

Paranoia in the Nonclinical Population

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Declaration of Authorship

I Rhani Allen-Crooks hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

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Abstract

A growing body of research demonstrates that paranoia is common in the general population. Four studies are presented that investigate factors associated with paranoia and naturalistic change in non-clinical groups. First, two experimental studies examine paranoia in the context of the Prisoner's Dilemma Game (PDG), an interpersonal research paradigm, where two players have the choice to cooperate or compete with each other. The dominant and rational choice for both players is to compete, however each players' individual reward would be greater if they both played cooperatively. Study 1 found that higher state paranoia was associated with the choice to compete. However the competitive choice can be selected due to distrust of the other player, or in order to maximise personal gain. The second experimental study employs a Three-Choice version of the PDG (PDG-Alt) that includes the option to withdraw, the rational choice when distrust of the other player is high. Higher state paranoia was associated with the withdrawal choice. These studies conclude that the withdrawal choice in the PDG –Alt provides a potential behavioral marker of state paranoia. Second, two studies examine naturalistic change in nonclinical paranoia. Idiosyncratic accounts of a single past paranoid experience are elicited and variations in dimensions known to be important in clinical paranoia are examined. Results show that levels of preoccupation, distress, impact on well being and conviction that harm was intentional significantly reduce over time. However the amount of time passed since the experience occurred is not significantly associated with level of change. Finally, in Study 4 a qualitative investigation is presented that identifies themes associated with change in nonclinical experiences of paranoia. The thesis concludes with a discussion of the theoretical, clinical and research implications of the findings.

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1 Chapter One - Introduction

1.1 Overview of Introduction Chapter

The term “paranoia” can refer to a range of suspicious thoughts from mild social evaluative concerns at one end to fears regarding severe threat of physical, psychological or social harm at the other (Freeman et al., 2005a). Although the term may be used to describe particular symptoms of psychosis, such as persecutory delusions, the central interest of the current thesis is the common, ordinary and often transitory feelings of paranoia experienced within nonclinical populations. The thesis focuses on both the interpersonal nature of nonclinical paranoia and naturalistic changes in responses to nonclinical paranoid experience. This introductory chapter consists of a literature review, where historical and operational accounts of paranoia shall first be briefly considered before discussing the definition of paranoia that will be central to the current thesis. Current dominant models of paranoia will also be reviewed. The thesis adopts a continuum approach to paranoia, and therefore a review of the dimensional views of psychosis shall be presented. Within this discussion the evidence provided to support the notion of a continuum in psychosis and more specifically persecutory delusions shall be reviewed. The shortcomings of this evidence shall be considered before addressing the current concerns of research in the area of paranoia within nonclinical populations. Specifically, the need for further experimental and exploratory investigation into the area of nonclinical paranoia will be examined. The introduction chapter will end with a summary of the aims of the current thesis.

1.2 What is Paranoia?

1.2.1 Historical Accounts

The term paranoia is a complex one which has had multiple meanings (Manchreck, 1992). In the original Greek, παράνοια is a compound word consisting of para (beyond) and noos (mind) meaning literally besides or outside the mind. It was not until 1818 with the publication of Johann Heinroth's 'Disorders of Mental Life' that the term paranoia was used within the broader category of monomania to describe delusional states. By the early 20th century its use was focused to refer to any mental illness in which systematised delusions were at the centre (Bell, 2003).

Early texts on delusional beliefs supply descriptions of the content of those beliefs rather than detailed definitions. It has been suggested that this may be due to the prevalent belief in the apparent simplicity of categorising delusions by content (Freeman and Garety, 2004).

"The patient notices that he is looked at in a peculiar way, laughed at, scoffed at, that people are jeering at him, are spitting in front of him, the clergyman makes allusions to him in the sermon. He is grossly abused and threatened, his thoughts are influenced, he is surrounded by a 'spiteful revolution'. People spy on him; Jews, anarchists, spiritualists, persecute him, poison the atmosphere with poisonous powder, the beer with prussic acid, generate magic vapours and foul air, do not let him take a single good breath, try to wash him away with musk water." (Kraepelin, 1899).

1.2.2 Operational Accounts of Paranoia

In clinical accounts, persecutory delusions are not associated with any one mental illness but are linked to many different conditions, including depression, social phobia, PTSD, personality

disorders and schizophrenia (Freeman & Garety, 2004). Persecutory delusions are one of the most commonly occurring subtypes of delusional beliefs (Freeman and Garety, 2004), and are diagnosed by the use of several major classification systems. These were developed and subsequently revised to meet the need to reliably diagnose mental illnesses such as schizophrenia. Glossaries of handbooks of symptoms such as the Diagnostic and Statistical Manual (DSM-IV-TR), American Psychology Association 2000, the International Classification of Diseases (ICD-10) World Health Organisation 1993 and the Present State Examination (PSE) Wing et al. (1974) are frequently used when making a clinical diagnosis.

There is a general consensus between these various classification systems in the accounts and definitions of persecutory delusions. Paranoia is defined as “A delusion in which the central theme is that one (or someone to whom one is close) is being attacked, harassed, cheated, persecuted, or conspired against.” DSM-IV (American Psychiatric Association, 1994). “A term used by mental health professionals to describe suspiciousness (or mistrust) that is highly exaggerated or not warranted at all” (National Institute of Mental Health). Or an unsupported belief “...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 bring about their death” Schedules for Clinical Assessment in Neuropsychiatry/PSE-10 (WHO, 1992). However, the diagnostic criteria for delusions have been widely criticised for their conceptual incoherence and susceptibility to significant counter examples (Bell et al., 2006; David, 1999; Leeser & O’Donohue, 1999; Spitzer, 1990).

The lack of clear definition and disparity in diagnostic criteria has resulted in an increasing tendency among researchers and clinicians to use a ‘single symptom approach’ (Costello, 1992). Examining individual symptoms as they occur, rather than attempting to attribute them to a syndrome, has resulted in a refocusing of attention onto the experience of the individual.

In doing so the single symptom approach has enabled the study of single elements of psychopathology and evades some of the pitfalls of misclassification (Costello, 1992; Bentall, Jackson & Pilgrim, 1988). Studies using the single symptom approach have provided a clearer understanding of the nature of persecutory thinking (Freeman & Garety, 2004).

1.2.3 **Problems with Operational Accounts**

Freeman and Garety (2004) have identified five main areas where the discrepancies between operational accounts can be problematic:

1) A lack of agreement on what counts as persecution. Some clinical accounts include delusions of reference (feelings of being noticed or observed), although linked to persecutory delusions these are not the same, as some delusions may include a benign sense of observation.

2) A lack of clarity in the definition of persecutory intent. DSM IV-TR states that the respondent “suspects, without sufficient basis, that others are exploiting, harming, or deceiving him or her”, but no comment is made as to the intent of the persecutor to harm them.

3) A discrepancy in the target of threat. DSM-IV allows for harm to be targeted at friends and relatives as well as the individual but the Present State Examination (PSE) does not.

4) The timing of the persecution. The Schedule for Affective Disorders and Schizophrenia (SADS) includes people who think harm is about to occur, or has already occurred but won't again. Yet Freeman & Garety, (2004) state that the Present State Examination includes only those individuals who think harm is either occurring or just about to occur.

5) A discrepancy with the nature of the persecution. Most classification systems include some level of persecution; however there is no clear guideline as to where this level is. The nature of persecution could therefore range from extreme forms of harm (e.g. murder) to a mild level of harm (e.g. intent to annoy). Although all could feasibly be included as a persecution, it is left to the individual clinicians' discretion whether to include milder forms of suspicion of harm. This is particularly relevant when other psychotic symptoms such as hallucinations may eclipse persecutory beliefs of milder harm.

A further problem in the operational accounts of paranoia is the difficulty of reliably assessing the accuracy of paranoid thoughts (Freeman, 2008). This is complicated by the discovery that unfounded paranoia is more likely given a previous real victimisation experience (Johns et al., 2004; Fowler et al., 2006a). Delusional beliefs can range from the blatantly impossible (e.g. mind control conspiracies) to the more plausible (my boss has got it in for me). Therefore, the ability to reliably diagnose an unfounded persecutory belief is highly dependent on the content of that belief and as such is variable and at times unclear. However Spitzer (1992) states "A delusion is not a delusion because it is a false statement but because it is a statement made in an inappropriate context and, most importantly with inappropriate justification". Therefore, the extremeness and inappropriateness of the patients' behaviours, rather than the actual truth or falsity of the belief, are often used to assess its delusional nature (Manschreck, 1996; Fennig, 2005).

1.3 Freeman and Garety's Definition

In order to address some of the problems with operational accounts of persecutory delusions Freeman and Garety (2000) provide a more detailed definition of what constitutes a paranoid delusion. They argue that for a delusion to be considered persecutory an individual must both

believe that they are being harmed or that harm is imminent and that the persecutor actively intends to cause harm or distress. It is the second component that distinguishes paranoid thoughts from socially anxious ones (Freeman & Garety, 2000). Freeman and Garety's definition of persecutory delusions is reproduced in Table 1.

Table 1, Criteria for a delusion to be classified as persecutory (reproduced from Freeman & Garety, 2000)

<p>Criteria A and B must be met:</p> <ul style="list-style-type: none">A. The individual believes that harm is occurring, or is going to occur, to him or her.B. The individual believes that the persecutor has the intention to cause harm. <p>There are a number of points of clarification:</p> <ul style="list-style-type: none">1. Harm concerns any action that leads to the individual experiencing distress2. Harm only to friends or relatives does not count as a persecutory belief, unless the persecutor also intends this to have a negative effect upon the individual3. The individual must believe that the persecutor at present or in the future will attempt to harm him or her4. Delusions of reference do not count within the category of persecutory beliefs

This thesis uses Freeman and Garety's (2000) definition of paranoia. This definition is particularly useful for the purposes of the current thesis as it clearly and comprehensively states a set of criteria regarding which beliefs can be considered paranoid. Additionally, it not

only *normalises* paranoia but enables the current thesis to investigate a wide variety of situations and feelings that contain fear of intentional harm by others.

1.3.1 Current Usage of the Term

The term 'paranoia' has now passed into everyday language and is used to indicate some type of irrational fear of persons or objects in the external world. Terms such as paranoia, persecutory beliefs and persecutory delusions have been used both interchangeably and to refer to different concepts (Freeman, 2008). However in keeping with the widely accepted usage of the term 'persecutory delusions' will be used within the current thesis to refer to the clinical symptoms of paranoia whereas 'paranoid ideation' will refer to nonclinical paranoid thoughts or feelings (Ostling & Skoog, 2002; Freeman, 2007).

