. The standardized path coefficients for the model are presented in Figure 4.1. All paths were significant at $p < .001$. General parental style and emotional invalidation correlated at -.84. Emotional invalidation predicted higher EA and parenting style characterised by high care and low overprotection predicted attachment security. Secure attachment in turn was associated with less negative self-concept, which predicted higher EA. Both EA and negative self-concept predicted

paranoia. Sobel test for mediation confirmed that EA partially mediated the relationship between negative self-concept and paranoia ($z=4.86, p <.001$).

4.5. Discussion

Overall, our findings suggest that the origins of paranoid ideation may lie in developmental history, supporting a model in which early experiences with parents predict both how individuals come to view themselves in adulthood and their strategies for coping with negative mental states. Self-views and coping with negative mental states, in turn, predict paranoia.

Parenting characterised by affectionless control lead to insecure attachment and more negative views about the self in later life. This is consistent with previous research which has shown that adolescents and adults who perceive their parents as cold and overprotective are more likely to be insecurely attached (e.g., Karavasilis, Doyle, & Markiewicz, 2003; Perris & Andersson, 2000). Despite this association, general parenting practices explained only a modest amount of variance in adult attachment security indicating that other factors contribute to the formation of adult attachment representations. This is consistent with research which shows that while attachment representations developed in childhood persist, they are revised as a result of attachment-relevant events encountered in later life (Fraley, 2002). Our findings are also in line with studies which have found associations between insecure attachment and negative self-views (Pickering, et al., 2008; Wearden, et al., 2008). Interestingly, insecure attachment has also been linked to unstable self-esteem (Foster, Kernis, & Goldman, 2007) which is thought to be particularly characteristic of paranoia (Thewissen, et al., 2008; Thewissen, et al., 2007b).

Our results suggest that children learn about their own emotions and the ways of dealing with them from the reactions of their parents and this knowledge persists into adult life. By punishing children for their displays of distress, belittling their experiences, and by reciprocating their distress, parents may encourage children to view aversive mental states as unacceptable and to react to them with avoidance. These results are consistent with numerous studies which have observed a close association between childhood emotional invalidation and poor psychological outcomes (Klimes-Dougan, et al., 2007; Lunkenheimer, et al., 2007), including those assessed in later life (Krause, et al., 2003).

We replicated the results of Udachina et al. (2009b), finding that both negative self-concept and EA were predictive of paranoia and the effect of negative self-views on paranoia was partially mediated by EA. Our results are also consistent with previous research which implicates avoidant coping in paranoia (Fowler, et al., 2006; Spinhoven & van der Does, 1999). These results provide support for the idea that paranoid beliefs arise as a result of the attempts to avoid emotionally aversive unfavourable self-views (Bentall, et al., 2001). We also observed a strong association between negative self-concept and EA, suggesting that EA may be triggered by feelings of low self-esteem which individuals find aversive. While we found that negative self-esteem and EA mediated the relationship between parenting and paranoia, it is likely that other factors are also involved in this pathway. For example, research shows that some parental practices influence the development of theory-of-mind skills in children (Symons, 2004), while the deficit in such skills has been implicated in paranoia (Sprong, Schothorst, Vos, Hox, & Van Engeland, 2007). It is also of note that both unfavourable self-views and attempts to avoid unpleasant mental states are prevalent in other psychological problems and disorders and therefore confer general vulnerability to psychopathology. It is likely that extreme persecutory beliefs arise as a result of *efficient* avoidance rather than avoidance attempts per se. To estimate the relative efficiency of avoidance behavioural measures will be required. This is because self-report measures of EA such as AAQ may only reflect conscious attempts to avoid unpleasant private events rather than their success.

Our study was the first to investigate the relationships between parental practices, intolerance towards aversive mental states and paranoia. Our conclusions are limited by the use of retrospective reports. However, research has shown that self-report measures of parent-child relationships reflect the actual behaviour of the parents concerned rather than merely the perceptions of the child (Mackinnon, et al., 1991) and studies with psychiatric patients have revealed that reports of parental rearing behaviours remain stable despite clinical changes in severity of symptoms (e.g., Richter & Eisemann, 2001). Our cross-sectional design precludes drawing firm inferences about the direction of causality. It is also important to recognise that the parent-child relationships are likely to be bidirectional: child characteristics exert the influence on parenting style (Berry, Barrowclough, et al., 2007). Also, it is possible that our attachment style measure (the RSQ) more accurately reflects the individual's current representations of the self and others rather than childhood

attachment experiences. Further, common method of measurement (questionnaires) of different constructs is likely to artificially inflate the associations between them. Finally, our results are based solely on mothers' parenting and the effect of paternal parenting remains unexplored. With these limitations in mind, our results emphasise the importance of warm, sensitive parenting for the development of positive self-concept and adaptive ways of coping with negative mental states.

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Chapter 5

An experimental investigation of experiential avoidance

in nonclinical paranoia

5.1. Abstract

Introduction. A recent account of psychopathology emphasises the crucial role of experiential avoidance (EA), defined as intolerance towards negative mental states and efforts to avoid them, in psychopathology (Hayes et al., 1996; Hayes et al., 2004). Avoidance of emotionally aversive self-threatening information has also been linked to paranoid delusions (Bentall et al., 2001). This study investigated EA in a nonclinical sample using questionnaire and behavioural measures of avoidance.

Methods. University students (N=170) were first screened using questionnaire measures of paranoia, EA, depression, anxiety, and self-esteem on-line. In the second part of the study individuals scoring high on paranoia (N=24) and non-paranoid controls (N=27) took part in a modified emotional Stroop task which measured the accessibility of self-threatening information under high and low cognitive load.

Results. Paranoid students reported higher EA than their non-paranoid counterparts. Paranoid participants also showed heightened accessibility for negatively valenced self-threatening information in a high load condition, while no such effect was observed in the controls.

Conclusions. Paranoia is associated with habitual avoidance of negative self-referential information. Although EA strategies may be fruitful when cognitive demands are relatively low, their success is significantly compromised by additional pressures.

5.2. Introduction

The notion that avoidance of negative mental states plays an important role in psychopathology dates back to Freud's idea of repression (Freud, 1926/1959). Since then, several lines of research have explored this topic independently, generally finding that avoidance of aversive mental states is associated with poor psychological and health outcomes (Gross, 2002; Myers, et al., 2009; Wells & Matthews, 1996; Wenzlaff & Wegner, 2000). In an attempt to integrate research across distinct theoretical orientations, Hayes and colleagues have recently proposed the umbrella term of experiential avoidance (EA) under which all forms of avoidance could be subsumed (Hayes, et al., 2004; Hayes, Wilson, et al., 1996). EA is conceptualised as intolerance towards negative mental states (e.g., thoughts, feelings, memories) and active attempts to avoid them. In keeping with the historical perspective on avoidance, Hayes and colleagues suggest that psychological problems arise as a result of the attempts to control aversive mental states and not due to the presence of such states *per se* (Hayes, et al., 2004; Hayes, Wilson, et al., 1996). Consistent with this, high avoidance as measured by the Acceptance and Action Questionnaire (AAQ; Bond, et al., 2011; Hayes, et al., 2004) – a self-report measure specifically designed to assess EA – is associated with a range of psychiatric problems such as anxiety, depression and disordered eating (Hayes, et al., 2004; Hayes, Wilson, et al., 1996; Rawal, et al., 2010).

The mechanisms underlying EA are unclear but the *ironic process theory* (Wenzlaff & Wegner, 2000), originally designed to explain the paradoxical effects of thought suppression, may provide a useful insight. This theory suggests that thought suppression involves two separate processes: a monitoring system that scans consciousness for unwanted thoughts, and a distractor system that supplies distracting thoughts to replace the unwanted material. The two processes are differentially reliant on the availability of cognitive recourses for their successful operation: while the monitoring system is relatively automatic and effortless, the distractor system is effortful. When cognitive resources are plentiful, the two systems work harmoniously, successfully replacing unwanted material with more desirable thoughts. However, when cognitive resources are scarce, the automatic monitoring operates fluently, still looking for aversive material while the distractor system ceases to supply the substitutes, leading to the flooding with negative thoughts. Consistent

with this proposition, research has found that life stress and additional cognitive demands imposed in experimental situations undermine successful thought suppression (Beevers & Meyer, 2004; Wenzlaff & Bates, 1998; Wenzlaff & Luxton, 2003).

Interestingly, avoidance of unpleasant mental states is also implicated in a attribution-self-representation model of paranoia (Bentall, et al., 2001). This model suggests that paranoid individuals harbour negative views about themselves and respond to threats to preferred self-views by avoidance in the form of an external-personal attributional bias. This bias involves attributing the causes of negative events to other people. Such bias alleviates self-blame but leads to the development of a paranoid world-view since the individual starts believing that other people have malicious intensions towards the self. Reframed in terms of the ironic process theory, threats to self-esteem can be thought of as unwanted mental material while external personal explanations for negative events can be conceptualised as distractor thoughts.

A recent study explored the role of EA in paranoia using a large nonclinical sample (Udachina, et al., 2009b). First, questionnaire measures of EA, paranoia and self-esteem were administered. Second, participants with high and low paranoia scores were assessed using an Experience Sampling Method (ESM) – a structured diary assessment technique which allows the measurement of symptoms and behaviours in context of daily life (see Myin-Germeys, et al., 2009, for a review). The study found that paranoia was associated with high EA as assessed by the AAQ-II (Bond, et al., 2011) and diary reports. EA was also associated with low self-esteem and life stress moderated this relationship: the detrimental effect of EA on self-esteem was especially prominent under high stress.

While the results of Udachina et al.'s (2009b) study implicate EA in paranoid process, questionnaire measures of EA are likely to be affected by self-report bias and participants' limited insight into their own mental processes. The current study addressed these issues by employing a behavioural measure of EA in addition to the AAQ. We predicted that paranoia would be associated with both self-report and behavioural measures of avoidance. Consistent with the predictions of the ironic process theory, we thought that, if paranoid individuals ordinarily respond to self-threatening information with EA, then they should show reduced accessibility of this information when cognitive recourses are plentiful. However, additional demands imposed on the cognitive system will compromise successful EA, making self-threatening information more accessible.

In our search for a behavioural measure of EA we drew on social psychology research which has investigated the effects of suppression of racist beliefs on cognitive functioning (Richeson, et al., 2003; Richeson & Shelton, 2003). In these experiments, individuals completed an implicit measure of racial bias, then interacted with either a member of the same or different race and subsequently completed a cognitively demanding task in the form of the Stroop colour-naming test (Stroop, 1935). Colour-naming Stroop is a widely accepted measure of higher-level cognitive function, as participants are required to exert inhibitory control over responding to the more accessible colour-word in order to identify the colour of the ink correctly (Fournier-Vicente, Larigauderie, & Gaonach, 2008; MacLeod & MacDonald, 2000).

Both experiments have shown that higher racial bias ratings were associated with the impaired performance on the Stroop task for individuals who participated in interracial interactions but not for those who participated in same-race interactions. These results suggest that suppression of socially unacceptable attitudes which spontaneously emerge during contacts with members of other races is cognitively demanding. These findings are also consistent with a hypothesis that self-regulatory system is a limited, albeit renewable, resource and engagement in one task that taps the "self-regulatory" resource (e.g., controlling thoughts and/or emotional reactions) impairs performance on a subsequent task requiring similar resources (e.g., see Baumeister, Muraven, & Tice, 2000). In Richeson et al.'s experiments (2003; 2003) colour-naming Stroop performance served as an index of avoidance.

The emotional Stroop task is a variant of the colour-naming Stroop test. It requires individuals to name the colour of ink in which emotionally salient and non-salient words are printed as quickly and as accurately as possible. A common finding is that individuals take longer to colour-name words that are relevant to their clinical condition. For example, depressed patients take longer to colour-name depression-related words than to colour-name neutral words (Williams, Mathews, & MacLeod, 1996). It is thought that this interference results from the increased accessibility of depression-related material due to the possession of a negative self-schema. The increased accessibility leads to greater efforts required to suppress the meaning of the negative stimuli, undermining cognitive control over colour-naming and leading to greater interference for negative material (Wyble, Dinkar, & Bowman, 2008). The effect has been demonstrated in paranoid

patients, who show delayed colour-naming for emotionally salient words compared to words with neutral content (Kinderman, 1994).

The emotional Stroop provides a good measure of the immediate disruptive effect of emotionally salient information on cognitive control. However, in its original form, it is unsuitable for measuring the effect of EA on threat accessibility as research suggests that EA is initiated at later stages of information processing, i.e. approximately 500 ms post-exposure to threat (Mogg, Bradley, Miles, & Dixon, 2004). Therefore, to allow sufficient time for EA to occur, we modified the emotional Stroop by introducing a time lag between the exposure to threat and colour-naming. Thus, within each trial, participants were first primed with a word of varying degree of threat and only following a time lag were they required to colour-name a word "blue" or "red" presented either in blue or red ink (see Method for details). Our paradigm therefore combined the elements of both the emotional and the colour-naming Stroop tasks. To manipulate cognitive demands, on each trial, participants were asked to memorise either a 1-digit (low load) or a 6-digit (high load) number while performing the main task.

We predicted that paranoid individuals would engage in EA in response to self-threat. Their efforts would be successful under low cognitive load when mental resources are plentiful, leading to faster colour-naming times following self-threatening primes than following the neutral primes. However, under high cognitive load, successful EA should be disrupted, leading to longer colour-naming times following self-threatening primes than neutral primes.

5.3. Method

5.3.1. Participants

An opportunity sample of 170 university students (38 males, 130 females, 2 unidentified; mean age=21.06, *SD*=3.70) participated in the screening phase of the study completing the Persecution and Deservedness Scale (PaDS; Melo, et al., 2009a), the Acceptance and Action Questionnaire-II (AAQ-II; Bond, et al., submitted), the Hospital Anxiety and Depression Scale (HADS; Snaith & Zigmond, 1986; Zigmond & Snaith, 1983) and the Self-Esteem Rating Scale-Short Form (SERS-SF; T. Lecomte, et al., 2006)

online. One participant chosen at random received a prize of £100 for taking part. In Phase 2 of the study, two groups of participants were identified: (i) individuals who scored in the upper tertile of persecution subscale of the PaDS (PaDS-P) formed the paranoid group and (ii) individuals who scored in the lower tertile this subscale constituted the control group. These individuals were contacted and invited to participate in Phase 2 of the study in return for £8.

Twenty-four individuals from the paranoid group (PaDS-P range 2.10-3.50; 4 males) and 27 individuals from the control group (PaDS-P range 0.00-0.80; 6 males) agreed to take part in Phase 2 and were tested 2 to 4 weeks following Phase 1. The paranoid and the control groups did not differ in terms of age, Mann Whitney $U = 277.50$, $p=.37$, or sex distribution, $\chi^2[1] = 6.44$, $p=.51$.

5.3.2. Measures

The *Persecution and Deservedness Scale* (PaDS; Melo, et al., 2009a) assesses paranoid ideation and perceived deservedness of persecution. The *persecution sub-scale* includes 10 statements implying that the individual is an object of malevolence (e.g., "There are times when I worry that others might be plotting against me") rated on 5-point Likert scales (0-4) averaged to yield a *persecution score (PaDS-P)*. Based on Phase 1 data, Cronbach's alpha was .90 for persecution subscale.

The *Acceptance and Action Questionnaire-II* (AAQ-II; Bond, et al., submitted) is a revised and improved version of the original Acceptance and Action Questionnaire (Hayes, et al., 2004). AAQ-II is a 10-item measure of EA, defined as intolerance towards unpleasant mental events such as thoughts, emotions and bodily sensations. The items are rated on 7-point Likert scales (1-7) and example items include, "It's okay to remember something unpleasant' (reversed scored) and "I'm afraid of my feelings". *AAQ* score was calculated as the mean score on all items (items 1, 6 and 10 are reverse scored). Higher scores represent higher levels of avoidance. Cronbach's alpha was .91 based on Phase 1 data.

The *Self Esteem Rating Scale-Short Form* (SERS-SF; T. Lecomte, et al., 2006) is a 20-item self-report measure of self-esteem. Half of the items assess negative self-esteem (e.g., "I wish that I were someone else") and the other half measure positive self-esteem

(e.g., "I feel that people have good time when they are with me"). The items are rated on a 7-point Likert scales (1-7) Cronbach's alpha was .93 for negative and .91 for positive self-esteem based on Phase 1 data. *SERS negative self-esteem* and *SERS positive self-esteem* scores were defined as the mean score on all items of corresponding subscales.

The *Hospital Anxiety and Depression Scale* (HADS; Snaith & Zigmond, 1986; Zigmond & Snaith, 1983) is a 14-item measure of anxiety and depression symptoms rated on 4-point Likert scales (0-3). The scale contains two subscales: anxiety (7 items, e.g., "I feel tense or wound up") and depression (7 items, e.g., "I have lost interest in my appearance"). The subscales have good reliability and validity (Herrmann, 1997). Cronbach's alpha was .87 for anxiety and .74 for depression based on Phase 1 data. *HADS anxiety* and *HADS depression* scores were calculated as the mean score on all items in corresponding subscales.

5.3.3. Procedure

During the screening phase (Phase 1) participants completed the PaDS, the AAQ-II and the SERS-SF online. In the second phase, paranoid and control participants were identified (as described in the Participants section) and invited to take part in a follow-up study (Phase 2). Consented individuals were tested on two separate occasions. The first meeting was used to generate individualised lists of experimental stimuli and 1-2 weeks later participants took part in the experimental task.

Experimental task

The task consisted of 160 trials grouped into four blocks (40 trials per block) and preceded by a 22-trial practice session. The presentation order of the trials within each task was randomised. The general structure of a trial is presented in Figure 5.1. Each trial began with a presentation of the "Remember this number" message (2800 ms) followed by a number (3600 ms). This was followed by a fixation cross (800 ms) and then by a prime word (2200 ms) which participant was instructed to read. Next, there was a fixation cross (800 ms) followed by the target word (3000 ms) and the participant was to indicate the colour of the target by pressing the appropriate keyboard key with the middle and index

fingers of the left hand (a key labelled "B" for "blue" and a key labelled "R" for "red"); their reaction time (RT) was recorded. There were two target words ("blue; "red") printed in either red or blue coloured ink. Then another fixation cross appeared (1200 ms) and was followed by a second number (either the same or different from the one presented in the beginning of the trial) (5000 ms), accompanied by a written message "Is this the same number?" Participants indicated whether or not this number was the same by pressing the appropriate keyboard key with the middle and index fingers of the right hand (a key labelled "N" for "No" and a key labelled "Y" for "Yes"). Next, a blank screen appeared (1300 ms) to allow participants to rest before the next trial. All stimuli were presented in the middle of the screen and participants were instructed to indicate the colour of the ink of the targets as quickly and as accurately as possible.

Figure 5.1. Schematic diagram of task stimuli presentation (1 trial).

The primes belonged to several separate categories. First, self-threatening primes were identified. Past research has shown that exposure to personality attributes for which the discrepancy between actual self-perceptions and self-ideals is high are experienced as aversive (Higgins, 1987; Strauman & Higgins, 1988). However, we reasoned that paranoid individuals may be reluctant to reveal the discrepancy between self-perceptions

and self-ideals as they might be motivated to avoid thinking about their shortcomings. We therefore utilised the concept of the feared self (Carver, Lawrence, & Scheier, 1999) to identify self-threatening stimuli. Feared self is defined as the "set of qualities the person wants not to become but is concerned about possibly becoming" (Carver, et al., 1999, p. 785). Proximity to one's feared values (antigoals) is considered a prototypical trigger of avoidant responding and has been shown to elicit negative affect (Carver, et al., 1999).

To generate the feared attributes, participants were first instructed to write down 5 attributes that they would rather avoid having (the feared self). The instructions were adopted from Carver et al. (1999) and read: "Could you think for a moment about the kind of person you could become in the future if everything went wrong? What kind of personality traits would your rather avoid having? It's not necessary that you have these traits, only that you want to avoid having them." The first few spontaneously generated attributes in response to an open-ended request for person descriptors are considered one's most chronically accessible constructs and therefore should be perceived as most unpleasant by the participants (e.g., Higgins, et al., 1985). Therefore, the top 4 feared attributes generated by the participant were operationalised as *negative high-threat attributes* (feared self attributes are negative in valence by definition as they imply antigoals).

To ensure that only the primes threatening to the self affected colour-naming latencies, 4 feared attributes from another participant's list were also included as a separate prime category (*negative low-threat attributes*). Only the attributes not relevant to the ones listed by the target participant were included and a thesaurus was used to confirm that the self-relevant and self-irrelevant attributes were semantically unrelated. Because of the overlap in attributes reported by some paired participants it was not always possible to use all four low-threat attributes from one person. In these cases a non-overlapping attribute(s) was taken from another participant's list. To control for the possibility that colour-naming latencies could be attributed to affective negativity of the primes rather than their self-relevance, we asked participants to generate an antonym (positively valenced) attribute for each feared attribute (*positive high-threat*; e.g., "generous"). The antonyms of the 4 negative low-threat attributes formed the *positive low-threat* category of the primes. Thus, for each participant an ideographic set of 16 *emotional* primes consisting of 4 categories was constructed: (i) 4 negatively valenced high-threat primes; (ii) 4 positively valenced

high-threat primes; (iii) 4 negatively valenced low-threat primes; (iv) 4 positively valenced low-threat primes. Finally, to control for possible nonspecific effects of cognitive load, 4 *neutral* adjectives were also included ("primary", "normal", "spare", "usual") as a separate, fifth category and used across all the participants. The to-be-memorised numbers were either 1-digit long (low load) or 6-digit long (high load). A full factorial design was used for the experiment. Each of the 20 primes was presented in each of the two load conditions (high, low) and in conjunction with each of the two target words ("blue; "red") printed in each of the two colours (blue, red), yielding 160 trials.

Following Ratcliff's (1993) recommendations, the interference indices for colour-naming following each type of emotional prime in each load condition were expressed in terms of percentage difference in colour-naming times in relation to the time taken to colour-name targets preceded by neutral primes in the corresponding load condition. For example, the interference index for negatively valenced high-threat primes under high load = (median RT taken to colour-name targets preceded by negatively valenced high-threat primes under high load / median time taken to colour-name targets preceded by neutral primes under high load) x 100. To reduce possible outlier effects, interference indices were calculated using the median RT for each participant and each condition. Trials with colour-naming errors were excluded. Positive interference indices indicated an increase in colour-naming times for emotional primes relative to the neutral primes, indicating greater accessibility of emotional primes. Negative interference indices indicated a decrease in colour-naming times for emotional primes relative to neutral stimuli, indicating decreased accessibility of emotional primes compared to neutral stimuli.

5.4. Results

Since the assumptions of normality were broken for Phase 1 variables, non-parametric Spearman-*rho* correlations were calculated to assess the relationships between these variables (Table 5.1). Paranoia was strongly associated with self-reported EA. Both paranoia and self-reported EA were associated with more depression, more anxiety, higher negative and lower positive self-esteem.

Table 5.1. Correlations between questionnaire measures from Phase 1 (N=132).

	Paranoia	AAQ	Depres sion	Anxiety	Neg SE	Pos SE
AAQ-II	.74**	-				
Depression	.56**	.65**	-			
Anxiety	.71**	.75**	.59**	-		
Neg SE	.73**	.81**	.61**	.71**	-	
Pos SE	-.57**	-.70**	-.60**	-.55**	-.72**	-

Two-tailed Spearman's correlation coefficient, * *p*<.05, ** *p*<.01. AAQ-II=Acceptance and Action Questionnaire-II; Neg SE = negative self-esteem as measured by the SERS-SF; Pos SE = positive self-esteem as measured by the SERS-SF.

Since the assumptions of normality and homogeneity of covariance matrices were broken for Phase 2 study variables, non-parametric tests (Mann-Whitney *U*) were used to compare the differences between groups on questionnaire measures. Summary statistics for the two groups and group comparison statistics are shown in Table 5.2. By design, paranoid group had higher PaDS persecution ratings than then non-paranoid controls. Compared to the controls, paranoid participants reported higher EA, more depression and more anxiety. They also reported higher levels of negative and lower levels of positive self-esteem.

5.4.1. EA and paranoia

In order to investigate whether EA predicted paranoia over and above anxiety and depression symptoms, unilevel linear regressions were performed with PaDS persecution scores as the dependent variable. In a first block, HADS depression and HADS anxiety scores were entered as predictor variables. In a second block AAQ-II scores were entered as an additional predictor. The model was significant at step 1, F[2,46] = 18.67, *MSE*= 0.90, *p* <.001, R^2=.45. Only anxiety (β[SE]= 0.58[0.24], *p* < .001) but not depression (β[SE]= 0.13[0.30], *p* < .001) was a significant predictor of paranoia. Adding AAQ to the model at step 2 significantly improved the model, ΔR^2=0.18, *p* <.001; F[3,45] = 25.42, *MSE*= 0.62, *p* <.001, R^2=.63. In this model, only EA (β[SE]= 0.74[0.14], *p* < .001) was a

significant predictor of paranoia. Anxiety (β[SE]= 0.10[0.26], p = .51) and depression (β[SE]= - 0.05[0.26], p = .71) were not significant predictors.

Table 5.2. Summary statistics for phase 2 questionnaire variables (stratified by group) and group differences.

	Group						
	Control (N=27)			Paranoid (N=24)			
Variables	M	SD	Mean Rank (Sum of Ranks)	M	SD	Mean Rank (Sum of Ranks)	Mann-Whitney U Statistic
Paranoia	0.44	0.27	14.00 (378.00)	2.83	0.41	39.50 (948.00)	0.01***
AAQ-II	2.57	0.77	14.77 (384.00)	4.69	1.01	36.57 (841.00)	33.00***
Depression	0.99	0.55	20.20 (545.50)	1.42	0.50	32.52 (780.50)	167.50***
Anxiety	1.70	0.50	16.52 (446.00)	2.68	0.57	36.67 (880.00)	68.00***
Neg SE	2.61	0.84	11.92 (238.50)	4.94	1.09	31.31 (751.50)	28.50***
Pos SE	5.51	0.86	31.78 (635.50)	4.00	0.91	14.77 (354.50)	54.50***

*** p <.001, two-tailed. AAQ-II=Acceptance and Action Questionnaire-II; Neg SE =negative self-esteem as measured by the SERS-SF; Pos SE = positive self-esteem as measured by the SERS-SF.

5.4.2. Experimental task

A 3 x 2 x 2 mixed ANOVA with prime threat level (high; low; neutral), load (low; high) and group (control; paranoid) as independent variables performed on the colour-naming error rates revealed no significant main effects or interactions, all F's < 1.74, p's > .18, η^2 <.03. A similar analysis performed on the number recall error rates revealed a significant main effect of load, F(1,49)= 47.31, *MSE*= 112.81, p < .001, η^2 =.48. On average, participants made more number recall errors in the high load condition (*M*=11.89, SD=9.90) than in the low load condition (*M*=3.75, SD=3.85). No other main effects or interactions were significant, all F's < 2.99, p's > .10, η^2 =.03.

Mean indices of interference for the experimental task are shown in Table 5.3. Indices > 1 indicate interference and indices < 0 indicate facilitation. To investigate the effect of prime type, cognitive load and group on colour-naming, interference indices were analysed using a 2 x 2 x 2 x 2 mixed ANOVA with prime threat level (low; high), valence (negative; positive), and load (low; high) as within subjects variables, and group as a between subjects variable[3]. Trials with colour-naming errors were excluded.

The main effect of group was significant, F(1,49) = 4.30, *MSE*= 334.697, p <.05, η^2=.11, and so was the main effect of threat level, F(1,49) = 6.26, *MSE*= 105.50, p <.05, η^2=.11. None of the remaining main effects were significant, F's < 1.90, p > .17, η^2 <.04. The group x threat (F[1,49] = 2.20, *MSE*= 105.50, p =.15, η^2=.04) and the group x threat x load (F[1,49] = 0.32, *MSE*= 37.30, p =.57, η^2=.01) interactions which were of particular theoretical interest were non-significant. The valence x load (F[1,49] = 3.74, *MSE*= 19.62, p =.059, η^2=.07), group x valence x load (F[1,49] = 3.59, *MSE*= 19.62, p =.06, η^2=.07), and threat x valence x load (F[1,49] = 3.74, *MSE*= 20.48, p =.06, η^2=.07) fell short of statistical significance.

The group x threat level x valence x load interaction fell just short of statistical significance, F(1,49) = 3.60, *MSE*= 20.48, p=.06, η^2=.07. However, because this interaction was of theoretical significance, it was followed up by two separate repeated measures ANOVAs, one for each of the two groups. In these analyses, level of threat (low;

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[3] When the analyses were repeated with depression entered as a covariate to control for the possible confounding effect of depression, the results remained essentially unchanged.

high), valence (negative; positive), and load (low; high) were independent variables and interference indices were the dependent variables. The analyses revealed that the threat level x valence x load interaction was significant in the paranoid group ($F[1,23] = 7.83$, $p = .01$, $\eta^2 = .25$) but not in the control group ($F[1,26] = 0.22$, MSE=23.17, $p = .98$, $\eta^2 < .01$).

Table 5. 3. Mean indices of interference (SD) for the two groups as a function of prime threat level, prime valence, and cognitive load.

	Group			
	Control (N=27)		Paranoid (N=24)	
	Low Load	High Load	Low Load	High Load
Neg high-threat	0.28	-1.21	2.21	7.57
	(10.12)	(11.33)	(8.55)	(7.64)
Posit high-threat	-1.41	-2.90	5.03	3.65
	(8.83)	(10.49)	(9.04)	(9.49)
Neg low-threat	-0.29	-1.82	0.74	1.29
	(13.18)	(13.38)	(9.55)	(12.44)
Posit low-threat	-2.84	-4.44	-0.18	0.38
	(12.21)	(11.67)	(8.97)	(12.25)

The interference indices for the paranoid group for low-threat (panel A) and high-threat (panel B) primes are shown in Figure 5.2. This figure suggests that in the paranoid group, interference for low-threat primes remained constant and close to 0 regardless of the valence of the primes or cognitive load. However, the situation was different in this group for high-threat primes. Interference was slightly higher for positively valenced primes than for negatively valenced primes in the low load condition. However, as a function of higher load, the interference for positively valenced primes slightly decreased while the interference for negatively valenced primes increased substantially.
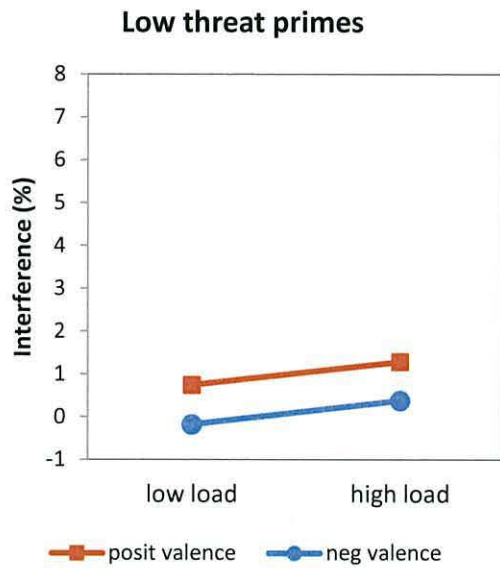
A.   B.
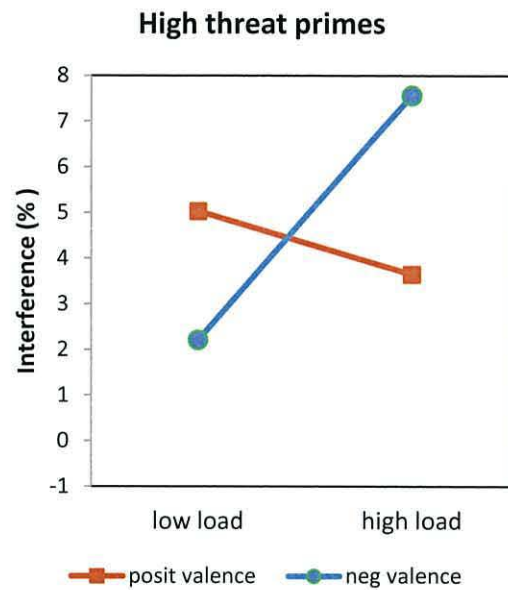
Figure 5.2. Interference indices for the paranoid group. A. Low-threat primes. B. High-threat primes.

To formally test these observations, we carried out simple-effects tests on interference indices for high-threat primes in the paranoid group. The results showed that for positively valenced primes the interference was not significantly different across the two load conditions (mean difference = 1.38, p =.61). However, the interference for negatively valenced primes was higher in the high load condition than in the low load condition (mean difference = 5.35, p <.05).

In order to explore the concurrent validity between self-report and behavioural measures of EA, Pearson correlations between AAQ scores and interference indices for high-threat primes were calculated. The results revealed only a weak and non-significant positive relationship between the two measures (r=.13, p =.39).

5.5. Discussion

Consistent with previous research (Udachina, et al., 2009b), we found that self-reported EA was associated with paranoia and low self-esteem. The observation that low self-esteem was associated with EA provides an indirect support for the notion that individuals use avoidance strategies to combat feelings of low self-esteem. Although the group x threat level x valence x load interaction fell short of statistical significance, there was a trend towards non-paranoid students showing equally low accessibility for high- and low-threat words in either of the two load conditions. However, paranoid individuals tended to show enhanced accessibility for negatively valenced high-threat words in the high load condition. It is possible that the enhanced accessibility of negatively but not positively valenced self-threatening attributes under load could be explained by a particular aversiveness of negatively valenced attributes (see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). As accessibility was measured in terms of the proportion increase in colour-naming times following emotional primes in comparison to neutral primes, load-related increased accessibility of negatively valenced self-threatening attributes cannot be simply ascribed to participants' general cognitive slowing under increased cognitive demands. Neither can this accessibility be attributed to higher levels of depression in paranoid participants as our results remained the same after controlling for the possible confounding effect of mood. The lack of association between self-report and behavioural measures of EA is puzzling and it undermines the credibility of the behavioural measure of EA. However, one explanation might be that individuals do not always have insight into their own mental processes.

Paranoid participants' response to load manipulation is consistent with the idea that they habitually avoid unpleasant self-threatening information and is in line with the predictions of the *ironic process theory* (Wenzlaff & Wegner, 2000) and studies which have shown that the success of thought suppression is highly dependent on availability of cognitive resources (Beevers & Meyer, 2004; Wenzlaff & Luxton, 2003). Our results are also congruent with the observation that in daily life, the detrimental effect of EA on self-esteem is particularly prominent in high stress situations (Udachina, et al., 2009b). It is possible that highly unstable self-esteem observed in paranoid patients (Thewissen, et al., 2008) is due to varying cognitive demands imposed by the environment. Such explanation would also be in line with the observation that psychotic patients are extremely sensitive to life stress (e.g., Myin-Germeys, et al., 2003).

Our findings are also compatible with the attributional model of paranoia which proposes that paranoid individuals perceive self-threatening information as highly aversive and engage in avoidance of such information in order to preserve self-esteem (Bentall, et al., 2001). It is possible that cognitively demanding EA interferes with people's ability to understand others' mental states which has also been implicated in psychosis (Harrington, Siegert, & McClure, 2005).