1.4 Current Models of Paranoia

Although a broad range of models for both clinical and nonclinical accounts of paranoia exist, the current thesis will briefly review three currently dominant theories of paranoia that seek to explain the production and maintenance of persecutory beliefs. Two contemporary explanatory models of paranoia address the relationship between self esteem, depression and paranoid ideation. One theory commonly referred to as the 'paranoia as defence' model, maintains that persecutory beliefs are developed from defensive mechanisms that protect against underlying negative emotions and threats to self esteem (Bentall, Kaney & Dewey, 1991; Bentall Kinderman & Kaney, 1994; Kinderman & Bentall, 1996). A further hypothesis is provided by Freeman and colleagues who suggest that paranoia is a direct reflection of self esteem, and that persecutory beliefs are a development of existing emotional concerns such as distress, worry or low self esteem (Freeman and Garety, 2004). A third model known as 'poor me versus bad me paranoia' (Trower & Chadwick, 1995), suggests that there are in fact

two fundamentally different types of paranoia. The following section will briefly discuss all three models and review the empirical evidence for each one.

1.4.1 **Paranoia as Defence, and Emotional Consistent Accounts.**

The notion that paranoia may develop from mechanisms designed to protect the self is a longstanding one (Cicero & Kerns, 2010). Freud (1911) observed that persecutory delusions serve a defensive function. People with persecutory delusions have been found to be highly sensitive to threats to self (Colby, Fought & Parkinson, 1979). Additionally, it has been suggested that paranoid schizophrenia is a form of camouflaged depression (Zigler & Glick, 1988). Bentall and colleagues developed these initial ideas into a comprehensive model of paranoia (Bentall, Kaney & Dewey, 1991; Bentall, Corcoran, Howard, Blackwood & Kinderman, 2001).

In Bentall's initial model, persecutory delusions were seen to develop from a tendency to avoid blaming the self for bad events (Bentall et al., 1991). By minimising any discrepancy between how a person may see themselves and images of their ideal self, a self serving attributional bias prevents implicit low self esteem from ever reaching consciousness. In maintaining that delusions are a defence against negative affective processes, Bentall's model implies that paranoia serves as a defence against both low self esteem and depression (Freeman & Garety, 2003). Although depression and low self esteem are distinct concepts they are typically found to correlate in studies of persecutory delusions (Chadwick, Trower, Jususti-Butler & Maguire, 2005; Drake et al., 2004; Freeman et al., 1998; 2001; Lyon, Kaney & Bentall, 1994). If correct, this model predicts three outcomes: firstly, that paranoid individuals will display low implicit self esteem; secondly, there will be a discrepancy between implicit and explicit self esteem and thirdly, this model predicts an exaggerated self serving attributional style among paranoid individuals. However, the evidence for these hypotheses have been described as 'mixed'

(Bentall, et al., 2001; Freeman, 2007) or 'inconsistent' (Thewissen, Bentall, Lecomte, van Os & Myin-Germeys, 2008). Freeman et al. (1998) found that low self esteem was a prominent feature of patients with persecutory delusions whilst other studies have reported relatively high or normal levels of self esteem in paranoid patients (Candido & Romney, 1990; Krstev, Jackson & Maude, 1999; Lyon, Kaney & Bentall, 1994). Many studies have found an exaggerated self serving bias within patients with persecutory delusions (Kaney & Bentall, 1989; Craig et al., 2004; Fear et al., 1996; Lyon, Kaney & Bentall, 1994; Sharp Fear & Healy, 1997; Bentall & Kane, 1992; Kinderman & Bentall, 1996a). However a notable amount of studies have found no such bias (Langdon et al., 2006; Martin & Penn, 2002; Kinderman & Bentall 1996b; Randall et al., 2003; Kinderman et al., 1992), with some evidence suggesting there is more of a personalising bias in this group (McKay, Langdon & Coltheart, 2005a). Such mixed findings show that paranoia is not consistently associated with low self esteem or an exaggerated externalising bias. It has therefore been argued that paranoia does not effectively serve to defend against threats to self esteem (Freeman, 2007). However, Bentall et al. (2001) have made some refinements or clarifications to the original model. Within this recent model, persecutory delusions are still seen to serve the defensive function of protecting the individual from negative thoughts about the self. However, these attempts at self protection are seen as dysfunctional (sometimes they work and sometimes they don't). Therefore, this recent model does not make any direct predictions about overall levels of either implicit or explicit self esteem. Rather, self esteem is predicted to be highly unstable within paranoid patients. This hypothesis is supported by evidence that shows levels of paranoia are positively associated with fluctuations in self esteem in individuals with both clinical and nonclinical levels of paranoia (Thewissen, et al., 2008). Further, declines in self esteem have been shown to predict the onset of a paranoid episode with depression being associated with a longer duration of such an episode (Thewissen, et al., 2010). The authors conclude that paranoid

delusions do not serve a direct defensive function against self esteem and negative emotions, but rather are determined by such emotions and reductions in self esteem.

1.4.2 **Freeman's Emotional Consistent Account**

In comparison, Freeman and colleagues view paranoia as the direct expression of a multitude of emotional concerns, low self esteem being just one of them (Freeman & Garety, 1999; 2004; Freeman et al., 2005a). This account asserts that negative emotions, anxiety, worry and low self esteem all play a direct role in the formation of delusional persecutory beliefs. If a person has negative views about the self and others, is anxious or depressed, then suspicious thoughts are simply more likely to occur (Freeman & Garety, 2004). This model therefore predicts high levels of anxiety, depression and low self esteem among paranoid individuals. These predictions are particularly well supported by evidence from nonclinical populations. Within this group paranoia is consistently found to be associated with lower self esteem and higher depression (Ellett et al., 2003; Freeman et al., 2005a; Fowler et al., 2006b; Johns et al., 2004; Martin & Penn, 2001; McKay, Langdon & Coltheart, 2005b). Additionally, studies into associations between affective problems and positive symptoms of psychosis support this view (Freeman, 2006; Guillem et al., 2005; Norman & Malla, 1994; Sax et al., 1996). Furthermore, low self esteem has been found to be moderately correlated with a decreased self serving attributional bias (Metalsky, Joiner, Hardin & Abramson, 1993; Tennen, Herzberger & Nelson, 1987). Taking this association into account, in predicting a correlation between low self esteem and paranoia the emotional consistent account would also consequently predict that paranoia would be negatively associated with a self serving attributional style, an association that was found in a recent study of nonclinical college students (Cicero & Kerns, 2010).

Freeman argues that although low self esteem and depression are associated with paranoia, not all individuals with paranoia have low self esteem; he pertains that no causal direction can

be established and notes it is perfectly plausible that paranoid thoughts themselves may lower self esteem. The focus of the majority of his work is not on demonstrating a simple association between low self esteem and paranoia. Rather, he states that negative beliefs about the self and others and negative emotional states are of crucial importance when attempting to understand the production of paranoid beliefs, with anxiety playing a particularly important role (Freeman et al., 2008b; Fowler et al., 2006a; Johns et al., 2004; Martin & Penn, 2001).

However, some of the evidence that supports Freeman's model has been criticised for not addressing methodological weaknesses in measurements of explicit self esteem and attributional style. For example a study by Freeman et al. (2000) that found low levels of self esteem among paranoid patients has been criticised by Bentall et al. (2001) for using Robson's (1989) questionnaire measure of self esteem. Bentall argues that Robson's (1989) self esteem measure includes a broad range of self esteem related constructs including items that reflect respondents' ideas about being disliked by others i.e. "most people would take advantage of me if they could". Bentall et al. (2001) argue that paranoid patients may be expected to endorse such items and that using this measure may account for the low levels of self esteem found within Freeman and colleagues' (2000) paranoid group (Bentall, et al., 2001).

1.4.3 **Poor Me and Bad Me Paranoia**

A third alternative model of clinical paranoia that may explain some of the mixed evidence on associations between a self serving attributional bias, self esteem, depression and paranoia has been proposed by Trower & Chadwick (1995). Trower & Chadwick (1995) drew on their clinical experience of patients with persecutory delusions and observed that some persecutory delusions appear to perform a defensive function whilst others do not. They attribute these differences to two basic types of paranoia: 'poor me' and 'bad me'. People experiencing 'poor me' paranoia tend to blame others for negative events and see their persecution as

undeserved. In contrast people experiencing 'bad me' paranoia tend to blame themselves for negative events, they see themselves as bad people and thus view persecution as a justifiable punishment. Trower and Chadwick argue that paranoia is driven by a cognitive tendency to misperceive negative evaluation from others. They propose that people react differently to these perceived threats to the self by either agreeing with them in the case of 'bad me' paranoia or disagreeing with them as with 'poor me' paranoia. These two types of paranoia are seen to develop from different experiences of care given within childhood. Those with 'bad me' paranoia experienced invasive, critical and punitive relationships with caregivers in their early years that led to the development of a self protective style in adult relationships. Those with 'bad me' paranoia expect interpersonal relationships to be unrewarding and develop an 'avoidant' attachment style. They expect others to view them as bad and display greater levels of depression, anxiety, and lower self-esteem. In contrast, 'poor me' paranoia is proposed to result from neglectful caregivers and instable representation of being cared for by others. Therefore, their adult attachment style is marked by a greater need for reassurance and approval from others. Their exaggerated need for approval often leads to seeing any negative evaluation from others as underserved. This type of paranoia is proposed to be accompanied by higher self-esteem and lower levels of depression and anxiety.

Empirical evidence supports this model by demonstrating some of the predicted differences between the two paranoia types (Chadwick, Trower, Juusti-Butler, & Maguire, 2005a).

Chadwick and colleagues confirmed that the patients with paranoia classified as 'bad me' had lower self-esteem, more negative self-evaluative thinking, lower negative evaluations about others, higher depression and anxiety when compared to a 'poor me' paranoia patient group. Freeman et al. (2001), also found greater depression and low self esteem to be associated with 'bad me' paranoia. However, recent evidence suggests that 'bad me' paranoia may be particularly uncommon (Fornells-Ambrojo and Garety, 2005). Additionally, Bentall et al. (2001)

argue that 'poor me' and 'bad me' paranoia are reflections of a dynamic attributional stance and are therefore liable to fluctuate according to the individuals' perception of deservedness and persecution at any given time. Indeed empirical evidence has shown that paranoia type is highly variable in clinically acute groups (Melo et al., 2006). However, Chadwick et al. (2005a) do caution that not all individuals with persecutory delusions will fit into one of these two types and that it is possible that individuals may change from one type of paranoia to the other.