Our results suggest that because EA is so taxing on cognitive resources, it is far from an ideal strategy for dealing with unpleasant mental states. A relatively mild cognitive challenge in the laboratory setting leads to a moderate but non-ignorable increase in accessibility of negative self-perceptions. It is likely that in real life situations where cognitive demands are considerable such a strategy would translate into a significant cognitive impairment. It is also possible that constant mental control in the face of self-threat may prevent the individual from processing, learning and integrating important experiences into self-narrative. Consistent with such proposition, avoidance of aversive information has been linked to failure to encode such information and poor autobiographical memory (Fraley & Brumbaugh, 2007; Hermans, Defranc, Raes, Williams, & Eelen, 2005).

Similar to eye-tracking research which has found that paranoid individuals orient their attention away from socially threatening scenes (Green & Phillips, 2004), our data imply that paranoid individuals habitually direct their attention *away* from threatening attributes. Our results, however, are ostensibly at odds with emotional Stroop studies which have shown the increased accessibility of threat to the self in paranoia suggesting that paranoid individuals' attention is directed *towards* the threat (Kaney & Bentall, 1989; Kinderman, 1994). This conflict in findings could nevertheless be resolved if we accept that the direction of threat bias in paranoid individuals may depend on stage of processing and that the automatic preferential processing of threat cues is followed by its active avoidance at later, more controlled, processing stages (Green & Phillips, 2004). It is possible that during the vigilance stage, paranoid individuals are extremely sensitive to threat because the presentation of threatening stimuli activates negative self-relevant schemas and related autobiographical knowledge stored in the long-term memory. At the avoidance stage, threat is successfully avoided provided that cognitive resources allow for this to happen. Such an explanation, known as a *vigilance-avoidance hypothesis* was

originally invoked to explain attentional biases in anxiety disorders and suggests that avoidance is motivated by alleviation of aversive state produced by threatening material (Mogg, Weinman, & Mathews, 1987). The similarities in the processing of threat in paranoid and anxious individuals would be particularly interesting since paranoia is seen by some researchers as is a direct extension of the anxiety produced by anticipation of social threat and avoidant "safety behaviours" are considered a maintenance factor for paranoia (D. Freeman, et al., 2002; D. Freeman, et al., 2007). It is also of note that the processing stages described by the vigilance-avoidance hypothesis closely resemble those described by the ironic process theory. Both accounts implicate an automatic and effortless monitoring followed by controlled and effortful avoidance stage.

5.6. Limitations

Our results should be considered in the context of several limitations. First, high levels of EA are not unique to paranoid individuals. Research has also found the link between EA and a variety of other psychological problems and disorders has also been found (Hayes, et al., 2004; Hayes, Wilson, et al., 1996; Rawal, et al., 2010), suggesting that factors other than EA must contribute to the development of paranoid ideas. Second, despite the fact that paranoid thinking is normally distributed within population, our results may not extrapolate to clinical paranoia.

Third, the probability value of the four-way interaction effect ($p=.06$) did not quite reach the conventional 0.05 level, precluding us from drawing firm conclusions from the results. However, because the effect size for this interaction was of medium size (Cohen, 1992), it is possible that the test lacked statistical power which could have been remedied by a greater number of participants.

Finally, we were unable to control for word characteristics (e.g., word frequency, word length) due to the ideographic nature of the stimuli and therefore the interpretation of stand-alone interference indices should be done with caution. This limitation however should not affect the main finding demonstrating the effect of cognitive load on accessibility of negative self-attributes in paranoid individuals.

5.7. Conclusions

Our findings suggest that paranoid individuals habitually avoid aversive self-relevant information. They also indicate that EA has a built-in instability: while it may be relatively effective at dealing with self-threats when cognitive recourses are free but additional cognitive demands undermine its success increasing the accessibility of unpleasant self-relevant information.

5.8. References

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Chapter 6

Experiential avoidance in patients with persecutory delusions:

An experimental study

6.1. Abstract

Introduction. It is thought that experiential avoidance (EA), conceptualised as avoidance of unpleasant mental experiences, lies at the heart of psychopathology. Avoidance of emotionally aversive threats to self-concept has also been implicated in paranoid delusions. The study investigated EA and its developmental origins in relation to paranoid delusions.

Methods. Currently paranoid patients (N=21), patients with remitted paranoid delusions (N=11), and controls (N=25) were assessed on questionnaire and behavioural measures of EA. The behavioural measure of EA examined accessibility of self-threatening information under low and high cognitive load using a Stroop-like task. The developmental origins of EA were assessed using questionnaires.

Results. Paranoid patients reported high levels of EA. On a behavioural task, paranoid individuals showed low accessibility of emotionally arousing information when cognitive resources were free. However, additional cognitive demands increased accessibility of emotional information in this group. Enhanced accessibility of emotionally arousing information due to high load was associated with self-reported EA. Self-reported EA in adulthood was also associated with emotional invalidation in childhood and insecure attachment.

Conclusions. Paranoid individuals habitually use EA to deal with emotionally salient information and such strategy leaves them vulnerable to stress. The origins of EA lie in the developmental history.

6.2. Introduction

6.2.1. Paranoia and EA

The attribution-self-representation model of paranoia (Bentall, et al., 2001) holds that paranoid individuals have a negative latent self-schema which is highly sensitive to threats and that these individuals defend against such threats by making external-personal attributions for negative events in order to avoid self-blaming, internal attributions. The repeated explanations of negative events in terms of external-personal causes then promote a paranoid world-view. The model predicts a highly fragile explicit self-concept in paranoid individuals, reflecting the varying extent to which threats to preferred self-views are avoided during successive iterations of the attribution-self-representation cycle. Consistent with this proposition, research has found that paranoia is associated with highly variable self-esteem (Thewissen, et al., 2008; Thewissen, et al., 2007a).

The idea that avoidance of unpleasant inner experiences plays a crucial role in psychological disorders dates back to Freud's idea of repression (Freud, 1926/1959). This idea was further developed by other researchers of various orientations with all of the research overwhelmingly showing that avoidance leads to poor psychological and health outcomes (Gross, 2002; Myers, et al., 2009; Wells & Matthews, 1996; Wenzlaff & Wegner, 2000). Recently, Hayes and colleagues (Hayes, et al., 2004; Hayes, Wilson, et al., 1996) have proposed an umbrella term of *experiential avoidance (EA)* as way of consolidating research on different forms of avoidance. Hayes et al. propose that EA, defined as intolerance of unpleasant mental experiences (e.g., thoughts, feelings, memories), plays an instrumental role in the development of psychiatric problems (Hayes, et al., 2004; Hayes, Wilson, et al., 1996). According to this approach, it is not the negative mental events *per se* that lead to psychopathology, but it is their effortful avoidance that is most harmful. The processes underlying EA are poorly understood but the *ironic process theory* account of thought suppression (Wenzlaff & Wegner, 2000) – a common form of EA – may provide useful insights into the mechanisms involved. This theory suggests that thought suppression involves two major elements: a relatively effortless monitoring system that scans the content of consciousness for undesired material, and a cognitively more demanding distractor system that seeks thoughts that will promote the preferred state.

Research shows that, under normal circumstances, the simultaneous operation of these two systems ensures efficiency in warding off aversive mental content. However, additional cognitive demands (e.g., stress) disrupt the resource-consuming distractor system but not the automatic monitoring system, which continues its vigilance for unwanted thoughts, resulting in the enhanced accessibility of the suppressed material (e.g., Beevers & Meyer, 2004; Wenzlaff & Luxton, 2003).

The EA account of psychopathology resembles the attributional model of paranoia as both implicate avoidance of unpleasant mental content in the development of psychological problems. Recast in terms of the ironic process theory, self-esteem threats experienced by paranoid individuals could be conceptualised as the avoided aversive material and external personal attributions for negative events as 'distractor' thoughts. Direct evidence for the role of EA in paranoia was found in a recent study which examined the relationships between paranoia, EA, self-esteem, and stress in non-clinical population (Udachina, et al., 2009a). The results showed that self-reported excessive reliance on EA predicted subsequent paranoid thinking. Moreover, consistent with the idea that mental control fails when cognitive resources are overstretched, EA was associated with particularly low self-esteem under high stress.

6.2.3. Developmental origins of EA

Although developmental origins of EA are unclear, attachment theory suggests that the way individuals cope with distress is influenced by their early experiences with primary caregivers (Bowlby, 1997). According to this theory, children internalise these experiences to form enduring representations of the self and others that provide prototypes for later social relations. The quality of attachment can be described in terms of two underlying dimensions: attachment anxiety, which is associated with the model of the self and reflects fear of rejection; and attachment avoidance, which is associated with the model of others and reflects avoidance of closeness. Research has shown that attachment avoidance in adults is associated with suppression of distressing attachment-related thoughts (e.g., Mikulincer, et al., 2004) while secure attachment in children is associated with greater willingness to talk about negative emotions (Waters, et al., 2010). Studies that have investigated attachment in paranoid individuals suggest that they may not have

enjoyed positive relationships with parents when growing up (Berry, Barrowclough, et al., 2007; Rankin, et al., 2005) and that these negative experiences translate into highly insecure attachment styles in adulthood (Berry, et al., 2006; Pickering, et al., 2008).

It has also been suggested that specific ways in which parents respond to their children's displays of negative emotions may influence how children regulate their emotions and their psychological health in later life (Gottman, et al., 1997; Wenzlaff & Eisenberg, 1998). Studies have shown that parents who stifle the expression of negative feelings in their children are especially likely to produce offspring and later adults who have emotional problems (Klimes-Dougan, et al., 2007; Lunkenheimer, et al., 2007). The results of a study carried out by Krause and colleagues (2003) suggest that the pathway from emotional invalidation in childhood to emotional problems in later life may be mediated by over-reliance on avoidant coping.

6.2.4. Present study

The first objective of the study was to investigate the role of EA in paranoia. We hypothesised that paranoid individuals are intolerant of aversive mental experiences and find threats to preferred self-views particularly aversive. While previous research on EA and paranoia has used exclusively questionnaire measures (Udachina, et al., 2009a), this approach is prone to self-presentation bias. It is also likely that the levels of insight into own mental states vary among individuals. Therefore, we developed a behavioural measure of EA to be used alongside the self-report measure. We reasoned that if EA is cognitively costly, and if paranoid individuals ordinarily engage in EA to combat the unpleasant effects of self-threatening information, then they should be efficient at reducing the accessibility of this information when cognitive recourses are plentiful. However, additional demands imposed on already heavily used cognitive system will undermine successful EA, leading to increased accessibility of self-threatening information.

Some previous research has used performance on a cognitively demanding task following active avoidance as an index of avoidance. Richeson and colleagues (2003; 2003) investigated the effects of suppression of racist beliefs on cognitive functioning. In these experiments, individuals completed an implicit measure of racial bias, then interacted with either a member of the same or different race and subsequently completed a Stroop

colour-naming test (Stroop, 1935). Colour-naming Stroop is a widely accepted measure of higher-level cognitive function, as participants are required to exert inhibitory control over responding to the more accessible colour-word in order to respond to the colour of the ink correctly (MacLeod & MacDonald, 2000). Both experiments have shown that racial bias related to impaired performance on the Stroop task for individuals who participated in interracial interactions but not for those who participated in same-race interactions. These results imply that suppression of privately held but socially unacceptable attitudes which spontaneously emerge during contacts with members of other races is cognitively demanding. These findings are also consistent with a hypothesis that self-regulatory system is a limited, albeit renewable, resource and engagement in one task that taps the "self-regulatory" resource (e.g., controlling thoughts and/or emotional reactions) impairs performance on a subsequent task requiring similar resources (e.g., see Baumeister, et al., 2000).

The emotional Stroop task – a variant of the colour-naming Stroop test – has also been used to measure effortful suppression. The emotional Stroop requires individuals to name the colour of ink in which emotionally salient and non-salient words are printed as quickly and as accurately as possible. A common finding is that individuals take longer to colour-name emotionally salient words. It is thought that this interference results from the increased accessibility of emotionally salient words. The increased accessibility leads to greater efforts required to suppress the meaning of the emotional stimuli, undermining cognitive control over colour-naming and leading to greater interference for emotionally salient material (Wyble, et al., 2008). Studies in clinical populations have shown that depressed patients take longer to colour-name depression-related words than to colour-name neutral words (Williams, et al., 1996) while paranoid patients show delayed colour-naming for emotionally salient words compared to words with neutral content (Kinderman, 1994).

The emotional Stroop provides a good measure of the immediate disruptive effect of emotionally salient information on cognitive control. However, in its original form, it is unsuitable for measuring the effect of EA on threat accessibility as research suggests that EA is initiated at later stages of information processing, i.e. approximately 500 ms post-exposure to threat (Mogg, et al., 2004). Therefore, to allow sufficient time for EA to occur, we modified the emotional Stroop by introducing a time lag between the exposure to threat

and colour-naming. Thus, within each trial, participants were first primed with a word of varying degree of threat and only following a time lag were they required to colour-name a word "blue" or "red" presented either in blue or red ink (see Method for details). To manipulate cognitive demands, on each trial, participants were asked to memorise either a 1-digit (low load) or a 6-digit (high load) number while performing the main task. Our paradigm therefore incorporated the elements of both the emotional and the colour-naming Stroop tasks.

We reasoned that, if paranoid individuals ordinarily react to self-threatening information with EA, then they should be highly efficient at avoiding such information when cognitive resources are free. This would lead to lower accessibility of self-threatening information and would manifest in faster colour-naming times following self-threatening primes than following neutral, non-threatening, primes. However, additional cognitive demands would disrupt successful avoidance, leading to heightened accessibility of self-threatening information. This would manifest in deterioration in performance as indexed by slower colour-naming times following self-threatening primes than following neutral primes.

The second objective of the study was to explore the developmental antecedents of EA. No research to date has investigated the role of emotional invalidation in EA in psychiatric patients. However, previous research linking unsatisfactory parent-child relationships to avoidant coping and poor psychological outcomes in children and adults (Berry, et al., 2006; Pickering, et al., 2008) suggests that the roots of intolerance towards negative mental states lie in early experiences. It is plausible that the suboptimal relationships with parents found in paranoid individuals (Rankin, et al., 2005) will be associated with childhood emotional invalidation and higher levels of EA in adulthood. This hypothesis was tested by examining the relationships between questionnaire measures of attachment, childhood emotional invalidation, and EA within the patient group.

6.3. Method

6.3.1. Participants

Thirty-two patients with DSM-IV (APA, 1994) diagnosis of schizophrenia, schizoaffective, or delusional disorder either currently paranoid or with a past history of persecutory ideation were recruited from local in- and out-patient facilities. Twenty-five healthy controls with no current or past psychiatric problems requiring treatment and scores < 1.6 on the persecution subscale of Persecution and Deservedness Scale (PaDS; Melo, et al., 2009a) were recruited through a community panel. Patients' diagnoses and paranoid status were confirmed by clinical staff. Written informed consent was obtained from all participants.

Patients were divided into 2 groups according to scores on the persecution subscale of the PaDS. Those with scores < 1.6 were considered remitted and the remaining patients were considered paranoid. Sociodemographic and clinical characteristics of the participants in the final sample are summarized in Table 6.1. The groups were comparable for age (F[2,54]=0.64, *MSE*=187.32, *p*=.53, η^2 =.02) and gender (χ^2[2]=0.62, *p*=.74) but there was a significant difference for IQ, (F[2,54] = 9.36, *MSE*=139.15, *p* <.001, η^2 =.26). Post-hoc Tukey tests showed that paranoid (*p* <.001) and remitted (*p* <.05) patients had a lower mean IQ than the controls.

6.3.2. Measures

The *Persecution and Deservedness Scale* (PaDS; Melo, et al., 2009a) assesses paranoid ideation and perceived deservedness of persecution. The *persecution subscale* includes 10 statements implying that the individual is an object of malevolence (e.g., "There are times when I worry that others might be plotting against me") rated on 5-point Likert scales (0-4) averaged to yield a *persecution score*. The subscale has excellent reliability (Melo, et al., 2009a).

The *Acceptance and Action Questionnaire-II* (AAQ-II; Bond, et al., submitted) is an improved version of the original Acceptance and Action Questionnaire (Hayes, et al., 2004). AAQ-II is a 10-item measure of EA, defined as intolerance towards unpleasant mental events such as bodily sensations, thoughts and emotions. The items are rated on 7-point Likert scales (1-7) and example items include, "It's okay to remember something unpleasant" (reverse scored) and "I'm afraid of my feelings". *AAQ score* was calculated as

the mean score on all items (items 1, 6 and 10 are reverse scored). Higher scores represent higher levels of EA. The scale has excellent reliability and AAQ-II ratings correlate with depression, anxiety, and paranoid ideation (Udachina, et al., 2009a).

Table 6.1. Sociodemographic and clinical characteristics of the study sample (N=57).

	Paranoid N=21	Remitted N=11	Controls N=25
Age (*SD*)	44.16 (14.29)	42.55 (10.23)	39.64 (14.14)
Sex (Female)	8	5	8
Years in education (*SD*)	12.38 (1.89)	13.27 (1.95)	15.72 (3.17)
IQ (*SD*)	105.80 (13.01)	109.09 (13.16)	120.32 (9.65)
Marital status			
Married or living together	4	1	11
Widowed	0	0	1
Divorced	4	3	2
Never married	13	7	11
Work situation			
Unemployed	16	7	13
Paid employment	1	3	3
Studying	1	1	5
Retired	3	0	4
Medication			
Antipsychotic	21	1	-
Antidepressant	5	3	-
Mood stabilizing	3	0	-

The *Hospital Anxiety and Depression Scale* (HADS; Snaith & Zigmond, 1986; Zigmond & Snaith, 1983) is a 14-item measure of anxiety and depression symptoms rated on 4-point Likert scales (0-3). The scale contains two subscales: anxiety (7 items, e.g., "I feel tense or wound up") and depression (7 items, e.g., "I have lost interest in my appearance"). The subscales have good reliability and validity (Herrmann, 1997). A total *HADS anxiety* and *HADS depression* scores were calculated as the mean score on all items in corresponding subscales.