In a recent study Morris, Millner, Trowers & Peters (2011), demonstrated that the two types of paranoia could be differentiated on measures of depression, shame and grandiose delusions and that 'bad me' patients did report higher levels of parental overprotection. However, they did not find that poor me patients reported higher levels of neglect and were unable to differentiate between the two groups on measures of alienation and insecurity threats to self construction. The authors conclude that 'poor me' and 'bad me' paranoia is a clinically useful distinction and that the theory may accurately predict symptomatic and emotional presentation rather than underlying differences in early relationships and self-construction.

1.5 Continuum views of Paranoia

In using findings from nonclinical participants to support the 'paranoia as expression' model, Freeman (2007), notes that data from nonclinical groups may provide clearer information on the relationship between paranoia, emotions and self esteem. By adopting a dimensional approach, such research is able to avoid the complications of investigations with clinical groups (e.g. medication, stigma, hospitalisation, unemployment and subsequent effects on depression and self esteem). The dimensional approach is central to the current thesis and it is to this area we now turn.

The present system for diagnosing psychosis (DSM –IV- TR) conceptualises psychosis as a set of discrete mental disorders and therefore still relies upon Kraepelinian dichotomous approach (Esterberg and Compton, 2009). This dichotomous or categorical approach was previously the dominant approach to delusions (Jones et al., 2003), and was supported by the work of Jaspers (1963). Within his influential textbook *General Psychopathology* (1963), Jaspers argued that delusions were distinct from normal beliefs. Jaspers took the rationalist view that delusions are formed and maintained by distinct mechanisms that qualitatively differ from those employed in the formation of *normal* beliefs. Such qualitative differences are seen to account for the observation that delusional beliefs are not formed on the basis of all relevant information, and are frequently impervious to counterargument (Jones et al., 2003).

However, an alternative approach is that delusions do not qualitatively differ from normal beliefs and that psychosis is best viewed as lying along a continuum, with mild occasional psychotic experiences at one end, and severe psychotic disorders at the other. Strauss (1969) observed that dichotomously diagnosed symptoms of psychosis (including persecutory delusions) are part of a continuum of experiences and as such apply to normal populations. Although the clear division between symptoms of clinical psychosis and their normal counterparts is necessary for clinical purposes, psychosis may in fact exist as a continuous phenotype in nature (van Os et al., 2000). While the medical approach assumes a categorical view which differentiates between symptoms of illness and everyday experiences found in the general population, it can be argued that all disease (both physical and mental) often exists as a continuum of severity rather than a binary phenomenon (Rose and Barker, 1978; Johns & van Os, 2001; van Os, 2003).

1.5.1 The Phenomenological and Vulnerability Distinction

Dimensional views of psychopathology are not uniform in their approach, although they share the notion of a continuum between clinical and nonclinical symptoms of psychosis; they crucially differ in their approaches to the notion of dimensionality (Costello, 1994). Firstly, the phenomenological view treats the psychotic characteristics found in normal populations as less intense or intrusive but not qualitatively different from those experienced by clinical populations. In comparison, the vulnerability view suggests that the amount and severity of 'psychosis like' symptoms can indicate vulnerability within that person to subsequent development of that disorder. This is often referred to as 'psychosis proneness' or 'schizotypy' (Claridge, 1994; Mason et al., 1997). Such work is supported by measures such as O-LIFE that have been shown to reliably assess psychotic characteristics in healthy individuals (Mason & Claridge, 2006).

1.5.2 The Continuous and Quasi-continuous Distinction

A further distinction within the dimensional view is between continuous and quasi-continuous relationships between nonclinical symptoms of paranoid ideation and the clinical disorder of persecutory delusions. A truly linear relationship between symptoms and disorder would create a smooth line of continuity, with severity and need for care increasing precisely in line with the level and frequency of symptoms (Johns & Van Os, 2001). However, the quasi continuous view holds that there is a normal distribution of psychotic symptoms but at a certain point they become critical and an abrupt nonlinear increase in severity and need for care emerges. Claridge (1994), describes this quasi dimensional view as the 'disease based' model and the fully dimensional view as 'personality based'. The quasi-dimensional view is generally favoured by psychiatrists due to its theoretical grounding in the medical model of disease (Claridge, 1994). Dimensionality is seen as degrees of expression of a disease process.

This model has a tendency to look at psychosis-like experiences and traits as 'formes frustes' of full-blown psychosis.

In comparison, the fully dimensional view looks at continuity at the level of personality traits. Although similar to the quasi-dimensional view (there is still a point where trait becomes disease/disorder), psychotic like traits are not simply lesser signs of disorder but exist within a 'healthy' personality. This is the approach favoured by most psychologists who accept the dimensional view of psychosis (Claridge & Beech, 1995; Claridge, 1994; 1997; Mason et al., 1995; 1997; Chapman et al., 1995; Claridge & Mason, 2006). As such the majority of work into paranoia within normal populations operates from within this theoretical framework. The underlying assumption being "that ordinary individuals, in their everyday behaviour, manifest characteristics- such as self-centred thought, suspiciousness, assumptions of ill will or hostility, and even notions of conspiratorial intent that are reminiscent of paranoia" (Fenigstein and Venable, 1992).

1.5.3 Support for the Continuum Approach

However, although investigators may differ in the particular approach they take to continuum views of psychosis, all present a challenge to some of the assumptions of the dichotomous or categorical approach to delusions (Lincoln, 2007). Firstly, it has been argued that delusions involve more aspects than the simple presence or absence of a bizarre belief (Chadwick & Birchwood, 1994; Spitzer, 1992). Such aspects include the distress, preoccupation or degree of conviction associated with the belief (Appelbaum et al., 1999; Peters et al., 1999; Haddock et al., 1999). Secondly, the observation that delusions are changeable and are not fixed entities challenges the notion that they are qualitatively different from normal beliefs, Appelbaum, 2004; Sharp et al., 1996; Kuipers et al., 1997, as cited in Lincoln, 2007). Additionally, Delespaul and Van Os (2003) note that empirical evidence supports both of these challenges and

demonstrates that delusions are both a multi dimensional characteristic that varies along dimensions and that dramatic changes can occur over time within the same person. Drawing on the work of Poulton et al. (2000), they note that in a large scale study of non-clinical children, a large proportion of 11 year olds who endorsed 'psychotic-like ideas', displayed clinically severe delusions aged 26. They conclude that it seems unlikely that the ideas endorsed by the children were the product of qualitatively different mechanisms than those observed within the same individuals aged 26, rather that such findings are more consistent with a shift along a continuum. Delespaul and Van Os suggest that the existence of changes within one or more dimensions such as conviction, distress and preoccupation within delusional individuals demonstrate that delusions are not distinct or irreducible, but are best viewed along a continuum with normal beliefs.

However, most notably the dichotomous approach has been challenged by the wealth of evidence from prevalence studies, showing that symptoms of psychosis such as delusions and hallucinations are commonly reported within the general population (Kendler et al; 1996; Johns et al., 2004; Peters, Joseph & Garety, 1999; Verdoux et al., 1998; Eaton et al., 1991; Freeman et al., 2005b).

1.6 Prevalence Studies of Psychosis in Nonclinical Populations

Several studies have investigated the prevalence of symptoms associated with psychosis within the general population. When investigating the prevalence of delusions Cox and Cowling (1989) surveyed 60'000 British adults and observed that 50% expressed a belief in thought transference, 25% believed in ghosts and 25% believed in reincarnation. Peters, Joseph and Garety (1999) reported a significant overlap in measures of delusional ideation between a normal population and psychotic inpatients with 10% of the normal group scoring higher on

the Peter's Delusion Inventory (PDI) than the deluded group. Co-occurrence of delusional beliefs and hallucinations have also been observed in a nonclinical population (Verdoux, et al., 1998; Johns, et al., 1998; 2004; Chan, 2008; van't Wout, 2004). This finding is highly significant in supporting the notion of a continuum in psychosis due to the established link between hallucinations and delusions within the clinical population (Bilder, et al., 1985; Liddle, 1987; Peralta, et al., 1992).

1.6.1 Paranoia in Nonclinical Populations

It has also been argued that specific symptoms of psychosis such as persecutory beliefs frequently occur in nonclinical populations (Freeman, 2007). In a large review of studies investigating persecutory beliefs Freeman (2007) concludes that there is strong support for the view that the rate of delusional beliefs among the general population is greater than that of psychotic disorders (Freeman, 2007, p.430), although he later qualifies this with the assertion that the exact frequencies reported vary according to the content of delusions included and the characteristics of the given sample population (Freeman, 2007).

1.6.1.1 The Prevalence of Paranoia in the General Population

One challenge faced when estimating the prevalence of psychosis in the general population is that many studies do not differentiate between the different delusional subtypes (Freeman, 2007). In order to highlight key findings in work examining specifically paranoia in the general population, a systematic review of literature was performed. The search strategy was to review all literature on the prevalence and measurement of paranoia in the general population. A systematic review of peer reviewed papers was performed using electronic databases PubMed, PsychINFO, PsychArticles and Science Direct, using the following search terms; paranoia, persecutory delusions, paranoid ideation AND general population, OR

nonclinical. The initial literature search yielded 104 papers that provided details on the occurrence of specifically persecutory thinking in the general population. Both titles and abstracts were read to establish articles relevant to the search strategy. Papers that focused on clinical groups, or who provided limited information on a nonclinical control group, or papers whose focus did not meet the search criteria were excluded from the search. This yielded a total of 35 papers. Nineteen of which were large scale epidemiological or selected population studies that provided prevalence rates and details of measurements used to assess paranoia in the general population. A further 12 papers used questionnaires to examine affective processes i.e. anxiety, self esteem, social phobia in relation to paranoia in nonclinical groups, and four studies experimentally investigated paranoia in non clinical groups. The following literature review is therefore structured to address these areas.

The results of the systematic review were tabulated and note; the author(s), year of publication, the population studied, sample size, assessment used, time period and prevalence findings. In addition a further table listing details of 12 recent questionnaire based studies of affective processes in nonclinical paranoia was produced (both tables can be found in Appendix K).

Freeman, (2007) notes that rates of reported symptom endorsement among nonclinical populations do differ depending on the classifications used and specific populations examined within each study. Within a large scale review of literature examining paranoia in nonclinical populations Freeman (2007) identifies three main categories of prevalence studies: Those that examine representative general populations studies (Eaton et al., 1991; Tien & Anthony, 1990; Johns et al., 2004), those that examine older adult general populations (Christenson & Blazer, 1994; Forsell & Henderson, 1998; Ostling & Skoog, 2002 and Cohen et al., 2004), and finally

those that use selected nonclinical samples (Olfson et al., 2002; Verdoux et al., 1998; Freeman et al., 2005b).