The *Relationship Questionnaire* (RQ; Bartholomew & Horowitz, 1991) consists of 4 descriptions of attachment styles (secure, fearful, preoccupied, dismissing) and participants are asked to indicate the degree to which each style describes their relationships on a 7-point Likert scale (1-7). The scale has adequate psychometric properties (D. Griffin & Bartholomew, 1994). Two underlying dimensions are identified: *attachment avoidance* and *attachment anxiety*. Attachment avoidance reflects the tendency to avoid closeness in personal relationships and involves negative representations of others and is calculated as the sum of fearful plus preoccupied scores (high anxiety) less the secure and dismissing scores (low anxiety). Attachment anxiety refers to a tendency to worry about rejection and abandonment, reflecting negative self-representations, and is calculated as the sum of fearful plus dismissing scores (high avoidance) less that of secure and preoccupied scores (low avoidance).

A mother version of the *Socialization of Emotion Scale* (SES; Krause, et al., 2003) was used to measure childhood emotional invalidation. SES describes 12 scenarios in which children express negative emotions such as anger, sadness, or worry. Participants are asked to rate each scenario on the extent to which their mother manifested different types of responses on a 7-point Likert scale (1-7). Emotional invalidation was defined as a mean score on all items of the following subscales: (i) *Punishment*, indicating the degree to which individuals report their mother punishing them in order to decrease their expression of negative emotions (e.g., "My mother would tell me that if I didn't stop [being upset], I wouldn't be allowed to go out anymore"); (ii) *Minimization*, reflecting the degree to which participants report their mother minimizing or devaluing their expressions of distress (e.g., "My mother would tell me to quit overreacting and being a baby"); (iii) *Distress,* reflecting the degree to which individuals report their mothers expressing distress when they

experience negative affect (e.g., "My mother would feel upset and uncomfortable because of my reactions").

A modified version of *Self-Concept Checklist* (SCC; Kinderman & Bentall, 2000) was used to assess self-concept and self-relevance of different personality attributes. The SCC is an ideographic method of assessment of facets of the self and has been used with paranoid individuals in the past (Kinderman, Prince, Waller, & Peters, 2003). Participants were first asked to rate 30 negative personality attributes on how well each attribute described them, using 1-5 Likert scales (1-5) and resulting in a self-relevance score for each attribute. Following this, each participant was presented with top 4 high self-relevance attributes (the 4 negative attributes that the participants identified as most self-descriptive) and the top 4 low self-relevance attributes (the 4 negative attributes that the participants identified as least self-descriptive). They were then asked to generate an antonym (positive attribute) for each of these 8 attributes. This resulted in a list of 8 high self-relevance (4 positive and 4 negative) and 8 low self-relevance (4 positive and 4 negative) attributes. A mean self-relevance score based on the 4 most self-descriptive and the 4 least self-descriptive negative attributes was calculated to yield a *negative self-concept* score.

The *Quick Test* (Ammons & Ammons, 1962) was used to estimate the pre-morbid intelligence of the participants. The adult version comprises a list of 50 words presented in a successive order of increasing complexity which have to be matched to pictures.

Experimental task

The task consisted of 80 trials grouped into eight blocks (10 trials per block) and preceded by a 22-trial practice session. The presentation order of the trials within a task was randomised. The general structure of a trial is presented in Figure 6.1. Each trial began with a presentation of the "Remember this number" message (2800 ms) followed by a number (3600 ms). This was followed by a fixation cross (900 ms) and then by a prime word (2200 ms) which participant was instructed to read. Next, there was a fixation cross (800 ms) followed by the target word (4000 ms) and the participant was to indicate the colour of the target by pressing the appropriate keyboard key with the middle and index
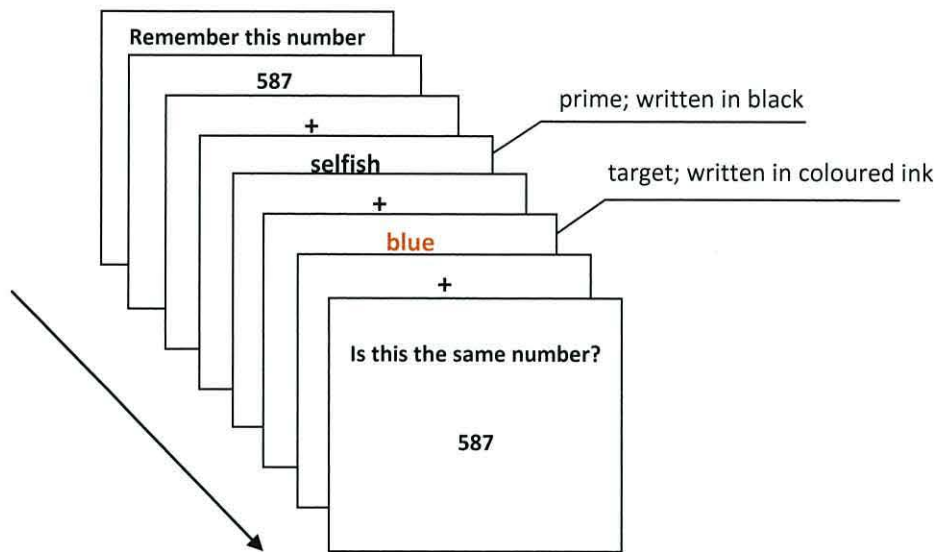
Figure 6.1. Schematic diagram of task stimuli presentation (1 trial).

fingers of the left hand (a key labelled "B" for "blue" and a key labelled "R" for "red"); their reaction time (RT) was recorded. There were two target words ("blue; "red") printed in either red or blue coloured ink. Then another fixation cross appeared (1200 ms) and was followed by a second number (either the same or different from the one presented in the beginning of the trial) (5000 ms), accompanied by a written message "Is this the same number?" Participants indicated whether or not this number was the same by pressing the appropriate keyboard key with the middle and index fingers of the right hand (a key labelled "N" for "No" and a key labelled "Y" for "Yes"). Next, a blank screen appeared (1300 ms) to allow participants to rest before the next trial. All stimuli were presented in the middle of the screen and participants were instructed to indicate the colour of the ink of the targets as quickly and as accurately as possible. To ensure that participants paid attention to the primes, they were warned about and administered a memory test during which they were asked to recall as many primes from the experiment as they could remember.

The primes belonged to several separate categories. First, we identified self-threatening primes. Past research has shown that exposure to personality attributes for

which the discrepancy between the actual self-concept and self-ideals is high are experienced as aversive (Higgins, 1987; Strauman & Higgins, 1988). Our pilot work, however, revealed that the negative attributes for which this type of discrepancy was the greatest closely matched the negative attributes which participants endorsed as most self-descriptive. We therefore determined self-threatening attributes by directly assessing the individuals' self-concept on a list of negative attributes using the SCC (see the Measures section) and then selecting for each participant those 4 attributes which she/he judged as most self-descriptive (negatively valenced high-threat primes; e.g., "selfish"). To ensure that only self-threatening primes affected colour-naming times, 4 least self-descriptive negative attributes were also included as a separate category (negatively valenced low-threat primes; e.g., "impolite"). To control for the possibility that colour-naming interference could be attributed to affective negativity of the primes rather than the level of threat that they pose to the self, we also included the positively valenced antonyms of high- and low-threat negatively valenced attributes from SCC. This resulted in two more categories: positively valenced high-threat (e.g., "generous") and positively valenced low-threat (e.g., "polite") primes. Thus, for each participant an ideographic set of 16 *emotional* primes consisting of 4 categories was constructed: (i) 4 negatively valenced high-threat primes; (ii) 4 positively valenced high-threat primes; (iii) 4 negatively valenced low-threat primes; (iv) 4 positively valenced low-threat primes. Finally, to control for possible nonspecific effects of cognitive load, 4 *neutral* adjectives were also included ("primary", "normal", "spare", "usual") as a separate, fifth, category and used across all the participants.

The to-be-memorised numbers were either 1-digit (low load) or 3-digit (high load) long. The primes from each of the 5 categories were shown in conjunction with each of the two load conditions and in combination with the following targets: half of the primes (2 words from each category) were presented in combination with the target word "red" printed (i) in blue or (ii) in red ink. The other half of the primes from each category were presented in combination with the target word "blue" printed (i) in blue and (ii) in red ink. Please see Table 6.2 for prime-target combinations used.

Following Ratcliff's (1993) recommendations, the interference indices for each type of emotional primes in each load condition were expressed in terms of percentage difference in colour-naming times in relation to the time taken to colour-name targets

Table 6.2. Prime-target combinations used in each of the two load conditions.

Prime threat level	Prime valence		Target word	Target colour
High-threat	negative	2 words	"blue"	red
	(4 words)			blue
		2 words	"red"	red
				blue
	positive	2 words	"blue"	red
	(4 words)			blue
		2 words	"red"	red
				blue
Low-threat	negative	2 words	"blue"	red
	(4 words)			blue
		2 words	"red"	red
				blue
	positive	2 words	"blue"	red
	(4 words)			blue
		2 words	"red"	red
				blue
Neutral	(4 words)	2 words	"blue"	red
				blue
		2 words	"red"	red
				blue

preceded by neutral primes in the corresponding load condition. For example, the interference index for negatively valenced high-threat primes under high load = (median RT taken to colour-name targets preceded by negatively valenced high-threat primes under high load / median time taken to colour-name targets preceded by neutral primes under high load) x 100. To reduce possible outlier effects, interference indices were calculated using the median RT for each participant and each condition. Trials with colour-naming

errors were excluded. Positive interference indices indicated an increase in colour-naming times for emotional primes relative to the neutral primes, suggesting greater accessibility of emotional primes. Negative interference indices indicated a decrease in colour-naming times for emotional primes relative to neutral stimuli, suggesting decreased accessibility of emotional compared to neutral primes.

6.4. Results

6.4.1. Correlations

As some variables were non-normally distributed, the relationships between questionnaire measures of paranoia, deservedness, EA, depression, anxiety, negative self-concept, attachment, and emotional invalidation were investigated using Spearman rho correlations (Table 6.3). The results showed that, paranoia and self-reported EA were strongly associated with each other. Both paranoia and EA were also positively associated with anxiety, depression, negative self-concept, attachment insecurity and emotional invalidation. The relationship between emotional invalidation and attachment was in the predicted direction[4].

6.4.2. Group differences

Mean scores on study variables stratified by group together with the results of statistical analyses are presented in Table 6.4. To confirm the validity of the patient groups and to estimate group differences on self-reported EA, one-way analyses of variance (ANOVA) with post-hoc Tukey tests (here and in all further analyses) were performed with group (paranoid; remitted; control) as the independent variable and PaDS persecution and AAQ scores as the dependent variables. The results showed that, consistent with the study design, paranoid patients obtained higher PaDS persecution scores than remitted patients and controls (both $p < .001$). The results also revealed that paranoid individuals

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[4] When correlational analyses were carried out for the clinical and non-clinical groups separately, the associations between variables remained essentially the same.

reported higher levels of EA than remitted patients (p <.05) and controls (p <.001).
Remitted patients also showed higher levels of EA than controls (p < .001).

Table 6.3. Correlations between all study variables (N=57).

	PaDS persec	AAQ-II	HADS depres	HADS anxiety	Neg self-concept	Attach anxiety	Attach avoid
AAQ-II	.65**	-					
HADS depres	.63**	.67**	-				
HADS anxiety	.58**	.70**	.65**	-			
Neg self-concept	.46**	.42**	.39**	.37**	-		
Attach anxiety	.61**	.67**	.61**	.61**	.38**	-	
Attach avoid	.35**	.48**	.40**	.34*	.31*	.38**	-
Emotion invalid	.15	.28*	.11	.19	.19	.17	.18

Note. Two-tailed Spearman's correlation coefficient, * p<.05, ** p<.01. PaDS persec = persecution subscale of Persecution and Deservedness subscale; AAQ-II = Acceptance and Action Questionnaire-II; HADS depress = depression subscale of Hospital Anxiety and Depression Questionnaire; HADS anxiety = anxiety subscale of Hospital Anxiety and Depression Questionnaire; Neg self-concept = negative self-concept; Attach anxiety = attachment anxiety; Attach avoidance = attachment avoidance; Emotion invalid = emotional invalidation.

One-way ANOVAs comparing self-concepts, depression, and anxiety across groups revealed more negative self-views in the paranoid patients compared to the remitted patients (p <.05). Paranoid patients were also more anxious and more depressed than the remitted patients (p <.05) and controls (p <.001). Remitted patients were more depressed than controls (p <.05). One-way ANOVAs comparing emotion invalidation, attachment anxiety and attachment avoidance across groups revealed no group differences for emotional invalidation. However, greater attachment anxiety was found in paranoid

patients compared to the remitted patients (p <.05) and controls (p <.001). Remitted patients reported greater attachment anxiety than controls (p <.05). As regards attachment avoidance, paranoid patients reported higher levels than the controls (p <.05).

Table 6.4. Mean scores (*SD*) for study variables (stratified by group) and group differences.

	Mean (*SD*)					
	Paranoid N=21	Remitted N=11	Controls N=25	F	P value of F	Group differences
PaDS persec	2.52 (0.84)	0.43 (0.44)	0.56 (0.43)	F(2,54) =70.22 *MSE*=0.38	<.001	P > R, C
AAQ-II	4.76 (1.17)	3.91 (0.62)	2.28 (0.85)	F(2,54)=40.37 *MSE*=0.90	<.001	P > R, C R > C
Neg self-concept	2.16 (0.63)	1.35 (0.34)	1.49 (0.37)	F(2,54)= 3.73 *MSE*=0.17	<.05	P > R
HADS anxiety	2.64 (0.53)	1.94 (0.39)	1.75 (0.50)	F(2,54)= 19.62 *MSE*=0.24	<.001	P > R, C
HADS depression	2.56 (0.11)	1.81 (0.15)	1.30 (0.10)	F(2,54)= 22.31 *MSE*=0.23	<.001	P > R, C R > C
Attachment						
Emotional invalid	3.48 (0.86)	3.19 (1.05)	3.07 (1.06)	F(2,52)= 0.99 *MSE*=0.98	ns	-
Attach anxiety	2.38 (4.66)	-1.18 (2.75)	-4.96 (3.52)	F(2,54)= 20.62 *MSE*=14.95	<.001	P > R, C R > C
Attach avoidance	2.10 (3.91)	0.82 (2.46)	-1.20 (3.85)	F(2,54)= 4.36 *MSE*=14.47	<.05	P > C

6.4.3. EA and paranoia

In order to investigate whether EA predicted paranoia over and above anxiety and depression symptoms in the entire sample, unilevel linear regressions were performed with PaDS persecution scores as the dependent variable. In a first block, HADS depression and HADS anxiety scores were entered as predictor variables. In a second block AAQ scores were entered as an additional predictor. The model was significant at Step 1, $F[2,54]$ = 32.41, p <.001, R^2=.55. Both anxiety (β[SE]= 0.38[0.21], p < .01) and depression (β[SE]= 0.44[0.21], p < .001) were significant predictors of paranoia. Adding AAQ to the model at Step 2 significantly improved the model, ΔR^2=0.05, p <.05; $F[3,53]$ = 26.05, p <.001, R^2=.57. In this model, both depression (β[SE]= 0.33[0.21], p < .01) and EA (β[SE]= 0.35[0.11], p < .05) were significant predictors of paranoia while anxiety was no longer a significant predictor (β[SE]= 0.19[0.25], p = .42).

To explore the predictors of paranoia within clinical and non-clinical groups, similar analyses were repeated separately for each group. The results showed that within the clinical group, the model was non-significant at Step 1, $F[2,29]$ = 2.32, p =.12, R^2=.14. Adding AAQ to the model however at Step 2 however significantly improved the model, ΔR^2=0.15, p <.05; $F[3,28]$ = 3.75, p <.05, R^2=.29. In this model, only AAQ was a significant predictor (β[SE]= 0.52[0.30], p < .05) whilst neither depression (β[SE]= 0.20[0.42], p = .27) nor anxiety (β[SE]= -.14[0.57], p = .53) were significant predictors.

When similar analyses were repeated for non-clinical group the results revealed that the model was non-significant at Step 1, $F[2,22]$ = 2.57, p =.10, R^2=.19. The model also failed to reach statistical significance at Step 2, $F[3,21]$ = 2.01, p =.14, R^2=.22.

6.4.4. Developmental antecedents of EA

In order to investigate the role of emotional invalidation in EA in the entire sample, a linear regression was performed with AAQ scores as the dependent variable and SES

emotional invalidation scores as the predictor variable. The results showed that the model was significant, $F(1,53) = 4.76$, $MSE= 2.03$, $p <.05$, $R^2=.08$. In the entire sample childhood emotional invalidation was associated with higher EA ($\beta[SE]= 0.29[0.20]$, $p < .05$). When similar analyses were carried out with attachment anxiety and attachment avoidance as the predictor variables, the results revealed that the model was again significant, $F(2,54) = 37.40$, $MSE= 0.94$, $p <.05$, $R^2=.58$. In the entire sample both attachment anxiety ($\beta[SE]=0.62 [0.03]$, $p < .001$) and attachment avoidance ($\beta[SE]=0.28[0.03]$, $p < .01$) were associated with higher EA.

To explore the developmental origins of EA within the clinical and non-clinical groups, similar analyses were repeated separately for each participant group.

The results showed that within the clinical group, the model in which emotional invalidation was entered as a predictor of EA was non-significant, $F(1,28) = 1.27$, $p =.27$, $R^2=.04$. When the analyses were carried out with attachment anxiety and attachment avoidance as the predictor variables of paranoia within the clinical group, the results revealed that the model was significant, $F(2,29) = 7.97$, $p <.01$, $R^2=.36$. Only attachment anxiety ($\beta[SE]=0.50 [0.04]$, $p < .01$) but not attachment avoidance ($\beta[SE]=0.21[0.05]$, $p =.18$) were associated with higher EA.