A wide range of different measures have been employed to assess paranoia in these nonclinical groups. The Diagnostic Interview Schedule, a standardised interview schedule that enables clinicians to make psychiatric diagnoses according to DSM-III criteria (Robins et al., 1981), was used to examine prevalence of paranoid beliefs in US populations by both Eaton et al. (1991) and Tien & Anthony (1990). These studies reported between 5% and 0.5 % of the US population tested endorsed the symptom that they believed someone was plotting against them or trying to hurt them. However, it must be noted that in neither study were these schedules administered by a mental health professional. In addition it may be argued that by using a diagnostic measurement in large scale studies of the general population a certain percentage of clinically relevant but undiagnosed cases will emerge.

However, Johns et al. (2004) conducted an interview survey using the Psychosis Screening Questionnaire (Bebbington & Nayani, 1995) to identify and subsequently exclude 60 individuals with 'probable psychosis' (i.e. those who reported either a diagnosis or symptoms suggestive of psychotic disorder; taking anti-psychotic medication; past admission to a psychiatric hospital or ward; or reported auditory hallucinations) from their sample of over 8,000 British citizens. Results showed that within the remaining sample, 20% had thought in the last year that people were against them, 10% felt that people had deliberately tried to harm them, and 1.5% upheld the more extreme paranoid belief that there was a plot against them. Although it is important to note that the paranoia measure used within this study was comparatively simple and consisted of one probe question "Over the past year have there been times when you felt people were against you?" followed by two further questions "have there been times when you felt people were deliberately trying to harm you or your

interests?” and “have there been times when you felt that a group of people were plotting to cause you serious harm or injury? Therefore, this study did not differentiate between real or imagined events, nor assess the conviction with which the belief was held. Nevertheless, despite these shortcomings, the findings of this study do indicate that persecutory thinking may exist in lesser forms within a nonclinical population.

In a study of 1005 adults attending a general medical practice in USA, Olfson et al. (2002) administered the Mini International Neuropsychiatric Interview, a structured diagnostic interview for DSM-IV and ICD-10 disorders (Sheehan et al., 1998) and reported that that up to 10.6% of the nonclinical sample believed that others were spying on them. A larger proportion of paranoid thought endorsement was reported by Verdoux et al. (1998) who administered the Peters et al. Delusions Inventory (Peters et al., 1999) to 462 adults without psychiatric disorder attending general medicine practices in South West France. They reported that 25.5% of respondents agreed that they have at some point in their lives felt as though they have been persecuted in some way, with 10.4% reporting that they have felt there was a conspiracy against them.

However, as Freeman (2007) notes, large scale studies that use diagnostic measures may underestimate the actual prevalence of paranoid thoughts, as they are not sensitive to the more transitory, everyday instances of paranoid thinking. Using the Paranoia Checklist Questionnaire, a measure devised for the purpose of measuring paranoia in nonclinical populations, Freeman et al. (2005) found that in a sample of 1202 university students in England, up to 42% reported feeling that negative comments were circulated about them at least on a weekly basis. Such a finding does suggest that more everyday paranoia is more common than previously thought.

Freeman (2007) concludes the large scale review by observing that a conservative estimate is 10 -15% of the normal population report regular delusional ideation, with 5-6% having moderately severe delusional beliefs and 1 to 3% reporting nonclinical delusions that are comparable in severity to clinical cases.

More recently, three studies (Freeman et al. 2010; 2011; Murphy et al. 2010) have employed self report questionnaires that used questions taken from the Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995). Freeman et al. (2010) assessed 8580 English private household residents (aged 16 +), who took part in the second Survey of Psychiatric Morbidity, and reported that 9% of respondents believed that people were deliberately acting to harm them, and 1.6% felt that there were potential plots to cause them serious harm. In a similar survey in 2011, Freeman assessed 7281 English private household residents who took part in the third Survey of Psychiatric Morbidity, conducted in 2007. Using the Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995), Freeman and colleagues identified three different levels of paranoia and reported that 18.6% reported the lower level of paranoia (that people were against them), 8.2% reported that people were deliberately acting to harm them, and 1.8% reported the more severely paranoid belief that there were potential plots against them. Freeman et al. (2011) found that across all levels, paranoia was associated with youth, lower intellectual functioning, poverty, poor physical health and social functioning, less perceived social support, stress at work, less social cohesion, and suicidal ideation, and thus concluded that even at nonclinical levels, paranoia has sizable impacts for individual health, emotional well being, and social functioning (Freeman et al., 2011).

Similar rates of prevalence for more severe paranoid beliefs were found by Murphy et al. (2010a). Murphy and colleagues sampled the same population as Freeman et al. 2011 (3rd Survey of Psychiatric Morbidity) using the Psychosis Screening Questionnaire (PSQ) and

reported that 1.5% of their sample of 7266 respondents without clinically defined psychosis reported a belief in potential plots to cause them serious harm.

However, there are some notable methodological limitations associated with the use of the PSQ within the general population. Firstly, as a self report questionnaire it cannot control for the inclusion of real or actual events relating to harm. Without the clarification and cross questioning of a clinical interview, it is possible that respondents may misunderstand the nature of the questions. Secondly, the questionnaire contains only three items that capture paranoid ideation, and the second and third questions are dependent on a positive response to the first. Therefore there is little measurement of severity, and the measure is not sensitive to subtle differences and variety in paranoid thought. This approach may therefore result in an underreporting of paranoid thought. Conversely, it may be argued that due to concerns of perceived stigma, self reported endorsement of items assessing psychotic experiences may be denied in the general population (Hanssen et al. 2003). Nonetheless, taken together these results do suggest that the rate of endorsement on these particular items appear relatively stable within the general population of England.

When looking at populations outside the UK, similar patterns of prevalence emerge. In a study of 5893 non-institutionalised persons (aged 15 -54) in USA, Murphy et al. (2010b) reported a slightly higher endorsement at the more severe end of the paranoid spectrum with 3.61% reporting that at they had believed in others plotting, poisoning or aiming to hurt them. However, before concluding that this may reflect an international difference in paranoid ideation, it is important to note that Murphy and colleagues used the Composite International Diagnostic Interview (CIDI), this may have produced slightly higher endorsement rates for two reasons. Firstly, the more extreme item of a belief in a plot to cause harm also contains the terms 'aiming to hurt'. This may arguably reflect a less severe and everyday paranoid concern,

and would therefore be more widely endorsed. Secondly, the CIDI assesses whether respondents have ever felt this in their lifetime. In comparison, the PSQ limits respondents to reporting on thoughts that have occurred in the last year.

A different assessment of paranoid ideation was employed by Cella et al. (2011), who reported prevalence rates from two different populations; students who attended either Swansea University in the, UK or those who attended a university in Italy. Cella et al. 2011, like Verdoux (1998) administered the Peters et al. Delusions Inventory (PDI; Peters et al. 1999, 2004), a general population measure of delusional proneness. Cella et al. (2011) reported that up to 41% of the sample reported some paranoid thinking, and that overall PDI scores did not differ between the two sample locations.

In a study of 4951 Chinese undergraduates, Chan et al. (2011) used the Paranoid Ideation Checklist, a self report questionnaire adapted for Chinese respondents from items on the Paranoia Checklist (Freeman et al. 2005). In using this particular measure Chan et al. (2010) were able to report that up to 71.5% of a Chinese student population reported having one or more paranoid symptoms at least once in their lifetime, with up to 18.2% reporting that these symptoms occurred at least once a week. An advantage of using the Paranoid Ideation Checklist is that it can provide a dimensional view of paranoia, and thus goes beyond simply noting the presence or absence of a symptom. Therefore, Chan et al. (2011) were able to report that between 9.3% and 53.5% 'somewhat believed' the paranoid thought (conviction) and that between 14.7 to 31.3% reported that they found this belief 'somewhat distressing'.

These data are comparable to nationwide surveys (Freeman 2005; Johns et al. 2004; Kendler et al, 1996; Van Os et al. 2000) who examined Western samples.

However, as with other studies within this review, Chan et al. (2011) relied on self-reported questionnaire data and did not include any form of clinical interview. Further, the sample was

limited to undergraduate students, and thus the prevalence rate may not be representative of the general population of China. Nevertheless, any finding that suggests there are similar prevalence rates of paranoid ideation within international non-clinical samples, may lend further weight to the notion of a continuity of paranoia in the general population.

The majority of studies investigating paranoid thoughts in the general population focus on adult groups, however, Wigman et al. (2011) note that expression of both clinical and nonclinical symptoms of psychosis typically appear in adolescence (Verdoux et al. 1998). Therefore Wigman et al. (2011) report data from two studies looking at positive psychotic experiences, including paranoia in large samples of Dutch children aged between 12 and 16. Wigman and colleagues employed the Community Assessment of Psychic Experiences Positive Experiences Scale (CAPE), a self report questionnaire used to assess five different dimensions of psychotic experiences. They note that in both studies, over 89% of children reported ever having paranoid thoughts (i.e. feeling persecuted, looked at oddly, or conspired against), with between 29.4 and 25.5 % reporting paranoid ideation occurring 'often' or 'almost always'. Wigman et al. (2011) conclude that the prevalence of psychotic symptoms, including paranoia is higher amongst adolescents than in the general adult population. Thus, the exclusion of these groups in previous work may have resulted in an underestimation of the true prevalence of paranoid ideation in the general population. One potential explanation put forth for the higher rate of paranoid thoughts in adolescent populations is that this group may be more self-conscious than adults, and this may result in them being more susceptible to paranoid thoughts. Indeed Ellett et al. (2007) have shown that high levels of self awareness are associated with higher instances of paranoia in student groups.

Yet, there are several methodological limitations of this study that need to be considered. Firstly, as with all other prevalence studies reviewed it did not include a clinical interview for

assessment. As this self report measure was given to adolescents it is also possible that a greater level of misinterpretation of questions may have occurred. Further, the conclusion that adolescents have greater levels of paranoia is made by simply comparing the results of one fixed point measurement of paranoia to rates found in adult populations. In order to accurately assess this hypothesis it would be necessary to track individuals over time to investigate whether their levels of paranoia reduce with age.

This approach was taken by Rössler et al. (2007) who conducted a longitudinal study with 372 adults born in Zurich Switzerland between 1958 and 1959. Participants were asked to take part in both a structured interview (Structured Psychopathological Interview and Rating of the Social Consequences of Psychological Disturbances for Epidemiology - SPIKE) and self report questionnaire (Paranoid Ideation Subscale of the SCL90-R, Derogatis, 1977) at ages 21, 23, 28, 30, 35 and 41 years. The main findings of this study show that a proportion of the sample reported some (at least 'a little bit') paranoid ideation within the last four weeks of each interview. However, most (but not all) symptoms showed a decline over 20 years. For example at age 20 to 21, 27% felt that others were to blame for their troubles, whereas by age 40 to 41 this had reduced to 20.6%. Additionally, at age 20 to 21, 42.8% reported feeling that they were watched by others, by age 40 to 41 this had reduced to 33.3%. However, when looking at the items used within this study, it is apparent that they include ideas of reference and social anxiety (i.e. others not sharing your ideas or taking advantage of you) that according to the definitional criteria of Freeman & Garety (2000) may not be considered clearly or exclusively paranoid.