When similar analyses were repeated for non-clinical group, the results revealed that the model in which emotional invalidation was entered as a predictor of EA was non-significant $F(1,23) = 2.78$, $p =.10$, $R^2=.11$. When the analyses were carried out with attachment anxiety and attachment avoidance as the predictor variables of paranoia within the non-clinical group, the results revealed that the model was significant $F(2,22) = 4.61$, $p < .05$, $R^2=.30$. Attachment avoidance ($\beta[SE]=0.40 [0.04]$, $p < .01$) was a significant predictor while there was also a trend towards attachment anxiety ($\beta[SE]=0.35[0.04]$, $p =.06$) being associated with higher EA.

6.4.5. Experimental task

Two paranoid patients were unable to follow the experimental procedure and further 1 paranoid patient, 1 remitted patient, and 3 control participants assigned a score of 1 to all thirty attributes on the SCC. The data from these individuals were excluded from the analyses reported below.

A 3 x 2 x 3 mixed ANOVA with prime threat level (high; low; neutral), load (low; high) and group (paranoid; remitted; control) as independent variables performed on the colour-naming error rates revealed a significant main effect of group, $F(2,48)=4.68$, MSE $=96.44$, $p<.05$, $\eta^2 =.16$. Post-hoc tests showed that paranoid patients ($M=5.34$, SD=5.83) were less accurate than the controls ($M=1.56$, SD=2.33), $p <.05$. There were no other significant main effects or interactions, all F's < 1.90, p's $> .17$, $\eta^2 < .04$.

A similar analysis performed on the number recall error rates revealed that the main effect of load was significant, $F(1,48)=4.05$, $MSE =42.00$, $p=.05$, $\eta^2 =.08$. On average, participants made more number recall errors in the high load ($M=8.24$, SD=7.11) than in the low load ($M=6.32$, SD=7.23) condition. The main effect of group was also significant, $F(2,48)=7.22$, $MSE =213.82$, $p<.01$, $\eta^2 =.23$. Post-hoc tests showed that paranoid patients ($M=10.95$, SD=7.24) were less accurate than the controls ($M=3.87$, SD=4.34), $p <.05$. No other main effects or interactions were significant F's < 2.12, p's $> .12$, $\eta^2 <.05$.

To investigate the effect of prime type, load, and group on colour-naming interference, interference indices were analysed using a 2 x 2 x 2 x 3 mixed ANOVA with level of threat (low; high), valence (negative; positive), and load (low; high) as within subjects factors, and group as a between subjects factor[5]. The results revealed a significant group x load interaction ($F[2,48] = 4.56$, $MSE= 342.83$, $p <.05$, $\eta^2 =.16$), indicating that cognitive load affected colour-naming interference for emotional primes differently in different groups. No other main effects or interactions were significant, all F's <2.16, p's $> .15$, $\eta^2 <.04$. Stroop interference indices for emotional primes across load conditions and participant groups are shown in Figure 6.2. Examination of this figure suggests that under low load, paranoid and, to a lesser extent, remitted patients displayed *facilitation* in response to emotional primes, i.e. their colour-naming RTs were faster following emotional primes than following neutral primes. However, this effect was reversed under high load when both paranoid and remitted patients demonstrated considerable *interference*, i.e. colour-naming RTs were slower following emotional primes than following neutral primes. The opposite was true for controls who displayed less interference under high load.

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[5] When the analyses were repeated with depression entered as a covariate to control for the possible confounding effect of depression, the results remained essentially unchanged.
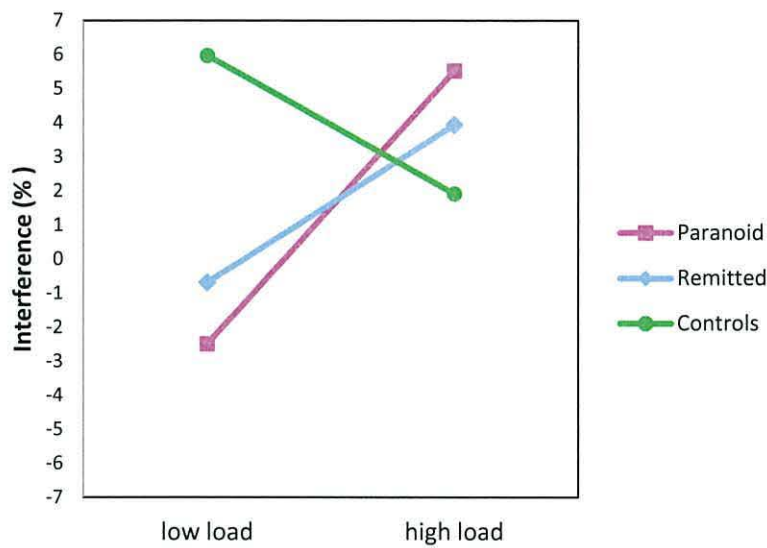
Figure 6.2. Interference indices for emotional primes in low and high load conditions across the participant groups.

To formally test these observations, the significant load x group interaction was followed up by simple effects analyses. The results revealed that, in the paranoid group, interference for emotional primes was higher in the high load condition compared to the low load condition (mean difference = 8.01, $p < .05$). However, there was no significant difference in interference for emotional primes due to load either in the remitted (mean difference= 4.52, $p=.38$), or in the control (mean difference = 4.25, $p=.11$) groups.

In order to explore the concurrent validity between self-report and behavioural measures of EA, the difference in interference for emotional primes due to load was calculated by subtracting the interference index for emotional primes in the low load from the interference index for emotional primes in the high load. Pearson correlations between the resulting difference and AAQ scores revealed that the two measures of EA were moderately and positively associated with each other ($r=.29, p < .05$).

6.5. Discussion

Our findings offer partial support to our hypotheses. Consistent with our predictions and previous research in a non-clinical population (Udachina, et al., 2009a),

within the clinical group, self-reported EA was associated with paranoia over and above its association with other forms of psychopathology. Also in line with previous research (Udachina, et al., 2009a), we found that self-reported EA was related to a more negative self-concept, suggesting that mental control strategies are motivated by a desire to restore a positive view of the self.

In contrast to our predictions, we found no evidence that paranoid patients found emotional information that was self-relevant to them as particularly threatening. Instead, our behavioural data indicate that acutely paranoid individuals may find any emotionally salient information as threatening and engage in attempts to avoid it. Our behavioural results cannot be attributed to higher levels of depression in patients as our results remained the same after controlling for the possible confounding effect of mood. The association between questionnaire and behavioural measures of EA supports the convergent validity of the two measures and adds credibility to our findings. It is difficult to explain why we failed to observe the effect of threat level on accessibility of primes. However, it is possible that the way the primes were identified may account for this. In particular, it might be that the list used to identify self-descriptive negative attributes did not always contain the traits that participants would have spontaneously reported as most self-descriptive. This could have lead to a poor approximation of the threatening attributes used as stimuli in the experiment to those attributes which the participant would have found most threatening.

Facilitation for colour-naming observed in paranoid patients following emotionally arousing cues under low load suggests that these individuals may normally inhibit such cues with even greater ease than they resist the distracting effects of neutral information. This suggests that these individuals are well-practiced at inhibition of emotional information. However, in line with the ironic processing theory (Wenzlaff & Wegner, 2000) our data also show that additional cognitive demands undermine successful EA revealing heightened accessibility of emotionally salient information. The latter observation is in line with the evidence that psychosis is associated with an exaggerated emotional response to daily hassles (e.g., Myin-Germeys, et al., 2003).

By demonstrating the relationship between EA and cognition, our results provide further evidence for the interdependence of emotional and cognitive factors in paranoia already shown in previous research (Bentall, et al., 2009). However, insofar as we found

no evidence that paranoid patients were particularly sensitive to self-relevant aversive information, our results do not support the attributional model of paranoia which proposes that paranoid individuals are engaged in avoidance of information that threatens the self (Bentall, et al., 2001).

Our results also highlight the dangers inherent in EA strategies. A relatively mild stress-related cognitive impairment in the laboratory may translate into a considerable handicap in real-life emotionally charged situations. While dealing with stressful situations requires mobilisation of all available resources, the coping skills of paranoid individuals would be compromised due to high cognitive costs of EA, leaving them overwhelmed by emotions. Moreover, EA takes the valuable resources away from other life-important cognitive processes such as learning and decision-making. Finally, the failure to attend to emotionally arousing experiences may preclude learning from these experiences and successful integration of these experiences into self-narrative. In support of this preposition, avoidance of unpleasant information has been linked to impaired encoding of such information and poor autobiographical memory (Fraley & Brumbaugh, 2007; Hermans, et al., 2005).

While our data are consistent with the eye-tracking research which has shown that paranoid individuals orient their attention *away* from socially threatening scenes (Green & Phillips, 2004), our results are also ostensibly at odds with studies which have used the emotional Stroop to investigate cognitive bias in paranoia. For example, Kinderman (1994) found that paranoid individuals showed increased interference for both positive and negative emotional words in the emotional Stroop task, indicating that their attention is biased *towards* threat. This apparent conflict, however, could be resolved if we accept that the direction of threat bias in paranoid individuals may vary across early and late stages of information processing (Green & Phillips, 2004). This would be consistent with the *vigilance-avoidance hypothesis* originally designed to explain attentional biases in anxiety disorders (Mogg, et al., 1987). This hypothesis holds that in anxious individuals, an automatic and biased preferential processing of threat cues is followed by its active avoidance during later stages of controlled processing. It is thought that such avoidance is motivated by alleviation of aversive states elicited by threatening stimuli.

6.5.1. Developmental origins of EA

Consistent with earlier research (Berry, Barrowclough, et al., 2007), paranoid individuals' relationships were characterised by rejection anxiety and resistance to closeness, indicating that they generally saw themselves as unworthy of others' support and expected others to be unavailable in times of need. A significant association between the two attachment dimensions highlights the interdependence of self- and other-representations.

In line with previous research (Krause, et al., 2003; Mikulincer, et al., 2004; Waters, et al., 2010), we found that in the entire sample, emotional invalidation in childhood predicted higher levels of EA in adulthood. We failed to replicate this association when we analysed the results separately for clinical and nonclinical participants. However, it is likely that the statistical power was insufficient to detect this association as the effect sizes in both groups were small. The modest amount of variance explained by emotional invalidation in EA could be explained by the fact that childhood experiences represent a distal variable which exerts its influence over many years. Adult attachment, on the other hand, accounted for a significant proportion of the variance in EA which is probably explained by a more proximal position of this measure in relation to the outcome variable. Despite the evidence that emotional invalidation in childhood may engender EA in later life, we found no evidence that paranoid patients' upbringing was characterised by emotional invalidation.

6.6. Limitations

Our study has a number of limitations. First, due to the ideographic nature of the stimuli, we were unable to control for prime word characteristics such as length and frequency, and therefore the interpretation of stand-alone interference indices should be done with caution. This limitation however should not affect our main results showing a moderating effect of load on accessibility of emotional information in paranoid individuals.

Second, despite the recent evidence highlighting considerable differences between paranoid individuals who believe that persecution is underserved and those who believe it to be justified (Chadwick, Trower, et al., 2005; Melo, et al., 2006a), we were unable to explore the differences between these two subtypes of patients due to low participant

numbers. Finally, retrospective measures of parental practices may be prone to recall bias. However, research suggests that people are fairly accurate in reporting the details of parent-child relationships (Mackinnon, et al., 1991), while research with psychiatric patients has shown that reports of parental rearing behaviours remain stable despite significant changes in symptom severity (Gerlsma, Das, & Emmelkamp, 1993; Richter & Eisemann, 2001).

6.7. Conclusions

Our findings suggest that paranoid individuals rely on EA strategies to manage distress. EA has a precarious nature: it can be fruitful when cognitive resources are plentiful but it backfires when these recourses are depleted, making the individual more vulnerable to emotionally arousing mental content. Finally, our results indicate that the roots of EA can be traced to early experiences with parents. In clinical practice, paranoid individuals should be encouraged to accept emotional experiences and integrate them fully with other thoughts and memories. This should reduce paranoia and the risk of being overwhelmed by this material in stressful situations.

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Chapter 7

General Discussion

7.1. Summary of the findings

The studies described in this thesis investigated the role of experiential avoidance (EA) in paranoid process using a range of methodologies (questionnaire, structured diary assessment, and experimental), study designs (cross-sectional, longitudinal) and populations (clinical and non-patient). On balance, the results support the hypothesis that paranoid individuals are highly intolerant of aversive mental contents and habitually engage in avoidance of such content. These results were robust to different methodologies and study designs and were replicated in clinical and nonclinical populations.

The examination of beliefs about deservedness of persecution in acutely paranoid patients revealed that Bad-me (BM) and Poor-me (PM) paranoid beliefs were associated with distinct psychological profiles, with BM beliefs characterized by more depression and lower self-esteem (Chapter 2). While deservedness judgements remained relatively stable in the short-term, acute paranoia, and especially BM paranoia, was associated with a highly unstable psychological presentation. Importantly, the data from subgroups of patients revealed complex dynamic relationships between paranoia and self-esteem. Measured concurrently, BM but not PM paranoia was associated with lower self-esteem. Measured prospectively, paranoia predicted lower self-esteem in individuals with BM beliefs but higher self-esteem in those with PM beliefs. The evidence that PM paranoia protects against negative self-views over time is consistent with the proposals that paranoia may serve a defensive function in some circumstances (Bentall, et al., 2001; Trower & Chadwick, 1995).

While across studies EA was also associated with depression and anxiety, the association between paranoia and EA remained even when anxiety and depression were controlled for (Chapter 5 and 6). Avoidance of unpleasant mental states was also associated with unstable self-views (Chapter 3), suggesting that EA might be employed to regulate self-esteem. We found that paranoia was predicted by unfavourable views about the self and attempts to avoid aversive mental states (Chapter 3 and 4). Negative views about the self and avoidance, in turn, were predicted by developmental history (Chapter 4). Specifically, cold and overcontrolling parenting in the first sixteen years of life predicted negative self-perceptions in adulthood while emotional invalidation in childhood, including

punishment, belittlement, and distress on the part of the mothers in response to children's displays of negative emotions predicted EA in adulthood.

Our results were generally consistent with the predictions of the ironic process theory (Wegner, 1994; Wenzlaff & Wegner, 2000) as the relative success of EA depended on availability of cognitive resources. In paranoid students, negatively valenced self-threatening information was more accessible when their resources were stretched; no such effect was observed in non-paranoid controls (Chapter 5). Similarly, enhanced accessibility of emotionally charged information under cognitive demand was detected among paranoid patients. Self-reported EA was associated with the behavioural measure of avoidance in a clinical sample (Chapter 6) but not among students (Chapter 5). In the context of daily life, activity-related stress exacerbated the harmful effect of EA on self-esteem (Chapter 3).

7.2. Results of this thesis in context of previous literature

Hayes et al. (2004; 1996) argue that EA plays a central role in the development and maintenance of psychopathology. Consistent with this proposal, we found that paranoid individuals habitually avoid unpleasant mental states. This evidence supports emerging research which has already linked EA to a variety of psychiatric symptoms such as depression, anxiety, social phobia, agoraphobia, obsessive-compulsive symptoms, and disordered eating (Briggs & Price, 2009; Hayes, et al., 2004; Lee, et al., 2010; Rawal, et al., 2010). Previous studies have also shown that paranoia is associated with avoidant coping and mental control strategies (Morrison, et al., 2007; Spinhoven & van der Does, 1999).

Consistent with earlier research we found that BM beliefs were strongly associated with depression and negative self-views (Chadwick, Trower, et al., 2005; D. Freeman, et al., 2001; Melo, et al., 2006b). Also in line with earlier research (Melo, et al., 2006b; Thewissen, et al., 2008; Thewissen, et al., 2007b) we observed a highly unstable psychological profile in acutely paranoid patients. This is consistent with the hypothesis that paranoid individuals persistently engage in attempts to protect fragile self-esteem from threats (Bentall, et al., 2001).

Our most interesting observation concerns temporal relationships between self-esteem and paranoia. Cross-sectional measures of self-esteem in undifferentiated samples of paranoid patients and students revealed a negative association between paranoia and self-esteem, i.e. higher paranoia was associated with lower self-esteem as demonstrated by some previous studies (D. Freeman, et al., 1998; Humphreys & Barrowclough, 2006). However, variations in this relationship emerged when the question was examined across subgroups of participants and time. Concurrently, paranoia was associated with low self-esteem only in those patients who believed that their punishment was deserved (BM); there was no association between concurrent paranoia and self-esteem in either paranoid patients who thought that their persecution was unjustified (PM), remitted patients, or controls. When the effect of current paranoia on subsequent self-views was examined, paranoia predicted lower self-esteem in the BM patients but higher self-esteem in the PM patients. This observation is consistent with Trower and Chadwick's account of paranoia (Chadwick, Trower, et al., 2005; Trower & Chadwick, 1995) and the attribution-self-representation model of paranoia (Bentall, et al., 2001) which both suggest that, at least in some circumstances, paranoid beliefs may confer protection against negative self-evaluations.

Consistent with previous research (e.g., Bentall, et al., 2009), our results suggest that emotional processes play an important role in paranoid delusions. They indicate that both negative self-representations and EA are involved in paranoia. The origins of the negative beliefs about the self and EA, in turn, lie in developmental history of the individual. Our findings largely replicate those of Udachina et al. (2009b) who found that negative self-views and EA predicted paranoia in a nonclinical sample. The observation that EA was associated with fluctuations in self-esteem is compatible with Bentall et al.'s (2001) model which proposes that dramatic fluctuations in self-esteem observed in paranoid patients (Thewissen, et al., 2008; Thewissen, et al., 2007b) reflect the attempts to avoid feelings of low self-worth. The evidence that EA may confer vulnerability for paranoia is particularly interesting since antipsychotic drugs which block dopamine D2 receptors disrupt avoidance responses in animals without affecting escape behaviours, suggesting that avoidance and psychotic symptoms share a common biological substrate (Moutoussis, et al., 2007).