Taken together, the large body of work that measures and reports the prevalence of paranoia in the general population is often used to support the idea that psychosis represents a quantitative rather than qualitative departure from normal behaviour. There are however

several methodological limitations within each individual approach to establishing prevalence in this group, where relevant these have been discussed within the current review. However, in addition to the methodological disadvantages of each individual approach, broader and more epistemological criticisms of prevalence research and the conclusions drawn from this type of study have been made and will now be discussed.

1.6.2 Criticisms of Prevalence Research

Costello (1994) asserts that although prevalence studies can show the existence of 'symptom like' behaviours; they do not provide any test of whether these nonclinical behaviours are quantitatively or qualitatively different from clinical symptoms. When comparing behaviours between clinical and nonclinical samples one problem emerges: if identical patterns of variance were found for any given factor between a nonclinical and a clinical population, the clinical and normal groups could still be qualitatively different from one another. Therefore, the possibility still remains that although clinical and nonclinical groups may both show psychotic symptoms, and other factors may co-exist with these symptoms, the cause of both factors may be very different. A very similar argument is made by Mullen (2003) in his critique of the dimensional view of psychosis. Mullen (2003) questions several methodological issues and theoretical assumptions within prevalence studies. He notes that Peters et al. (1999) who developed the Peters Delusional Inventory from the Present State Examination and administered it to a large nonclinical sample, 'toned down' items and noted that many of the questions began with the prefix 'do you ever feel as if'. Mullen suggests that noting endorsement of such items is "a long way from indicating that delusions are on a continuum with such normal beliefs" (Mullen, 2003 p.507). Perhaps more importantly, Mullen notes that other interpretations of prevalence study findings are not 'fully considered', namely that such studies may include examples of misunderstandings, culturally sanctioned beliefs and

idiosyncratic but individually understandable beliefs. Such beliefs may be illogical but cannot be considered on a continuum with delusional beliefs.

A similar point is also raised by Jones (2003). In a published debate with Delespaul and Van Os about the dimensional view, Jones (2003) argues that simply observing 'psychosis like' symptoms in nonclinical groups cannot infer dimensionality. Drawing on the work of Jaspers (1963), Jones argues that such beliefs may appear continuous, but delusions and normal beliefs are products of very different cognitive mechanisms.

However, Mullen (2003) asserts that perhaps not all delusions are the same. He argues that some types of delusions may be better explained by the notion of a continuum than others. Crucially, he names persecutory delusions as among those beliefs that may feasibly have a clear equivalent non-delusional belief within the general population. It may therefore be suggested that criticisms of the continuum view are strongest when considering the dimensionality of the extraordinarily bizarre and manifestly false beliefs of patients with schizophrenia. It may be argued that the issues raised by Mullen (2003) and Jones (2003) when discussing the dimensional view, such as the possibility of undetected qualitative differences in the formation and maintenance of delusions vs. normal beliefs, and the endurance of delusions compared with other beliefs, are harder to reconcile with the empirical evidence provided by research into nonclinical paranoia. In short, persecutory beliefs, perhaps more than other delusion beliefs, lend themselves particularly well to the dimensional view.

1.7 Questionnaire based Research

Further support for the continuum view of paranoia has been provided by a number of cross sectional questionnaire based studies using both the general population (Freeman et al., 2005b; 2009; 2011; Van Dongen et al., 2011;) and samples of students (Combs and Penn, 2003;

Ellett Lopes & Chadwick, 2003; Martin & Penn, 2001; Lincoln & Keller, 2008; Yamauchi, Sudo & Tanno, 2009; Fowler et al. 2006; Gracie et al. 2007; Pickering, Simpson & Bentall, 2008; Tone, Goulding & Compton, 2011; Melo & Bentall, 2010; Jones & Fernyhough, 2008). These studies support the dimensional view by demonstrating that factors associated with persecutory delusions are also found to be associated with high levels of nonclinical paranoia in non-patient groups. Within the last 10 years the prominence of the dimensional view of paranoia has led to a growth in questionnaire based research investigating the relationships between nonclinical paranoia and other affective symptoms. For example paranoid thoughts have been found to be associated with anxiety, (Freeman et al., 2005b; 2009; 2011; Combs & Penn; 2004; Fowler et al., 2006; Martin & Penn, 2001; Jones & Fernyhough, 2008; Tone, Goulding & Compton, 2011; Thewissen et al. 2011), as well as depression and low self esteem (Martin and Penn, 2001; Freeman et al, 2005b; 2011; Combs and Penn, 2004; Ellett, Lopes & Chadwick, 2003; McKay, Langdon & Coltheart, 2005; Melo & Bentall 2010; Pickering, Simpson & Bentall, 2008; Raes & Van Gucht, 2009), each of which are found in clinically paranoid groups. Additionally, social psychological research has provided evidence to suggest that a range of cognitive biases known to exist among clinically deluded groups can be found at the lower end of the paranoid continuum (Combs & Penn, 2008). Reliable questionnaire measures, such as the Paranoia Scale (PS; Fenigstein & Venable, 1992); The Paranoid Thoughts Scale (G-PTS; Green et al., 2008); Persecutory Ideation Questionnaire (PIQ; McKay, Langdon, & Coltheart, 2006); Persecution and Deservedness Scale (PaDs, Melo et al. 2009); Paranoia Checklist (PC; Freeman et al 2005b); Paranoia/Suspiciousness Questionnaire (PSQ; Rawlings et al., 1996), are commonly used in these studies to assess nonclinical paranoia. These questionnaire studies have gone beyond simply noting the presence of paranoia in nonclinical populations and have begun to investigate both the content and concomitants of paranoia within this group. This

section initially considers questionnaire based measures of nonclinical paranoia and some the key findings from this research.

1.7.1 Questionnaire Measures of Paranoia in Nonclinical Groups

As with prevalence research, the different findings of individual questionnaire based studies often reflect the particular measure used to assess paranoid ideation in a nonclinical group, as well as the particulars of the sample used. The following section will therefore consider a range of measures currently used to assess paranoia in nonclinical groups.

The Paranoia Scale (Fenigstein & Venable, 1992) is perhaps the most widely used questionnaire measure in nonclinical groups, (Green et al, 2008; McKay, Langdon & Coltheart, 2006). The Paranoia Scale employs a rather broad definition of paranoia and therefore assesses thoughts that may be considered 'reminiscent' of paranoia (Fenigstein & Venable, 1992). This approach provides the advantage of assessing paranoid cognitions that may be present in everyday thoughts, and is therefore suitable for use with nonclinical groups. However, this measure has certain limitations that need to be considered. Firstly, it has been suggested that some of the items within the scale assess concepts such as ideas of reference (Freeman & Garety, 2000; Martin & Penn, 2001) and depressive thoughts (Green et al. 2008). Although ideas of reference and depression may be closely linked with persecutory ideation, it has been argued that they are distinct concepts (Freeman & Garety, 2000).

In order to assess specifically persecutory ideation and not related factors such as ideas of reference and depressive thoughts, the Persecutory Ideation Questionnaire (PIQ; McKay, Langdon, & Coltheart, 2006) was developed. The items on this self report were in accordance with the definitional criteria set out by Freeman and Garety (2000), namely that harm is occurring or is about to occur and that harm is intentional. The PIQ therefore assesses

specifically paranoid ideation rather than more general paranoia and has been validated for use in both clinical and non clinical groups (McKay, Langdon & Coltheart, 2006).

Both the PS and the PIQ can be described as uni-dimensional measures that assess the presence or absence of particular persecutory thoughts. However, it has been argued that paranoia is not a phenomena that simply exists or not, but is one that varies along a number of dimensions (Garety & Hemsley, 1987; Peters et al. 1999; Green et al. 2008; Haddock et al. 1999). Two measures that address this issue by assessing the dimensional content of paranoid thoughts are the Paranoia Checklist (PC; Freeman et al. 2005b) and the Paranoid Thoughts Scale (GPTS; Green et al. 2008). The Paranoia Checklist assesses the frequency, degree of conviction and level of distress within paranoid ideation. This measure was used within Freeman et al's. (2005b) large cross sectional internet survey (N=1202) with a sample of participants drawn from the general population. Using this measure Freeman and colleagues were able to report that over half (52%) reported experiences of 'needing to be on guard against others' during a one week period. With up to 7% of participants reporting that they found these thoughts distressing.

The Paranoia Checklist has also been adapted for a Japanese population. Yamauchi, Sudo & Tanno (2009) investigated the characteristics of paranoid thoughts in a sample of 128 college students using a Japanese version of the PC. By using a measure of paranoia that assessed distress and conviction, the authors found that paranoid thoughts were characterised by higher levels of distress, absurdity, anger, corrigibility, perception of intended harm and lower conviction than socially anxious thoughts.

In comparison to the PC, the Paranoid Thoughts Scale (GPTS; Green et al. (2008) assesses the dimensions of preoccupation, conviction and distress. It has been used as a measure of trait paranoia by Freeman & Fowler (2009), who reported that persecutory ideation was

significantly associated with a history of trauma, and this association was explained by levels of anxiety within a sample of the UK general population (Freeman & Fowler, 2009). One advantage that the Paranoid Thoughts Scale claims to have over previous questionnaire measures is that it is sensitive to changes in paranoia, and is devised for use with both clinical and nonclinical groups. The authors claim that it is therefore uniquely able to assess multidimensional change across the continuum (Green et al. 2008). Due to this sensitivity to change, this measure has been used in studies that assess paranoid ideation following experimental manipulations (Freeman et al. 2008; Valmaggia et al. 2007; Green et al, 2011).