Our findings suggest that suboptimal parenting leads to paranoia in adulthood through exerting its deleterious influence on individual's sense of self-worth and emotion-regulation strategies in adulthood. The idea that early interactions with parents shape self-image was first put forward by Bowlby (1997) who thought that such interactions provide a source of knowledge about self and others. According to this view, a child who is maltreated by her parents will grow up feeling that her parents are rejecting and that she is therefore unlovable. Consistent with this, studies have found that insecurely attached individuals hold more negative self-views (e.g., Pickering, et al., 2008; Wearden, et al., 2008). Our results are also in line with previous research showing that patients suffering from psychotic illness and subclinically paranoid individuals report unfavourable relationships with parents and an insecure adult attachment style (Berry, Wearden, & Barrowclough, 2007; Parker, et al., 1982; Pickering, et al., 2008; Rankin, et al., 2005).

Although the association between invalidation and EA was rather weak, there was some evidence that emotional invalidation in childhood may promote overreliance on EA in adulthood. This observation lends support to Gottman and colleagues' (1997) proposal that parental emotion socialization determines the child's attitudes towards her distress and the ways of regulating distress. In accordance with this, studies have found that parental punishment, minimization, and distress in response to children's displays of negative emotion are associated with emotional inhibition and psychological distress in later life (Klimes-Dougan, et al., 2007; Krause, et al., 2003; Lunkenheimer, et al., 2007). It appears that by overtly discouraging the expression of distress, parents implicitly encourage children to avoid the unpleasant mental states. It is not clear what motivates the parents to react in punitive ways in response to children's distress. However, it is possible that such reactions may be triggered by the parents' feelings of self-inadequacy in the face of the child's distress and their own inability to cope with such difficult emotions.

Our data suggest that EA in paranoid individuals may be affected by cognitive demands such as concurrent memory tasks or life stress. This is in line with the *ironic process theory* which proposes that mental control requires considerable cognitive effort and additional cognitive strain undermines successful avoidance (Wegner, 1994; Wenzlaff & Bates, 2000). These results are consistent with previous research which shows that additional cognitive demands reveal negative cognitions in individuals who engage in

thought suppression (e.g., Van der Does, 2005; Wenzlaff & Bates, 1998; Wenzlaff & Luxton, 2003).

It is interesting that, in the research reported in this thesis, self-report measures of EA failed to reveal successful avoidance of negative self-views, i.e. EA was associated with low self-esteem (Chapter 3, 4, 5 and 6) even when cognitive resources were relatively free (Chapter 3). On the other hand, the results of the ESM study (which did not include a direct self-report measure of EA) (Chapter 2) and the findings from experimental studies (Chapter 5 and 6) suggest that successful avoidance did take place in paranoid individuals at least in some situations. While the reasons for this discrepancy are not entirely clear, one explanation would be that, as suggested by some authors (e.g., Mikulincer, et al., 2004), avoidance operates outside of individual's awareness and self-report measures may fail to tap this process. Therefore, self-report measures of avoidance may reflect the attempts to avoid negative mental states regardless of their actual success. Experimental measures, on the other hand, may be a better indicator of successful avoidance.

Our experimental data are in line with eye-tracking research which has found that paranoid individuals orient their attention away from socially threatening scenes (Green & Phillips, 2004). However, our results are incompatible with emotional Stroop studies which reported the increased accessibility of self-threat in paranoia (Kaney & Bentall, 1989; Kinderman, 1994), suggesting that, rather than avoiding threat, paranoid individuals' attention is directed towards the threat. It is possible, however, that this conflicting evidence could be explained by a vigilance-avoidance hypothesis originally designed to explain attentional biases in anxiety disorders (Green & Phillips, 2004; Mogg, et al., 1987). This hypothesis states that the direction of threat bias may depend on the stage of processing: the automatic preferential processing of threat cues is followed by its active avoidance at later, more controlled, processing stages. It is possible that during the vigilance stage, paranoid individuals are extremely sensitive to threat because the presentation of threatening stimuli activates negative self-relevant schemas and related autobiographical knowledge stored in the long-term memory. At the avoidance stage, threat is successfully avoided provided that cognitive resources allow for this to happen (Green & Phillips, 2004). It is of note that the processing stages described by the vigilance-avoidance hypothesis closely resemble those outlined by the ironic process

theory. Both accounts implicate an automatic and effortless monitoring followed by controlled and effortful avoidance phase.

Overall, our findings show that avoidance of unpleasant mental states is an emotion regulation strategy with built-in instability. In the absence of notable stress EA may temporarily help alleviate unpleasant feelings. However, reliance on this strategy is potentially dangerous because it allows aversive mental content to remain in the background of consciousness, capable of exerting its influence when cognitive demands arise. The harmful consequences of EA may extend beyond increasing the vulnerability of paranoid individuals to stress. For example, it possible that avoidance may prevent the individual from processing, learning and integrating important experiences into a self-narrative. Consistent with such proposition, avoidance of aversive information has been linked to the failure to encode such information and poor autobiographical memory (Fraley & Brumbaugh, 2007; Hermans, et al., 2005). It is also possible that by taxing limited cognitive resources, EA inhibits paranoid individuals' mind-reading abilities which rely on availability of mental resources (McKinnon & Moscovitch, 2007). There is evidence that, among individuals with repressive coping style who are thought to habitually engage in suppression of aversive self-relevant information, unfavourable performance feedback is associated with attenuated mimicry of observed facial expressions (Mendolia, 2002).

7.3. Theoretical implications

The ironic process theory stipulates that two systems are involved in avoidance of unpleasant mental content: the *monitoring system* which scans consciousness for the unwanted material and the *intentional operating process* that seeks out more favourable mental content with which the unwanted phenomena are replaced (Wegner, 1994; Wenzlaff & Wegner, 2000). According to this theory, the relative success of avoidance depends on the efficiency of the intentional operating process. What our results show most convincingly is that paranoid individuals are highly intolerant towards negative mental states, signifying the presence of the first element of avoidance (habitual search for unwanted mental content). However, intolerance towards negative mental events is not unique to paranoia as high levels of EA are also observed in individuals suffering from anxiety, depression and a range of other symptoms and disorders (Hayes, et al., 2004; Lee,

et al., 2010; Rawal, et al., 2010). Insofar as the monitoring for negative internal phenomena is a transdiagnostic process, this evidence supports the hypothesis that paranoia is an extension of the individual's emotional concerns (D. Freeman, 2007; D. Freeman & Garety, 2003).

Although intolerance and monitoring for negative mental phenomena may be a common factor for a range of symptoms, it is likely that the nature of the second component of avoidance (the intentional operating process) is symptom-specific. Unfortunately, our results do not shed light on the nature of this second component in paranoid individuals, i.e. our data do not explain what phenomena are invoked by paranoid individuals to replace the unwanted mental states. However, our results tentatively suggest that since successful avoidance is observed only in paranoid patients who believe that their persecution is undeserved (PM patients) but not in patients who think that they deserved persecution (BM), the content of distractor thoughts is likely to vary according to perceived deservedness. The attributional model of paranoia (Bentall, et al., 2001) predicts that in PM paranoia the unpleasant information about the self is substituted with external-blaming attributions for negative events. Such substitution would explain why PM beliefs are associated with less depression and higher self-esteem than BM beliefs.

To conclude, as regards the competing models of paranoia, our data suggest that both Freeman et al.'s (D. Freeman, 2007; D. Freeman & Garety, 2003) and Bentall et al.'s (2001) models may provide valid accounts of paranoia. However, they may differ in terms of how well they describe the processes underlying BM and PM paranoid beliefs. Freeman's hypothesis that paranoia is an extension of the individual's emotional concerns best explains BM paranoia. Consistent with this, we found that BM patients report high levels of depression and low self-esteem. Although Bentall's model implies that paranoid individuals may switch between BM and PM stances and seeks to explain both, the evidence that persecutory beliefs may serve as a protection against low self-esteem is more pertinent to PM paranoia.

7.4. Ethical considerations

Research described in this thesis inevitably raised a number of ethical concerns. This is because it involved psychiatric patients who are thought to be particularly

vulnerable to exploitation in the context of research. Our research also involved exploration of sensitive and potentially upsetting topics as participants were asked to reflect on unpleasant mental states and some participants were also asked to discuss their psychiatric symptoms.

Despite a common belief that exploration of sensitive topics leads to exacerbation of distress, studies suggest that only a minority of individuals participating in sensitive research do report negative research experiences, whilst a majority tend to report positive experiences and report no elevated distress (Priebe, 2009; Ranjbar, 2011; Scott, Valery, Boyle, & Bain, 2002). This seems to be the case even in research as sensitive as that exploring sexual abuse (Priebe, 2009). Beneficial experiences of participation in sensitive research have also been reported. For example, female survivors of interpersonal violence perceived their participation as an interesting and valuable experience despite participants reporting strong emotions during the assessments (M. G. Griffin, Resick, Waldrop, & Mechanic, 2003; Ranjbar, 2011).

Ethical concerns have also been raised with regards to psychiatric participants being involved in research. In particular, there has been fears that participants in psychiatric research will become distressed and their mental state might worsen (Taylor, et al., 2010). However, research does not support such a view. A systematic review of studies that examined distress following participation in research that involved the assessment of psychiatric state or associated risk factors has revealed that although a minority of participants did become distressed, there was no evidence of longer-term harm (Jorm, Kelly, & Morgan, 2007). More recently, Taylor et al. (2010) evaluated the subjective experience of research participation in schizophrenia patients who were asked to report on suicidality. The study found that negative feedback concerning participation was rare whilst positive feedback was much more frequent, occurring in 45.6% to 60.8% of responses. Participants who reported positive experiences cited altruism, being valued, therapeutic effect and enjoyment as benefits of participation.

Our decision to pay the participants in order to stimulate recruitment raised another ethical issue. Although monetary payments are often used to promote research participation, some commentators have raised concerns about this common practice (Macklin, 1981; McNeill, 1997). In particular, it has been argued that monetary inducements encourage people to expose themselves to risk and may compromise research

integrity as participants may be motivated to be dishonest in order to receive payment. However, others argue that monetary rewards can be undue only in those research studies that involve the highest acceptable risk of physical or psychological injury (Palmer, 1985). Still others assert that research participants have an inalienable right to be paid as part of their freedom to establish a mutually beneficial relationship with researcher and none of the anti-inducement arguments should outweigh this freedom (Wilkinson & Moore, 1999).

From an empirical perspective, several studies have explored individuals' motivations for research participation, including the role of monetary incentives. Some studies have shown that financial motives are less important than other motivations such as altruistic and healthcare motives (Aby, Pheley, & Steinberg, 1996) and participants are rarely motivated by economic gain alone (Fry & Dwyer, 2001). However, several studies have shown that financial gain exerts a significant influence on the decision to participate in research, especially for healthy volunteers (Bentley & Thacker, 2004; Bigorra & Banos, 1990; Cunny & Miller, 1994). With regards to the influence of participant payments on participants' ability to assess risks involved in research, evidence indicates that although monetary payment does make prospective participants more willing to participate in research, high monetary payments do not blind respondents to the risks of research (Bentley & Thacker, 2004).

There is no agreement as to how the amount of financial remuneration paid to the participants should be determined. In our decision making we were guided by the payment model recommended by Dickert et al (2002). In this model, payment is rendered on the premise that research participation requires little skill but demands time and effort from the participant. Thus, payment using this model is based on standard wage payment for unskilled work with additional payments being made for uncomfortable procedures. Dickert et al (2002) argue that this type of model (i) reduces undue inducement concerns; (2) standardises payment across participants; and (3) establishes a system in which payment is based on the participant's contribution, consistent with the principle of equal pay for equal work.

Little research has been carried out on the impact of payment on participant selection and scientific integrity of research. However, to protect research integrity and to protect the participants from undue pressure we informed the participants that their

withdrawal from the study or completeness of their questionnaires, tests, or diaries would not affect the amount of monetary reward they received.

A range of additional safeguards and procedures were implemented to ensure the high ethical standards of research carried out as part of this thesis. First, all studies carried out as part of this thesis received an approval from the Ethics Committee of Bangor University. In addition, the studies involving NHS patients received an approval from the National Research Ethics Service (see Appendix 2 for letters of approval). Approvals were also granted by the relevant NHS trusts which were research sites for some of the studies. Second, in accordance with the ethical guidance of the British Psychological Association (2009), written informed consent was sought from all the participants. From the first contact participants were made aware that their participation was voluntary and that they were free to withdraw at any time without giving a reason and without their medical care or their rights being affected. When recruiting participants with past or present psychiatric history, the potential suitability (including their mental capacity and overall mental state) of the individuals for research was discussed with care staff. Mental capacity of potential participants was assessed prior to inviting them to take part in research. To minimise participant burden, we avoided recruiting individuals with current or past psychiatric history who were already involved in another research. During testing care was taken not to overburden participants. Participants were offered breaks and encouraged to work at their own pace. Longer testing sessions were broken down into shorter assessment periods.

Procedures were followed to maintain participant confidentiality. Research data were stored in a secure place and only researchers had access to it. All participants were debriefed at the end of each of the face-to-face testing sessions. In addition, participants were explained the rationale of the study at the end of their participation. We also answered participants' questions which arose from their participation. During testing only one participant reported levels of distress which required a referral to a mental health professional. However, all participants were given information on the services and support groups in case they were interested or felt that they wanted to explore their experiences further. In order to make the experience as useful to the participants as possible, as part of the studies which involved patient participants, we wrote a personal letter to the participants giving a summary of the study findings. We also provided a summary analysis of the diaries to the interested participants.

Feedback about the testing process was routinely collected from the participants. Although some individuals found some of the tests boring, and some found the process of filling in the diaries challenging, many also commented on the positive effects of participation. Some patient participants reported feeling heard and valued an opportunity to tell their story while some also found the process of reflection on their thoughts and feelings beneficial. Many patients also believed that their participation could help individuals suffering from psychosis in the future and felt that they made a valuable contribution. Distress among participants was rare and, in our experience, most often related to the patient participants' negative experiences of routine healthcare.

7.5. Limitations

7.5.1. Participants

The results of the studies reported here should be interpreted in context of certain limitations. First, the number of participants in the groups in some studies was limited. To some extent, the low numbers were due to patient recruitment difficulties and partly to the demanding nature of the ESM diary technique and the experiments which some patients found challenging. Consequently, it is possible that some genuine effects did not reach the conventional levels of statistical significance due to the low statistical power. Also due to low patient numbers it was not always possible to examine the differences between BM and PM subgroups, although such differences would have been of considerable theoretical interest. Moreover, it is possible that participants who failed to complete the ESM studies were also the ones with the highest levels of EA, biasing our findings. Finally, non-clinical samples were gender-biased as most participants were female.

7.5.2. Measures of EA

There is a question about what exactly self-report and behavioural measures of EA assess and how valid these measures are. First, as noted by some authors (e.g., Mikulincer, et al., 2004), avoidance may operate outside of the individual's conscious awareness therefore casting doubt over the basic ability of self-report measures to access the

information about EA. Second, even if self-report measures could access this information in ordinary people, self-report measures may not work as well with paranoid individuals. Because paranoid patients have difficulties thinking about their own and other people's mental states (Brune, 2005; Lysaker, et al., 2005) they may not possess adequate self-reflection skills in order to accurately report EA. Finally, even if questionnaire measures can access avoidance attempts of ordinary people and individuals with paranoia, there is a question as to whether AAQ-II represents a sufficiently reliable and valid method of doing so.

The AAQ-II as a self-report measure of avoidance could be criticized on several grounds. First, it contains items which conflate the act of avoidance with the experience of unpleasant mental states (e.g., "My painful memories prevent me from having a fulfilling life"). However, it is important to note here that evidence suggests that EA as measured by the AAQ-II is distinguishable from measures of psychopathology and negative beliefs about the self (Chapter 4; Bond, et al., 2011) supporting the view that the construct measured by the AAQ-II is separable from the mere presence of aversive inner states. Second, some items of the AAQ-II have questionable face validity. For example, it is difficult to see how the items "It seems like most people are handling their lives better than I am" or "Worries get in the way of my success" reflect acts of avoidance.

Despite these criticisms, however, psychometric properties of the AAQ-II appear to be satisfactory. The internal consistency of AAQ-II has been shown to be good both in the research presented in this thesis (Chapter 4) and in other studies (Bond, et al., 2011; Udachina, et al., 2009b) with Cronbach's alpha ranging from .78 to .92. Bond et al. (2011) also report a high (.79) 12-month test-retest reliability. With regards to its validity, the AAQ-II has been found to be strongly associated with the White Bear Suppression Inventory (r=.63) which represents a well-established measure of thought suppression.

The low correlation between the behavioural and self-report measures of EA observed in the current thesis (Chapters 5 and 6) raises further questions about what exactly the AAQ-II and the behavioural measures of EA assess and casts further doubts over the validity of these measures. There are several potential explanations for this poor correlation: (i) the AAQ-II is an inadequate measure of EA; (ii) a behavioural measure of EA employed in this thesis is a poor measure of EA; (iii) neither the AAQ-II nor the employed behavioural measure of EA are good measures of EA. The final possibility is

that both the AAQ-II and the behavioural measures of EA are accurate measures of EA but they reflect its separate aspects: whilst the AAQ-II (and other self-report measures of EA) may reflect conscious avoidance attempts rather than their actual success, the behavioural measures assess the relative success of these attempts. With regards to the first possibility (that AAQ-II is an inadequate measure of EA), it is important to note that although the terms *EA* and *psychological inflexibility* have sometimes been used interchangeably, according to Bond et al. (2011) these two terms reflect slightly different concepts. Bond et al. argue that by focussing exclusively on avoidance on negative mental states, EA constitutes a special case of a wider concept of psychological inflexibility, defined as rigid dominance of psychological reactions which reduces the person's contact with the present moment and her ability to follow chosen values and goals. A wider construct of psychological inflexibility arguably involves not only intolerance of negative mental states but also avoidance of positive emotions and/or overinvolvement with positive internal states that may be just as harmful if they reduce the person's sensitivity to her chosen goals and values (Bond et al., 2011). Bond et al. further assert that AAQ-II was developed as a measure of psychological inflexibility rather than of avoidance. With this argument in mind, it is possible that the poor correlation between AAQ-II and behavioural measures of avoidance observed in this thesis reflects the fact that these measures assess different concepts, i.e. that AAQ-II measures psychological inflexibility whilst the behavioural measures of avoidance were designed to measure the avoidance of negative mental states.

Regarding the suitability of the behavioural measures of EA employed in our experimental studies, they were initially developed for brainimaging research and other, more refined measures of avoidance (e.g., dot-probe-task), would probably have been more appropriate, particularly for investigating the time course of avoidance. Additionally, because of the time and feasibility constraints placed on patient research, different methods of identifying self-threatening stimuli were used in the two experiments precluding direct comparisons of the results.

7.5.3. Other issues

As regards our research on parenting in paranoia, it is likely that this relationship is bidirectional and child characteristics affect parenting style (Berry, Barrowclough, et al.,

2007). However, we did not model the effect of the individual's characteristics on parenting. Neither did we examine the role of paternal parental practices in paranoia. Further, the interpretation of our results is limited by the use of retrospective reports about parental behaviour. However, research has shown that self-report measures of parent-child relationships provide an accurate reflection of the actual behaviour of the parents, rather than merely the perceptions of the child (Mackinnon, et al., 1991), while the studies with psychiatric patients have shown that reports of parental rearing behaviours remain robust to clinical changes in symptom severity (Richter & Eisemann, 2000, 2001). It is also important to note that parental reactions to children's displays of distress were only a modest predictor of EA.

While causality cannot be established with confidence from cross-sectional data, the use of longitudinal and experimental designs provides support for the hypothesised relationship between EA and paranoia. Correlational studies based exclusively on questionnaire data are also problematic because the magnitude of the relationships between variables is likely to be inflated due to the common method of assessment.

Finally, although our data suggest that EA plays a significant role in paranoia, EA has also been linked to a variety of other psychological problems and disorders (Hayes, et al., 2004; Hayes, Wilson, et al., 1996; Rawal, et al., 2010), suggesting that factors other than EA must contribute to the development of paranoid ideas. Research implicates both cognitive and affective processes in paranoid delusions (Bentall, et al., 2009).

7.6. Implications for future research

Our results suggest that inconsistencies in the relationship between paranoia and self-esteem observed in previous research might be explained by failure to consider the dynamic nature of paranoid process and disregard for the moderating role of deservedness beliefs in this relationship. Future research should address these issues. It will also be important to systematically investigate the stability of deservedness beliefs across longer time frames and, importantly, elucidate the factors that determine perceived deservedness. There is evidence that most non-clinically paranoid individuals espouse BM beliefs whilst most paranoid in-patients are PM (Fornells-Ambrojo & Garety, 2005; Melo, et al., 2009b). The mechanisms of transition between milder BM beliefs and full-blown persecutory

delusions is poorly understood but it is interesting to speculate that a psychotic break may be precipitated by the increased efficiency of the *intentional operating system* postulated by the ironic process theory, involving a greater ease in generating external personal attributions for negative events.

It would also be interesting to determine whether there is a qualitative difference between the content of paranoid beliefs endorsed by BM and PM patients. For example, it is possible that some paranoid beliefs lend themselves to self-blame more readily than others. The associations between PM and BM beliefs and other aspects of delusions such as delusional preoccupation, conviction, and distress also merit further investigation. It is likely that PM beliefs are more preoccupying while BM beliefs are more distressing. A question also remains as to whether BM and PM beliefs are differentially associated with EA. If distress is pushed out of awareness then low levels of self-reported EA and high levels of behaviourally measured EA are likely among PM patients.

Further, although the evidence that PM paranoia protects against negative self-views over time is consistent with the attribution-self-representation model of paranoia (Bentall et al. 2001), future research will need to investigate whether changes in self-esteem produced by fluctuations in paranoid beliefs are also associated with changes in attributional style as predicted by this model.

Most research to date has investigated the role of maternal parenting in mental illness. However, the role of paternal parenting is increasingly recognised (e.g., Cabrera, Tamisk-LeMonda, Bradley, Hofferth, & Lamb, 2000; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004) and future work should explore the impact of paternal behaviours on factors involved in paranoia. There is also a need for longitudinal studies that will allow a better test of causality between parenting, EA and paranoia. More in-depth methods of assessment of attachment, such as the Adult Attachment Interview (George, Kaplan, & Main, 1985), might be used in future studies.

The time course of EA in paranoid individuals and the relationships between EA and other aspects of delusions such as conviction, distress, and preoccupation deserve further investigation. Finally, future work should consider the relationships between EA and other factors implicated in paranoia. For example, it is possible that, by taxing limited cognitive resources, EA inhibits the paranoid individuals' ability to mind-read, which relies on availability of mental resources (McKinnon & Moscovitch, 2007) and is

implicated in psychosis (Harrington, et al., 2005). Consistent with this proposition, there is evidence that, among repressors, unfavourable performance feedback is associated with attenuated mimicry of observed facial expressions (Mendolia, 2002).

7.7. Clinical implications

The results of this thesis have a number of clinical implications. One major implication for the treatment of paranoid patients is that psychological interventions for such patients should focus on increasing the individuals' tolerance towards distressing mental states and teaching them about more adaptive ways of managing such mental contents. One such therapeutic approach – the Acceptance and Commitment Therapy (ACT) – has been championed by Hayes et al. (Hayes, et al., 1999). Rather than focusing on reduction of the frequency or changing the content of unpleasant inner experiences, ACT concentrates on modifying people's relationship with such experiences. As part of the ACT, patients are taught to (i) identify and abandon internally oriented control strategies (ii) to accept the presence of difficult thoughts and feelings (iii) to learn to "just notice" the occurrence of these private experiences, without struggling with them, arguing with them, or taking them as true, and (iv) to focus on overt behaviours that produce valued outcomes (Bach & Hayes, 2002). Emerging research suggests that ACT is an effective form of psychological treatment for a range of problems, including chronic pain, drug dependence and depression (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Powers, Vording, & Emmelkamp, 2009). There is also preliminary evidence that ACT may be effective for psychotic symptoms as Bach and Hayes (2002) found that an ACT intervention was effective at decreasing the believability of psychotic symptoms and reduced rehospitalisation rates in a group of in-patients with psychosis. These results were later replicated and extended by Gaudiano and Herbert (2006) who reported that a brief ACT intervention produced improvements in affective symptoms, social impairment, and hallucination-related distress in psychotic in-patients. Mindfulness based treatments which encourage patients to accept unpleasant experiences and observe them without judgement may be effective for paranoid patients. Preliminary research suggests that mindfulness intervention may be able to enhance subjective well-being and improve life functioning in

psychotic patients (Chadwick, Hughes, Russell, Russell, & Dagnan, 2009; Chadwick, Newman Taylor, & Abba, 2005).

While ACT and mindfulness-based interventions have been specifically developed to tackle intolerance towards negative mental states, it is of note that, even when a reduction of EA is not the explicit aim of treatment, insofar as all main types of therapy require the individual to openly discuss their unpleasant thoughts and feelings, they promote sense of ownership and acceptance of these unpleasant mental phenomena.

As the findings of this thesis suggest that low self-esteem is a vulnerability factor for paranoid thinking, negative self-perceptions should be addressed as part of the treatment for paranoia. There is some evidence that interventions specifically targeting low self-esteem in psychotic patients are effective. Lecomte et al. (1999) tested such an intervention and found that, although the observed increase in self-esteem was statistically non-significant, it had beneficial effects for coping skills and psychotic symptoms. More recently, Hall and Tarrier (2003) evaluated the effectiveness of a cognitive behavioural intervention to improve self-esteem in psychotic patients with low self-esteem. The treatment focused on elaboration of positive self-traits generated by the patients and resulted in clinical benefits in terms of increased self-esteem, reduced psychotic symptoms and improved social functioning. Schema-therapeutic interventions (Young, Klosko, & Weishaar, 2003) built around challenging the patient's deep-seated negative self-views could also prove useful to paranoid patients.

Our results suggest that acutely paranoid beliefs are extremely labile and that there are substantial variations in experience within paranoid individuals. Therefore, the paranoid patients' overall clinical presentation, including beliefs about deservedness of persecution, should be assessed frequently and in detail and clinicians will need to adopt a tailored approach to treatment of each patient. The significant depression and low mood observed in depressed BM patients suggests that such patients may benefit from interventions aimed at alleviating depression and increasing self-esteem. Therapists should be mindful of the fact that paranoid ideas may serve a protective function for self-esteem of PM patients. Therefore, challenging delusional beliefs (normally carried out as part of the CBT interventions (Beck & Rector, 2000) for such patients) should be done with caution, as such individuals are likely to be reluctant to relinquish their paranoid beliefs.

To overcome potenital resistance, interventions for self-esteem prior to belief modification could prove to be more effective.

Finally, as our findings highlight the importance of sensitive and responsive parenting for psychological well-being, health policymakers should be mindful of the undesirable consequences of suboptimal parenting and promote policies that help parents improve their parental skills.

7.8. References

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1. Measures of paranoia

Persecution and Deservedness Scale (PaDS; Melo, et al., 2009a)

Please read each of the following statements carefully and indicate the extent to which they are true or false by circling a number on the scale.

1. There are times when I worry that others might be plotting against me.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

1.1 Do you feel like you deserve others to plot against you?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

2. I often find it hard to think of anything other than the negative ideas others have about me.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

2.1 Do you feel like you deserve people to have negative ideas about you?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

3. My friends often tell me to relax and stop worrying about being deceived or harmed.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

3.1 Do you feel like you deserve being deceived or harmed?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

4. Every time I meet someone for the first time, I'm afraid they've already heard bad things about me.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

4.1 Do you feel like you deserve to have people hearing bad things about you?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

5. I'm often suspicious of other people's intentions towards me.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

5.1 Do you feel like you deserve people having bad intentions towards you?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

6. Sometimes, I just know that people are talking critically about me.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

6.1 Do you feel like you deserve people to talk critically about you?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

7. There are people who think of me as a bad person.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

7.1 Do you feel like you deserve people to think of you as a bad person?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

8. People will almost certainly lie to me.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

8.1 Do you feel like you deserve people to lie to you?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

9. I believe that some people want to hurt me deliberately.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

9.1 Do you feel like you deserve people to hurt you deliberately?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

10. You should only trust yourself.	**Certainly false**	**Possibly false**	**Unsure**	**Possibly true**	**Certainly true**
	0	1	2	3	4

If you've answered 2 or above to the last question, please answer to the following question:

10.1 Do you feel like you deserve to have no one you can trust?	**Not at all**	**Possibly not**	**Unsure**	**Possibly**	**Very much**
	0	1	2	3	4

Persecutory Ideation Questionnaire (PIQ; McKay, et al., 2006)

Please respond to each item on a 5–point scale ranging from 1 – 'Not at all applicable to me', to 5 – 'Extremely applicable to me'.

	Not at all applicable to me	Somewhat unapplicable to me	Neutral	Somewhat applicable to me	Extremely applicable to me
	1	**2**	**3**	**4**	**5**
Someone has it in for me.					
I sometimes feel as if I'm being					

followed.					
I believe that I have often been punished without cause.					
Some people have tried to steal my ideas and take credit for them.					
My parents and family find more fault with me than they should.					
No-one really cares much about what happens to you.					
I am sure I get a raw deal from life.					
Most people will use somewhat unfair means to gain profit or an advantage, rather than lose it.					
I often wonder what hidden reason another person may have for doing something nice for you.					
It is safer to trust no-one.					
I have often felt that strangers were looking at me critically.					
Most people make friends because friends are likely to be useful to them.					

Someone has been trying to influence my mind.					
I am sure I have been talked about behind my back.					
Most people inwardly dislike putting themselves out to help other people.					
I tend to be on my guard with people who are somewhat more friendly than I expected.					
People have said insulting and unkind things about me.					
People often disappoint me.					
I am bothered by people outside, in cars, in stores, etc. watching me.					
I have often found people jealous of my good ideas just because they had not thought of them first.					

Acceptance and Action Questionnaire-II (AAQ-II; Bond, et al., 2011)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

		1	2	3	4	5	6	7
		Never true	Very seldom true	Seldom true	Someti mes true	Freque ntly true	Almost always true	Always true
1	It's OK if I remember something unpleasant.							
2	My painful experiences and memories make it difficult for me to live a life that I would value.							
3	I'm afraid of my feelings.							
4	I worry about not being able to control my worries and feelings.							
5	My painful memories prevent me from having a fulfilling life.							
6	I am in control of my life.							

7	Emotions cause problems in my life.							
8	It seems like most people are handling their lives better than I am.							
9	Worries get in the way of my success.							
10	My thoughts and feelings do not get in the way of how I want to live my life.							

2. Measures of anxiety and depression

Hospital Anxiety and Depression Scale (HADS; Snaith & Zigmond, 1986; Zigmond & Snaith, 1983)

Please read each item and circle the reply which comes closest to the way you have been feeling in **the past week**. Don't take too long over your replies; your immediate reaction to each item will probably be more accurate than a long thought out response.

1. I feel tense or 'wound up'.

   1 - Most of the time

   2 - A lot of the time

3 - From time to time, occasionally

4 - Not at all

2. I still enjoy the things I used to enjoy.

1 - Definitely as much

2 - Not quite so much

3 - Only a little

4 - Hardly at all

3. I get a sort of frightened feeling as if something awful is about to happen.

1 - Very definitely and quite badly

2 - Yes, but not too badly

3 - A little, but it doesn't worry me

4 - Not at all

4. I can laugh and see the funny side of things.

1 - As much as I always could

2 - Not quite so much now

3 - Definitely not so much now

4 - Not at all

5. Worrying thoughts go through my mind.

   1 - A great deal of the time

   2 - A lot of the time

   3 - From time to time, but not too often

   4 – Occasionally

6. I feel cheerful.

   1 - Not at all

   2 - Not often

   3 -Sometimes

   4 - Most of the time

7. I can sit at ease and feel relaxed.

   1 - Definitely

2 - Usually

3 - Not often

4 - Not at all

8. I feel as if I am slowed down.

1 - Nearly all the time

2 - Very often

3 - Sometimes

4 - Not at all

9. I get a sort of frightened feeling like butterflies in the stomach.

1 - Not at all

2 - Occasionally

3 - Quite often

4 - Very often

10. I have lost interest in my appearance.

1 - Definitely

2 - I don't take as much care as I should

3 - I may not take quite as much care

4 - I take just as much care as ever

11. I feel restless as if I have to be on the move.

1 - Very much indeed

2 - Quite a lot

3 - Not very much

4 - Not at all

12. I look forward with enjoyment to things.

1 - As much as I ever did

2 - Rather less than I used to

3 - Definitely less that I used to

4 - Hardly at all

13. I get sudden feelings of panic.

1 - Very often indeed

2 - Quite often

3 - Not very often

4 - Not at all

14. I can enjoy a good book or radio or TV programme.

1 - Often

2 - Sometimes

3 - Not often

4 - Very seldom

Beck Depression Inventory for Primary Care (BDI-PC; Beck, et al., 1997)

This questionnaire consists of groups of statements. Please read each group of statements carefully, then pick out a statement in each group which best describes the way you have been feeling during the **past 2 weeks, including today!** Circle the number beside the statement you picked.   If several statements in the group seem to apply equally well, check the box beside each statement.

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

2 **0** I am not discouraged about my future.
    1 I feel more discouraged about my future than I used to be.
    2 I do not expect things to work out for me.
    3 I feel my future is hopeless and will only get worse.

3 **0** I do not feel like a failure.
    1 I have failed more than I should have.
    2 As I look back, I see a lot of failures.
    3 I feel I am a total failure as a person.

4 **0** I get as much pleasure as I ever did from the things I enjoy.
    1 I don't enjoy things as much as I used to.
    2 I get very little pleasure from the things I used to enjoy.
    3 I can't get any pleasure from the things I used to enjoy.

5 **0** I feel the same about myself as ever.
    1 I have lost confidence in myself.
    2 I am disappointed in myself.
    3 I dislike myself.

6 **0** I don't criticize or blame myself more than usual.
    1 I am more critical of myself than I used to be.

2 I criticize myself for all of my faults.

3 I blame myself for everything bad that happens.

7 0 I don't have any thoughts of killing myself.