However, as with all self report questionnaire measures, the GPTS is an overall trait measure of paranoia. It provides a multi-dimensional assessment of paranoid ideation occurring within the last month. However the GPTS is not devised to assess the content of individual or specific past paranoid experiences. In order to investigate accounts of individual past experiences of paranoia in nonclinical groups a novel questionnaire based methodology was employed by Ellett, Lopes & Chadwick (2003). In order to assess the phenomenology of paranoid experiences within a sample of students at a British university (N=324), Ellett and colleagues developed The Personal Experience of Paranoia Scale (PEPS; Ellett et al., 2003). By examining specific personal experiences of paranoia along key dimensions, Ellett et al. (2003), were able to ascertain both the content of beliefs and whether these beliefs contained “a clear perception of intended harm” (Ellett et al., 2003, p.427). By assessing whether experiences were concurrent with Freeman and Garety’s (2002) definition, Ellett and colleagues demonstrated that 47% of the student sample reported an experience of paranoia, and that this percentage did not include examples of socially anxious experiences. Of note is that the student sample was found to be substantially preoccupied by their experiences, and believed the event significantly impacted on their well being at the time of its occurrence, with 63% reporting no change in their beliefs about the event between the time of its occurrence and

the time of completing the questionnaire. Additionally, greater levels of nonclinical paranoia were shown to be associated with low levels of self esteem. The authors conclude that paranoid beliefs are not confined to clinical populations and that “the belief component of paranoia, even as a normal cognitive process, tends to be constant” (Ellett et al., 2003, p.428).

Taken together such questionnaire based research demonstrates that beyond providing evidence for the dimensional view of paranoia, investigations into nonclinical paranoia are important phenomena of interest in their own right (Freeman et al., 2005b).

1.7.2 Social Cognitive Biases and Nonclinical Paranoia

Further support for the dimensional view is offered by social cognition research that has shown cognitive biases known to exist in clinically deluded groups, may also exist to a lesser extent in individuals with high levels of nonclinical paranoia (Combs & Penn, 2008). One of the central cognitive biases within paranoid individuals is the perceived hostility of others in ambiguous situations. Theoretical accounts of persecutory delusions assert that ambiguous situations, where situational cues are absent, facilitate social cognitive biases as difficulties in interpretation lead them to be misjudged as hostile or threatening (Freeman, et al., 2005a; Freeman & Garety, 2003; Freeman, Garety, Kuipers, Fowler & Bebbington, 2002; Green & Phillips, 2004; Turkat, Keane & Thompson-Pope, 1995). Within a nonclinical sample of college students, Combs & Penn (2007) have demonstrated that a greater hostility bias in ambiguous situations is significantly associated with higher trait paranoia. The authors conclude that a lack of contextual clues can lead to perceived hostility among nonclinical paranoid groups. Additionally, nonclinical paranoia has been found to be associated with greater levels of self-focused attention (Von Gemmingen, Sullivan and Pomerantz, 2003; Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007; Fenigstein & Venable, 1992), deficits in social perception and information processing (Miller & Karoni, 1996; Freeman et al., 2002; Green et al., 2003; Phillips

et al., 2000; Green & Philips, 2004; Bentall & Kaney, 1989; Kinderman, 1994; Fear et al., 1996; Combs et al., 2003; Combs et al., 2006; Combs & Penn, 2004). Further, an exaggerated self-serving external attributional bias for negative events known to be present in clinically paranoid groups (Garety and Freeman, 1999; Freeman, 2007; Bentall et al.2001), has been demonstrated in nonclinical individuals with high levels of trait paranoia (Kinderman and Bentall, 1996).

However, evidence that social cognitive biases known to exist in clinical groups also exist in nonclinical groups is mixed, with some studies finding no comparable bias in the tendency to jump to conclusions, Van Dael et al., 2006; Freeman et al., 2008d), or self -serving external attributional bias (Martin and Penn, 2002; McKay, Langdon and Coltheart, 2005a; Randall et al., 2003; Combs and Penn, 2004), leading to the suggestion that certain biases may only be manifest when paranoia reaches delusional intensity (Combs & Penn, 2004).

1.7.3 Criticisms of Self Report Data

One methodological drawback of the prevalence and questionnaire studies discussed above is that they rely on self report measures which have been accused of overestimating the presence of unfounded paranoid thinking (Freeman, 2008c). Although findings using self report measures have been shown to correlate with interviewer assessments (Preston and Harrison, 2003; Liraud et al., 2004; Watson et al., 2006) and experimental conditions (Valmaggia et al., 2007; Freeman 2005c), both survey and questionnaire studies have a number of methodological limitations that need to be considered. Firstly, large scale survey studies used in prevalence research do not have 100% response rates. For example, Johns et al. (2004) conducted interviews with only 67% of individuals who were identified for inclusion into the study. It has been suggested that those who are currently experiencing psychiatric difficulties are more likely to not respond or drop out of such studies (van Os, et al., 1999).

Alternatively, it has been suggested that studies relying solely on self selection may be more likely to include individuals who are experiencing psychological difficulties (Freeman et al., 2005b). The representativeness of the samples included in such large scale studies therefore need to be taken into account when generalising the findings. A further methodological constraint of large scale prevalence studies is that they frequently rely on a naturalistic design – that is they simply note if a thought or feeling has or has not been experienced by respondents. Without the rigour of any experimental control no causal inferences can be made.

Questionnaire based studies of nonclinical paranoia share many of these draw backs and also have limitations particular to their design. Such studies frequently rely on student samples, which may overestimate levels of delusional beliefs compared to samples drawn from the general population (Lincoln, 2008). Additionally both questionnaire based studies and large scale prevalence studies share many of the limitations common to all self report measures; such as, social desirability,(Paulhus & Reid, 1991), acquiescent or extreme responding (Paulhus & Vazire, 2007) and distorted self perceptions (John & Robins, 1994; Fiske & Taylor, 1991).

However, one of the main concerns with questionnaire based research is its inability to capture the interpersonal nature of paranoia (Freeman & Garety, 2000). Some of these limitations of questionnaire based research into nonclinical paranoia have led a recent shift of focus away from this type of design towards experimental manipulations (Bodner & Mikulincer, 1998; Freeman et al., 2003; 2005c; Ellett & Chadwick, 2007; Green, Freeman & Kuipers, 2011). A review of this of body of work will now be considered before addressing the focus of the current thesis.

1.8 Experimental Approaches to Paranoia

Studies that have experimentally induced paranoia in college students have not only provided further evidence that paranoia is common within nonclinical populations, but have also been able to determine factors that can elicit and maintain paranoia in nonclinical groups. To date, two experimental paradigms have been established to study nonclinical paranoia; the camera paradigm (Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007), and virtual reality paradigm (Freeman, et al., 2003; 2005c; 2008c; 2010). In addition a novel experimental approach to the study of nonclinical paranoia has recently been investigated by Green, et al. (2011). In order to discuss the advances made by the experimental approach to nonclinical paranoia these two established experimental paradigms and the more recent novel experimental approach will be reviewed.

1.8.1 The Camera Paradigm

The camera paradigm was initially developed by Bodner and Mikulincer (1998), who conducted a series of five experiments in order to assess if learned helplessness could lead to paranoid-like responses. In order to elicit learned helplessness they exposed participants to a computerised learning task that was unsolvable. After failing the task, participants were given either no feedback, universal failure feedback, or personal failure feedback. Participants' attention was manipulated by a camera that was either focused on themselves or the experimenter who was present. Depressive and paranoid thoughts were measured using a 17-item self report scale taken from existing measures of depressive and paranoid psychopathology. Results showed that when attention was focused on the self, personal failure produced depressive like reactions. Yet when attention was focused on the experimenter, participants showed a paranoid like response. The authors concluded that the

combination of personal failure and attentional focus on external/threatening agents may increase the likelihood of adopting a personalistic attitude, which in turn leads to the perception of events as intentionally directed towards the self. If however personal failure was accompanied by an internal attentional focus, then an increase in the sense of responsibility and concern about self esteem would result in a depressive response.

However, Bodner and Mikulincer (1998), reported certain limitations with this study, such as only including a failure condition and not exploring other adverse effects that may lead to paranoid cognitions. Also a lack of a behavioural examination of attentional focus and paranoid like reactions was reported. However, one of the main limitations of this study is that by including the constant presence of an experimenter in all experimental conditions Bodner and Mikulincer (1998) were unable to separate out the effects of having an experimenter present, high self awareness and task feedback (failure vs. neutral) on paranoid responses.

Ellett & Chadwick (2007) adapted the experimental methods used by Bodner & Mikulincer (1998) to investigate the link between focus of attention, task feedback and the presence of the experimenter. They extended the use of the camera paradigm to investigate dynamic aspects of how self awareness may trigger paranoia and how the presence of certain psychological resources such as positive self cognitions, self esteem and positive mood may act as a buffer against paranoid cognitions.

Ellett and Chadwick (2007) provided experimental evidence for the idea that heightened sense of self awareness can result in transient increases in paranoid thoughts within a nonclinical population. Furthermore, they demonstrated that this high self awareness was sufficient to trigger paranoid cognitions within ambiguous feedback conditions (i.e. not only failure under failure feedback), thus successfully demonstrating that high self awareness alone may act as a

trigger for nonclinical paranoia. Using the camera paradigm first developed by Bodner and Mikulincer (1998), Ellett and Chadwick (2007) conducted a series of three experiments where participants were exposed to a computer task that they could either fail or not. These tasks were performed under high or low self awareness conditions, again manipulated by a camera. Within the first of the three studies the presence of an experimenter was also manipulated by having three experimental conditions: a control condition where neither the experimenter or the camera was present; an experimenter condition where the experimenter was present but the camera was absent; and finally a camera condition, where the camera was focused on the participant but the experimenter was absent. By separating out effects of task failure and presence of experimenter they discovered that task failure alone would trigger paranoia only when self awareness was high, failure alone without high self awareness would trigger depressive cognitions. Interestingly, high levels of paranoia also occurred under high self awareness conditions in the absence of any task feedback, therefore suggesting that ambiguity and high self awareness were enough to produce a paranoid response. The authors concluded that their findings were consistent with the idea of a self-serving cognition within paranoid ideation and a link between self focus and paranoia.

These results are therefore very different from those produced by Bodner and Mikulincer's (1998) study. Where Bodner and Mikulincer found self-focus to produce depressive rather than paranoid cognitions, Ellett and Chadwick (2007) discovered that heightened self focus produced paranoid cognitions when accompanied by failure. However, direct comparison between the two studies is not possible due to the use of different types of failure feedback and experimental conditions within the studies and because of the essentially different foci of interest.

In the second experiment Ellett & Chadwick (2007) manipulated the order of the self awareness conditions by switching the focus of the camera thrice between experimenter and participant. Findings showed that paranoia levels once increased by the high self awareness condition showed no reduction when switched to the low self awareness condition, thus demonstrating that paranoia is sensitive to change in situations when it is activated, but once triggered it becomes less sensitive to situational changes. Such findings are consistent with the notion that paranoia has an adaptive value and that once paranoid thoughts are activated vigilance is maintained even when situational factors change.

Within the third experiment the impact of possible 'buffers' against paranoid cognitions was explored. Positive self cognition priming tasks were shown to reduce both paranoid and depressive cognitions. It appears from these findings that nonclinical paranoia can be a response to ambiguity or failure under conditions of high self awareness and that this response can be moderated by self-serving positive cognitions.

By bringing aspects of nonclinical paranoia under experimental control both studies provided an insight into the mechanisms of paranoid thought. In particular Ellett & Chadwick (2007) have established that levels of self consciousness, a sense of failure or ambiguity, and the existence or absence of self serving positive cognitions all play a central role in the emergence of paranoid thought within nonclinical populations.

1.8.2 **Virtual Reality Studies**

One of the challenges facing experimental studies of paranoid thinking in both clinical and nonclinical groups is assessing whether the persecutory belief is unfounded. Experimental studies using the camera paradigm are able to control certain situational factors to assess if they can increase or maintain self reported levels of paranoia, but have thus far been unable

to capture the interpersonal nature or unfounded aspect of nonclinical paranoia. In a series of virtual reality experiments investigating paranoid thinking in a student population (Freeman, et al., 2003), a general population (Freeman, et al, 2005c; 2008c), and across both nonclinical and clinical groups (Freeman et al., 2010) were able to assess inter personal paranoid responses that they knew to be unfounded by placing participants in a controlled virtual reality environment. Within the virtual reality environment participants witnessed everyday scenes such as sitting in a library (Freeman et al., 2003; 2005c), or travelling on a tube (Freeman, et al., 2008c; 2010), but the valuable novel aspect of this research was that all the computer characters (avatars) were controlled to behave in a neutral manner, thus ensuring that any paranoid thoughts expressed were unfounded. In all studies Freeman and colleagues found that a number of nonclinical participants reported paranoid thoughts about the avatars following the virtual reality experience (Freeman, et al., 2003; 2005c; 2008c; 2010). Freeman and colleagues used self report questionnaires to assess a range of cognitive and social factors thought to be relevant to the development and maintenance of paranoid thinking in both clinical and nonclinical groups and compared these to levels of state paranoia following the virtual reality environment. Participants were asked to respond to items such as 'someone was trying to isolate me, or 'was staring at me in order to upset me' following the virtual reality task. They found that paranoid responses in a nonclinical population were strongly predicted by anxiety, worry, perceptual anomalies and cognitive flexibility (Freeman et al., 2008c). In a further virtual reality study in 2010, they demonstrated that interpersonal sensitivity, depression and number of traumatic events could also predict levels of paranoid thought in both clinical and nonclinical groups. By comparing three groups of participants (low paranoia, high paranoia, and persecutory delusions) Freeman et al. (2010) found a clear dose response relationship for the majority of these factors. Freeman and colleagues conclude that they are able to clearly demonstrate that unfounded paranoid thoughts exist within nonclinical

groups and that the factors that are implicated with the development of clinical paranoia are also found at lower levels to be associated with nonclinical paranoid ideation, thus suggesting that persecutory delusions and nonclinical paranoia are related experiences.

Freeman's study has advanced experimental research in nonclinical populations in two ways; firstly it is able to demonstrate unfounded paranoid thoughts, and secondly it captures elements of the interpersonal nature of paranoia. By administering a state paranoia measure that assesses how the participants felt about the avatars within the VR environment, it is able to move beyond a general measure of paranoid state and explicitly assess individuals' thoughts and feelings regarding the intention of others. However, as with all published experimental research in this area to date, it relies on a self report measure. As the authors note "no other markers of this experience are available" Freeman et al. (2008c, p.263). Therefore, a challenge to current research within this area is to investigate alternative indicators or "markers" of paranoia within an experimental setting. This is a challenge that will be directly addressed within the first empirical chapter of the current thesis.

1.8.3 **Green, Freeman & Kuipers, 2011**

In addition, a novel experimental approach involving two experimental events designed to illicit paranoid thoughts in a nonclinical group, has recently been examined by Green et al. (2011). Within the experiment participants drawn from both a student and general population were asked to complete a 'filler' task whilst the two experimental events took place. Firstly, a stooge entered the room and called the experimenter away. Following this incident a 35 second tape recording of laughter was played within earshot outside the room. At the end of the task participants' explanations for the event were rated for the presence of a paranoid explanation. Results showed that 15.5% (n=9) of the sample gave a response which included an idea of reference i.e. "They were laughing at something they had read in my

questionnaires". The authors conclude that these findings demonstrate that spontaneous paranoid explanations can be elicited in nonclinical individuals for neutral events. Further, Green et al. (2011) reported that those who reported a paranoid explanation reported significantly higher levels of trait paranoia, and that interpersonal sensitivity and a personalising attributional style were predictive of a paranoid explanation.

However, it is worthy of note that none of the participants gave an explanation which included any notion of persecution or intent to harm. It has been argued that ideas of reference, although linked to persecutory beliefs, are distinct concepts (Freeman & Garety, 2004). Although Green et al. (2011) cite ideas of reference as in accordance with PSE-10, WHO, 1992 criteria, other clinical classifications such as DSM IV-TR exclude ideas of reference from persecutory delusion criteria. Furthermore, Freeman and Garety's (2000) definition, which is well established in the study of nonclinical paranoia, state that for a belief to be paranoid it must contain the belief that "harm is occurring, or is going to occur, and that the persecutor has the intention to cause harm" (Freeman & Garety, 2000).

Thus it may be argued that Green et al. (2011) have demonstrated thoughts of self reference in response to a neutral event, and not paranoia. This explanation is further supported by observing that Green et al. (2011) report that a personalising bias was a predicative factor of the 'paranoid' explanations elicited within their study. It is perhaps not surprising that participants who made self referential explanations for the events within the experiment displayed a tendency towards a personalising attributional style. However, the wealth of evidence suggests if any attributional bias exists within paranoid groups, it is predominantly an externalising bias (Kaney & Bentall, 1989; 1992; Craig et al., 2004; Fear et al., 1996; Lyon, Kaney & Bentall, 1994; Sharp, Fear & Healy, 1997; Kinderman and Bentall, 1996a).

In conclusion, this novel, and as of yet un-replicated experimental approach, provides two clear advantages: firstly, it represents a more real life situation and thus may be used to complement self report measures; secondly, it provides the advantage of experimental control over the neutrality of participants experience and thus ensures that subsequent responses are unfounded. However, the clear disadvantage of this approach is that it has thus far produced only self referential, rather than clearly paranoid responses.

1.8.4 **Limitations with Experimental Approaches to Date**

Additionally, there are several limitations with the two established experimental paradigms. Laboratory based studies using both the camera paradigm and the virtual reality studies lack ecological validity. Both the virtual reality environment and the camera paradigm are artificial experimental situations which provide very limited information about the formation of paranoid thoughts and beliefs in real life. The virtual reality paradigm does provide a reconstruction of a real world experience such as riding on a train or sitting in a library. It also provides the advantage of controlling the neutrality of the experience to ensure that any subsequent paranoid thoughts are unfounded. However, the avatars are not real people. Although there is some evidence to suggest that people may behave and feel as if they inhabit the virtual reality world created by computer displays (Sanchez-Vives & Salter, 2005), it is not known whether this effect can be generalised to interpersonal interactions. Additionally, both paradigms require a certain amount of specialist equipment. In particular the virtual reality paradigm is costly, and would require access not only to high tech equipment, but also to trained researchers in order to programme and use the equipment. Such limitations may make this paradigm inaccessible to many researchers.

1.9 Research Questions & Implications

There are some notable methodological limitations of the studies reviewed above and several theoretical issues remain unresolved. Firstly, all experimental studies reviewed so far are able to advance the findings of questionnaire based research but still rely upon self report measures to assess levels of paranoia. Additionally, with the exception of Freeman's Virtual Reality work, most studies into nonclinical paranoia have been unable to capture the interpersonal nature of paranoia – and even here participants know they are observing avatars. This is of crucial importance when understanding paranoia; as it is an inherently interpersonal belief that concerns the perception of threat from others (Freeman & Garety, 2000). An additional question that remains untested by previous research is; if paranoia is common in the nonclinical population, why isn't everyone constantly paranoid? Nonclinical paranoia has been shown to be both common and persistent. However, not all individuals that experience paranoid thoughts go on to develop persecutory delusions and a notable proportion of nonclinical groups report low levels of paranoia. One is therefore left to question if paranoia is not only milder in nonclinical groups, but is also more transient? Put simply; does paranoia change naturalistically in nonclinical groups and if so to what degree does it change and what factors are linked to change?

To date, the majority of research investigates factors that increase or maintain paranoia. Ellett and Chadwick (2007) have begun to assess factors that may act as buffers against paranoid thoughts in nonclinical groups, but little is known about factors that reduce such paranoid responses. Yet it is widely assumed that it is its lack of severity and transitory nature that sets nonclinical paranoia apart from clinically severe cases of persecutory delusions. Some work has looked at the dynamic aspects of nonclinical paranoia (Thewissen et al., 2008; 2011). Yet, to date no study has measured either the degree of naturalistic change or factors associated

with it. Therefore, three main areas require further validation – that is, the interpersonal nature, naturalistic change and factors associated with reductions in nonclinical paranoia. It is these areas that will be explored in the current thesis. This thesis will use a wide range of methodological approaches to experimentally explore the interpersonal nature of nonclinical paranoia, assess whether nonclinical paranoia changes naturalistically, and investigate potential reasons for change in responses to a nonclinical paranoid experience. The current thesis employs laboratory based experimental methods, internet based methodology, and trait and state paranoia questionnaire data. In addition it explores idiosyncratic dimensional change and finally employs a qualitative methodology in order to provide an in-depth exploration of reasons for change in nonclinical paranoia. By employing a multitude of different methodological approaches the current thesis aims to provide a detailed and comprehensive investigation into three previously under researched aspects of nonclinical paranoia.

1.10 Thesis Plan

In outline, the thesis is concerned with investigating both the interpersonal nature of nonclinical paranoia and naturalistic changes in responses to nonclinical paranoid experience, and reports the findings of four studies, which are briefly introduced below.

The first empirical chapter contains two experimental studies which explore a potential third experimental paradigm for the study of nonclinical paranoia. The first study assesses the presence of paranoid cognitions in the Prisoner's Dilemma Game (PDG), an established social psychology research paradigm. The aim of the study was to investigate the interactional nature of paranoia using the Two-Choice Prisoner's Dilemma Game.

Within the second study questions regarding the players' motives when selecting a competitive strategy on the PDG are addressed. The inclusion of a Three-Choice PDG (PDG-Alt) aims to distinguish between competition motivated by fear of the other players' intentions and competition motivated by maximising individual gain. Fear and greed based competition are unconfounded by the inclusion of a third (withdrawal) option. Additionally, individual differences in tendency towards risk taking were assessed.