    1 I have thoughts of killing myself, but I would not carry them out.

    2 I would like to kill myself.

    3 I would kill myself if I had the chance.

3. *Self Esteem Rating Scale-Short Form (SERS-SF; T. Lecomte, et al., 2006)*

This questionnaire is designed to measure how you feel about yourself. It is not a test, so there are no right or wrong answers. Please answer each item as carefully and accurately as you can by placing a number by each one as follows:

		1	2	3	4	5	6	7
		Never	Rarely	A little of the time	A good part of the time	Some of the time	Most of the time	Always
1	I feel that others do things much better than I do							
2	I feel confident in my ability to deal with people							
3	I feel that I am likely to fail at things I do							
4	I feel that people really like to talk with me							
5	I feel ashamed about myself							
6	I feel that I have a good sense of							

	humour								
7	I feel inferior to other people								
8	I feel that my friends find me interesting								
9	I get angry at myself over the way I am								
10	I feel that I am a very competent person								
11	I am afraid I will appear stupid to others								
12	My friends value me a lot								
13	I feel that I get pushed around more than others								
14	When I am with other people, I feel that they are glad I am with them								
15	I wish I could just disappear when I am around other people								
16	I feel that I make a good impression on others								
17	I wish that I were someone else								
18	I feel confident that I can begin new relationships if I want to								
19	I feel that if I could be more like other people, then I would feel better about myself								
20	I feel that people have a good time when they are with me								

4. *Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991)*

The following are four general relationship styles that people often report. Please rate each of these relationship styles to indicate how well or poorly each description corresponds to your general relationship style.

A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

Disagree Strongly			Neutral/ Mixed			Agree Strongly
1	2	3	4	5	6	7

B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

Disagree Strongly			Neutral/ Mixed			Agree Strongly
1	2	3	4	5	6	7

C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

Disagree Strongly			Neutral/ Mixed			Agree Strongly
1	2	3	4	5	6	7

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D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

Disagree Strongly			Neutral/ Mixed			Agree Strongly
1	2	3	4	5	6	7

5. *Socialization of Emotion Scale (SES; Krause, et al., 2003),*

This questionnaire lists various behaviours and attitudes of parents. Please cast your mind back to when you were a child. Indicate on a scale from 1 (very unlikely) to 7 (very likely) the likelihood that your **MOTHER** would respond in the ways listed for each item. Please read each item carefully and respond as honestly and sincerely as you can.

1.		If you became angry because you were sick or hurt and couldn't go to your friend's birthday party, she would:							
			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
	A	send you to your room to cool off							
	B	get angry at you							
	C	help you think about ways that you							

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			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
		could still be with friends (for example, invite some friends over after the party)							
	D	tell you not to make a big deal out of missing the party							
	E	encourage you to express your feelings of anger and frustration							
	F	soothe you and do something fun with you to make you feel better about missing the party							

2.		**If you fell of your bike and broke it, and then got upset and started to cry, she would:**							
			Very Unlikely						**Very Likely**
			1	**2**	**3**	**4**	**5**	**6**	**7**
	A	remain calm and would not get anxious							
	B	comfort you and try to get you to forget about the accident							
	C	tell you that you are over-reacting							
	D	help you figure out how to get the bike fixed							

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			Very Unlikely						Very Likely
	E	tell you that it's OK to cry							
	F	tell you to stop crying or you won't be allowed to ride your bike anytime soon							

3. **If you lost some prized possession and react with tears, she would:**

			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
	A	get upset with you for being so careless and then crying about it							
	B	tell you that you are over-reacting							
	C	help you think of places you hadn't looked yet							
	D	distract you by talking about happy things							
	E	tell you it's OK to cry when you feel unhappy							
	F	tell you that's what happens when you're not careful							

4. **If you were afraid of injections and became quite shaky and teary while waiting for your turn to get a shot,**

she would:

			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
A	tell you to shape up or you won't be allowed to do something you like to do (for example, watch TV)								
B	encourage you to talk about your fears								
C	tell you not to make big deal of the shot								
D	tell you not to embarrass her by crying								
E	comfort you before and after the shot								
F	talk to you about ways to make it hurt less (such as relaxing so it won't hurt or taking deep breaths).								

5. **If you were going over to spend the afternoon at a friend's house and became nervous and upset because she couldn't stay there with you, she would:**

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			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
	A	distract you by talking about all the fun you will have with your friend							
	B	help you think of things that you could do so that being at your friend's house without her wouldn't be scary (for example, take a favorite book or toy with you)							
	C	tell you to quit over-reacting and being a baby							
	D	tell you that if you don't stop that you won't be allowed to go out anymore							
	E	would feel upset and uncomfortable because of your reactions							
	F	encourage you to talk about your nervous feelings							
6.		**If you were participating in some group activity with your friends and proceeded to make a mistake and then looked embarrassed and on the verge of tears, she would:**							
			Very						Very

			Unlikely						Likely
			1	2	3	4	5	6	7
	A	comfort you and try to make you feel better							
	B	tell you that you are over-reacting							
	C	feel uncomfortable and embarrassed herself							
	D	tell you to straighten up or you'll go home right away							
	E	encourage you to talk about your feelings of embarrassment							
	F	tell you that she'd help you practice so that you could do better next time							

7.	If you were about to appear in a recital or sports activity and became visibly nervous about people watching you, she would:

			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
	A	help you think of things that you could do to get ready for your turn (for example, to do some warm-ups							

			Very Unlikely 1	2	3	4	5	6	Very Likely 7
		and not to look at the audience)							
	B	suggest that you think about something relaxing so that your nervousness would go away							
	C	remain calm and not get nervous herself							
	D	tell you that you are being a baby about it							
	E	tell you that if you don't calm down, you'll have to leave and go home right away							
	F	encourage you to talk about your nervous feelings							

8. **If you received an undesirable birthday gift from a friend and looked obviously disappointed, even annoyed, after opening it in the presence of the friend, she would:**

			Very Unlikely 1	2	3	4	5	6	Very Likely 7
	A	encourage you to express your disappointed feelings							
	B	tell you that the present can be exchanged for something you want							

			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
	C	NOT be annoyed with you for being rude							
	D	tell you that you are over-reacting							
	E	scold you for being insensitive to the friend's feelings							
	F	try to get you to feel better by doing something fun							

9. **If you were panicky and couldn't go to sleep after watching a scary TV show, she would:**

			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
	A	encourage you to talk about what scared you							
	B	get upset with you for being silly							
	C	tell you that you are over-reacting							
	D	help you think of something to do so that you could get to sleep (for example, take a toy to bed, leave the lights on)							

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			Very Unlikely						Very Likely
E	tell you to go to bed or you won't be allowed to watch any more TV								
F	do something fun with you to help you forget about what scared you								

10. **If you were at a park and appeared on the verge of tears because the other children were mean to you and wouldn't let you play with them, she would:**

		Very Unlikely						Very Likely
		1	**2**	**3**	**4**	**5**	**6**	**7**
A	NOT get upset herself							
B	tell you that if you start crying then you'll have to go home right away							
C	tell you it's OK to cry when you feel bad							
D	comfort you and try to get you to think about something happy							
E	help you think of something else to do							
F	tell you that you will feel better soon							

			Very Unlikely						Very Likely

11. If you were playing with other children and one of them called you names, and you then began to tremble and become tearful, she would:

			Very Unlikely						Very Likely
			1	2	3	4	5	6	7
	A	tell you not to make a big deal out of it							
	B	feel upset herself							
	C	tell you to behave or you'll have to go home right away							
	D	help you think of constructive things to do when other children tease you (for example, find other things to do)							
	E	comfort you and play a game to take your mind off the upsetting event							
	F	encourage you to talk about how it hurts to be teased							

12. If you were shy and scared around strangers and consistently became teary and wanted to stay in your

			Very Unlikely						Very Likely
		bedroom whenever family friends come to visit, she would:							
			1	**2**	**3**	**4**	**5**	**6**	**7**
A	help you think of things to do that would make meeting family friends less scary (e.g., to take a favorite toy with you when meeting my friends)								
B	tell you that it is OK to feel nervous								
C	try to make you happy by talking about the fun things you can do with our friends								
D	feel upset and uncomfortable because of your reactions								
E	tell you that you must stay in the living room and visit with family friends								
F	tell you that you are being a baby								

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Appendix 2 – Letters of ethical approval

North West Wales NHS Trust Research Governance Committee
Internal Review Panel

North West Wales NHS Trust, Ysbyty Gwynedd
Clinical Academic Office
North Wales Clinical School
Bangor, Gwynedd
LL57 2PW

Telephone/Facsimile: 01248 - 384.877
Email: Rossela.Roberts@nww-tr.wales.nhs.uk

PRIVATE & CONFIDENTIAL
Professor R. Bentall
School of Psychology
Bangor University,
Brigantia Building,
Penrallt Rd,
Bangor, Gwynedd
LL57 2AS

22 July 2008

Dear Professor Bentall,

Study title: 'Personality, mood, and coping with thoughts and feelings - 2'
R&D reference no: Bentall 08/25

The above research project was reviewed at the meeting of the Internal Review Panel held on 5 June 2008. Thank you for responding to the Committee's request for further information on the above research and submitting revised documentation, which was received on the 15 July 2008.

The Chairman considered the response on behalf of the Committee and is satisfied with the scientific validity of the project, the risk assessment, the review of the NHS cost and resource implications and all other research management issues pertaining to the revised application.

I have pleasure in confirming that the Internal Review Panel is pleased to grant Trust approval to proceed at the North West Wales NHS Trust sites.

The study should not commence until the Ethics Committee reviewing the research has confirmed final ethical approval - favourable opinion.

All research conducted at the North West Wales NHS Trust sites must comply with the Research Governance Framework for Health and Social Care in Wales (November 2001). An electronic link to this document is provided on the Trust's R&D WebPages. Alternatively, you may obtain a paper copy of this document via the R&D Office.

Attached you will find a set of approval conditions outlining your responsibilities during the course of this research. Failure to comply with the approval conditions will result in the withdrawal of the approval to conduct this research in the North West Wales NHS Trust.

If you would like further information on any other points covered by this letter please do not hesitate to contact me. On behalf of the Committee, may I take this opportunity to wish you every success with your research.

Yours sincerely

Dr K D Griffiths
Consultant Biochemist
R&D Director, Assistant to the Medical Director
Chairman Trust Research Governance Committee

Pwyllgor Moeseg Ymchwil Gogledd Orllewin Cymru
North West Wales Research Ethics Committee

Ms Alisa Udachina
School of Psychology
Brigantia Building
Bangor University,
Bangor, Gwynedd
LL57 2AS

North West Wales NHS Trust, Ysbyty Gwynedd
Clinical Academic Office

Bangor, Gwynedd
LL57 2PW

Telephone/ Facsimile: 01248 - 384.877
Email: Rossela.Roberts@nww-tr.wales.nhs.uk

22 October 2009

Dear Ms Udachina

Study Title:	**Personality, mood and cognitive processing**
REC reference number:	**09/WNo01/44**
Protocol number:	**1.2**

Thank you for your letter of 21 October 2009, responding to the Committee's request for further information on the above research and submitting revised documentation.
The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

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

Ethical review of research sites

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

Conditions of the favourable opinion

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

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

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk. *Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.*

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

West Midlands Research Ethics Committee

Osprey House
Albert Street
Redditch
Worcestershire, B97 4DE
anne.mccullough@westmidlands.nhs.uk
Chairman: Mr Paul Hamilton

Tel: 01527 587573
Fax: 01527 587501

11 August 2009

Professor Richard Bentall
School of Psychology
Brigantia Building
Bangor University
LL57 2AS

Dear Professor Bentall

Study title:	**Personality, mood and coping with thoughts and feelings - 2**
REC reference:	**08/H1208/25**
Amendment number:	**AM03**
Amendment date:	**16 July 2009**

The above amendment was reviewed at the meeting of the Sub-Committee held on 10 August 2009 by the Sub-Committee in correspondence.

Ethical opinion

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

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Participant Information Sheet: (non-panel)	3	04 May 2009
Participant Information Sheet: (panel)	3	04 May 2009
Participant Information Sheet: (voluntary organisation)	1	04 May 2009
Participant Consent Form: (non-panel)	3	04 May 2009
Participant Consent Form: (panel)	3	04 May 2009
Participant Consent Form: (voluntary organisation)	1	04 May 2009
Notice of Substantial Amendment (non-CTIMPs)		16 July 2009

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

West Midlands Research Ethics Committee

05 March 2009

Richard Bentall
School of Psychology
Brigantia Building
Bangor University
Gwynedd
LL57 2AS

Dear Mr Bentall

Study title:	**Personality, mood and coping with thoughts and feelings - 2**
REC reference:	**08/H1208/25**
Amendment number:	**AM02**
Amendment date:	**12 February 2009**

The above amendment was reviewed at the meeting of the Sub-Committee of the REC held on 03 March 2009.

Ethical opinion

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

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Protocol	5	20 December 2008
Participant Information Sheet	2 - non patients	20 December 2008
Notice of Substantial Amendment (non-CTIMPs)		12 February 2009
A code of Practice for the Safety of Social Researchers		

Membership of the Committee

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

GIG
CYMRU
NHS
WALES

Bwrdd Iechyd Prifysgol
Betsi Cadwaladr
University Health Board

Panel Arolygu Mewnol Y&D
R&D Internal Review Panel

Ysbyty Gwynedd
Clinical Academic Office
North Wales Clinical School
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PRIVATE & CONFIDENTIAL
Miss A Udachina
PhD Student
School of Psychology
Bangor University
Bangor
Gwynedd, LL57 2AS

8 October 2009

Dear Miss Udachina ,

Review: Udachina 09/44 Personality, mood and cognitive processing (enc)
Chief Investigator: Miss A Udachina

Documents reviewed: R&D Application form 28/08/2009; NHS SSI form 26/08/2009; NHS R&D Supplementary Info Form; Protocol v.1 01 July 2009; Participant Information Sheet: English - Patients (panel) v.1 01 July 2009; Participant Information Sheet: English - Patients (non-panel) v.1 01 July 2009; Participant Information Sheet: English - Healthy Controls v.1 01 July 2009; Participant Information Sheet: Welsh - Healthy Controls v.1 01 July 2009; Participant Information Sheet: Welsh - Patients (panel) v.1 01 July 2009; Participant Information Sheet: Welsh - Patients (non-panel) v.1 01 July 2009; Participant Consent Form: English - Patients (non-panel) v.1 01 July 2009; Participant Consent Form: English - Patients (panel) v.1 01 July 2009; Participant Consent Form: English - Healthy Controls v.1 01 July 2009; Participant Consent Form: Welsh - Healthy Controls v.1 01 July 2009; Participant Consent Form: Welsh - Patients (panel) v.1 01 July 2009; Participant Consent Form: Welsh - Patients (non-panel) v.1 01 July 2009; GP/Consultant Information Sheets v.1 01 July 2009; Debriefing Sheet v.1 01 July 2009; Questionnaire: Paranoia & Deservedness Scale No version; Questionnaire: Hospital Anxiety & Depression No version; Questionnaire: Self-Concept Checklist No version; Questionnaire: Accepta& Action Questionnaire No version; Questionnaire: Brief Core Schema Scale No version; Questionnaire: Relationship Questionnaire No version; Questionnaire: Parental Bonding Instrument No version; Questionnaire: Socialisation to emotion scale No version; Questionnaire: Name-letter preferences No version; Letter from Sponsor No version 31July 2009; Statement of Indemnity No version 01 August 2009; Investigator CV No version 30 July 2009; CV - Supervisor No version 30 July 2009

The above research project was reviewed at the meeting of the Internal Review Panel held on 8th October 2009. The Committee is satisfied with the scientific validity of the project, the risk assessment, the review of the NHS cost and resource implications and all other research management issues pertaining to the revised application.

I have pleasure in confirming that the Internal Review Panel is pleased to grant Trust approval to proceed at this site.

The study should not commence until the Ethics Committee reviewing the research has confirmed final ethical approval - favourable opinion.

GIG
CYMRU
NHS
WALES

Bwrdd Iechyd Prifysgol
Betsi Cadwaladr
University Health Board

**Ysbyty Glan Clwyd Hospital, Ysbyty Maelor Wrexham
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Ms Alisa Udachina
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Ein cyf / Our ref:LTJ

Eich cyf / Your ref:

Rhif Ysbyty / Hospital Number:

Rhif GIG / NHS Number:

☎:   01745 589624

Gofynnwch am / Ask for: Lona Tudor Jones

Ffacs / Fax: 01745 589717

E-bost / Email:
Lona.TudorJones@wales.nhs.uk

Dyddiad / Date:

RIVATE & CONFIDENTIAL

ar Ms Udachina

: **Childhood experiences, unpleasant mental states and their role in mental health
oblems
f:udachina09/WNo01/44**

e above research project was reviewed at the meeting of the Research Governance Committee
ternal Review Panel held on 5 January 2010 at Glan Clwyd Hospital.

ave pleasure in confirming that the Internal Review Panel has approved the study to proceed at
e Betsi Cadwaladr University Health Board at Ysbyty Glan Clwyd Hospital and Ysbyty Maelor
exham Hospital.

e panel agreed to fund the translation costs for the participant information sheets and the
nsent forms into Welsh to attract some children and families who may otherwise decide not to
e part.

e study should not commence until the Ethics Committee reviewing the research has confirmed
al ethical approval (favourable opinion and no objection to site specific assessment).

part of the regular monitoring undertaken by the Research Governance Committee you will be
quired to complete a short progress report. This will be requested on a six monthly basis.
wever, please contact me sooner should you need to report any particular successes or
oblems concerning your research. Whilst the Health Board is keen to reduce the burden of
perwork for researchers failure to produce a report may result on withdrawal of approval.

research conducted at Betsi Cadwaladr University Health Board must comply with the Research
vernance Framework for Health and Social Care in Wales (November 2001). An electronic link
this document is provided on the Trust's R&D WebPages. Alternatively, you may obtain a paper
by of this document via the R&D Office.

ached you will find a set of approval conditions outlining your responsibilities during the course
his research. Failure to comply with the approval conditions will result in the withdrawal of the
proval to conduct this research at the Betsi Cadwaladr University Health Board.

johebiaeth ar gyfer y Cadeirydd a'r Prif Weithredwr / Correspondence address for Chairman and Chief Executive:
fa'r Gweithredwyr / Executives' Office,
Gwynedd, Penrhosgarnedd
r, Gwynedd LL57 2PW   **Gwefan:** www.pbc.cymru.nhs.uk / **Web:** www.bcu.wales.nhs.uk