One central question that these experimental findings raise is; why isn't everyone constantly paranoid? The second half of the thesis endeavours to answer this question. The second empirical chapter presents a third study that assesses for associations between levels of trait paranoia, and a range of clinical and social constructs in a nonclinical sample. In addition, it examines whether individuals who report a paranoid experience differ from those that do not, on these constructs. This study explores the alternative methodology of face to face structured interviews to assess nonclinical paranoia. Finally, the third study compares retrospective and current dimensional responses to a particular paranoid experience. Idiosyncratic accounts of a single past paranoid experience and changes in dimensions known to be important in clinical paranoia are thereby examined.

Within the fourth and final study, participants who reported a paranoid experience within the previous study (Study 3), were interviewed to assess the reasons for any change (or lack of change) in their responses to a past paranoid experience. The final study is a phenomenological enquiry that focuses on participants' own meanings and perspectives regarding any change in their responses to a paranoid experience. Emergent themes in idiosyncratic accounts of changes in response to a single paranoid experience are reported in order to produce a detailed description of reasons for change in nonclinical paranoid experience.

In the final chapter, the thesis concludes with a discussion of the theoretical, clinical and research implications of the findings.

2 Chapter Two – Prisoner’s Dilemma Game and

Paranoia

2.1 Introduction

Recent experimental studies have begun to add to the growing body of research that shows paranoia commonly occurs in milder forms in the general population (e.g. Fenigstein & Vanable, 1992; Olfson et al., 2002; Ellett et al., 2003; Freeman et al., 2005b). To date two experimental paradigms have been developed that examine paranoia in nonclinical groups; a camera and task failure paradigm (Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007), and a virtual reality paradigm Freeman et al. (2003; 2005c). Experimental studies that have manipulated focus of attention in undergraduate samples by using a video camera and monitor demonstrated that nonclinical paranoia is triggered by a combination of high self awareness and task failure, or ambiguous feedback about task performance (Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007). However, the camera paradigm has difficulty in capturing either the interpersonal nature or real world experience of nonclinical paranoia; people are paranoid about the intentions of others. In a series of studies Freeman et al. (2003; 2005c) have explored the interpersonal nature of paranoia within virtual reality environments by placing nonclinical individuals in a pre programmed neutral virtual reality environment. Higher levels of nonclinical paranoia, anxiety and interpersonal sensitivity were found to be associated with greater suspicion of the computer characters. However, although the virtual reality paradigm allows experimental control of intended hostility, it lacks ecological validity as participants are experiencing neutral avatars rather than real people. Further limitations of the virtual reality paradigm are that it is costly and relies on the use of specialist equipment. Therefore, one challenge to current research is to establish an alternative cost effective and

easily administered paradigm that captures the interpersonal nature of nonclinical paranoia in a real world environment. The two studies presented within this chapter assess the presence of paranoid cognitions in the Prisoner's Dilemma Game (PDG), an interpersonal research paradigm developed from game theory, used extensively in experimental social psychological studies of interpersonal trust and distrust, but which has not been used before to study paranoia.

The chapter begins by considering the Prisoner's Dilemma Game (PDG), the history and attributes of this particular game, how it has been previously used as a tool in psychological research, and how it may be used to examine nonclinical paranoia. Two studies that investigate associations between game choice and paranoia in a standard Two-Choice version of the PDG are presented. The third and final study within this series explores associations between paranoia and game choice in a Three-Choice version of the game (PDG-Alt). The chapter concludes with a discussion of the theoretical and research implications of the findings.

2.1.1 The Prisoner's Dilemma Game (PDG)

The PDG is a construct of game theory whereby two or more players reach for the same goal and their individual attainment of that goal is in some way dependent on the other player. Players are faced with a choice to compete with one another for limited resources or to cooperate with each other to produce the best outcome for all. There are a wide variety of games used within game theory such as, the trust game, public goods games, and the ultimatum game, that all capture different aspects of the tension between individual and shared goals (Camerer, 2003). The Prisoner's Dilemma game is an example of a non zero sum game, where players can compete for limited resources yet there is also the prospect of a mutual or shared gain.

The actual game was first formalised in 1950 by Mervil Flood and Melvin Dresher of the RAND Corporation in California. Several months after this it was re-phrased as an anecdote about two prisoners by Albert Tucker at Princeton (Ridley, 1997). The scenario that Tucker created was that of two prisoners being arrested for murder and taken to separate cells. The prosecutor then individually makes an offer to both prisoners. If both the prisoners plead not guilty then they will both be given a lesser charge of possessing an illegal weapon and could face up to 1 year in prison. If only one prisoner pleads guilty and thereby implicates the other, the confessor will go free and the implicated prisoner will receive a full 30 year sentence. However in the event that they both plead guilty then they will both be charged and given a 10 year sentence each.

Table 2, Classic Prisoner’s Dilemma matrix

		Prisoner 1	
		Not Guilty	Guilty
Prisoner 2	Not Guilty	-1,-1	-30,0
	Guilty	0,-30	-10,-10

Table taken from Barash (2003)¹

What is particular to the Prisoner’s Dilemma is that it pays each person to plead guilty if they suspect that the other person will plead not guilty. Yet if the other person pleads guilty it is

¹ Negative numbers denote a negative sum game, in that the game is biased against the prisoners. There is no prospect of gain, the best outcome is no prison sentence (0) and the worst outcome is a prison sentence of 30 years (-30).

also best if they plead guilty also. If we were to add the sentences together then cooperating by pleading not guilty is the best move, the total combined sentence being only two years. However, individually pleading guilty is the best option. Therefore, at the crux of this dilemma is the conflict between the pursuit of individual goals and the common good. "Individual rationality leads to a worse outcome for both than is possible. Hence the dilemma." (Axelrod 1984).

Therefore, when playing a PDG each player must make a choice; to cooperate by acting in the mutual best interest of both players or to defect by acting in accordance with their own short term interests. In the equations frequently used by game theorists looking at the Prisoners Dilemma the 30 year sentence would be seen as (S) this being the "Sucker's Payoff" the worst possible outcome for the individual arrived at only if they cooperate whilst the other player defects. The consequent outcome for the defector in this case, the zero year sentence is known as (T) the "Temptation" payoff. The one year sentence is (R) the "Reward" payoff both parties receive for cooperating, and the ten year sentence is (P) the "Punishment" incurred by both parties if they both choose to defect.

Table 3, Generalised Prisoner's Dilemma Matrix

		Player 1	
		Cooperates	Defects
Player 2	Cooperates	R,R	T,S
	Defects	S,T	P,P

Table taken from Barash (2003)

The best a player is can achieve in this game is T (temptation to defect) and this option therefore has the highest payoff. The cooperation of the two players is rewarded (R) and is thus higher than the punishment for mutual defection. The worst outcome for either player is (S) which is the result of cooperating whilst the other player defects. However, the players should not be able to solve the dilemma by taking it in turns to exploit one another, therefore R needs to reap a higher payoff than spending half of the game getting T and the other half S. As Barash (2003) observes, the mathematical notation of the Prisoner's Dilemma Game can be written as: $T > R > P > S$ when $R > T + S/2$.

2.1.2 Iteration vs. One Shot Games

However when players are faced with playing the game only once with no further encounters, competition is the most logical resolution for each individual player. Whereas a 'one shot' game encourages competition, frequent repetition encourages cooperation. It has been suggested that this effect is due to reciprocation and the benefits of establishing a reputation as a cooperative player (Ridley, 1997). It pays both players to build up a pattern of mutual cooperation to maximise their payoffs when there is no predictable end to the game. Yet there is one problem with this strategy. When the players know how many games they are playing the rational decision is to defect on the last game, or predicting the other player will do this, defect on the second to last game. What you are then doing is simply delaying a one-shot game. "Mutual cooperation can be stable if the future is sufficiently important relative to the present" (Axelrod, 1984). One way to ensure this importance is to make the end of the game unpredictable. Therefore, only indefinitely iterated games can deviate from the dominance of the competition strategy (Barash, 2003).

2.1.3 PDG as a Tool in Psychological Research

The PDG is a useful tool when examining individuals' decision making processes. Different people respond in different ways to games of Prisoner's Dilemma and researchers can assess decisions made within the game to study such differences. For example people who have a tendency to cooperate are more likely to expect others to cooperate. (Alcock & Mansell, 1977). The PDG has also been widely used to establish that intergroup interactions (i.e. interactions between groups of two or more individuals) are significantly more competitive than interindividual ones (i.e. interactions between two individuals) (Insko, et al., 1987; 1988; 1990; 1992; 1993; 1994; 1998; 2001; McCallum et al., 1985; Schopler et al., 1991; 1993; 1994; 1995; 2001). The Prisoner's Dilemma has therefore been used extensively within experimental social psychological studies that concern interpersonal trust and distrust, but has so far not been used to study paranoia.

2.1.4 Prisoners Dilemma and Paranoia

It is surprising that the PDG has not been used before to study paranoia, given that it sets up an interpersonal interaction where issues of threat and concerns regarding the intentions of others are centre-stage. The PDG requires each individual player to consider the likely motivations and choices of the other player, and among those choices are strategies which may produce a negative outcome (low payoff) for any given individual.

2.2 Study 1 – Two-Choice Prisoner's Dilemma Game and Paranoia

2.2.1 Rationale

As the current study is assessing a new paradigm for the study of nonclinical paranoia, an initial study was performed in order to investigate any potential relationship between paranoia

and choice on a Prisoner's Dilemma Game. The rationale for the current study is that participants experiencing paranoia during a PDG would be both more likely to compete, and score higher on the state paranoia measure, because they appraise an opponent as malevolent, which makes competition in the PDG a better strategy than cooperation. Therefore, the study tested two hypotheses; firstly that higher levels of state (SPS) paranoia would be associated with selection of the competitive choice on a Two-Choice Prisoner's Dilemma Game, and secondly that higher trait paranoia (PS) will also be associated with the selection of the competitive choice on a Two-Choice PDG.

2.2.2 Design

The design of the current study is correlational and comprises one dichotomous variable of game choice (either cooperate and compete on the PDG) and two measures of paranoia (state and trait).

2.2.3 Participants

Participants were 64 men and 111 women, aged 18 to 64 (mean age = 29.6 years, SD = 9.5) of whom 95 (54%) were in full-time employment, 8 (5%) were unemployed and 72 (41%) were undergraduate students at a British university. Inclusion criteria were that participants must be English speakers, and aged 18 years or above. Exclusion criteria included self reported diagnosis or treatment of a mental health problem. Participants were recruited in two ways: (1) through a student participant pool and (2) via the Internet². Mixed sampling methods were

² 40 participants were initially recruited through a university research participation scheme. A significant correlation between state paranoia (SPS) and competition was found, $r_{pb} = 0.405$, $p = 0.01$. The decision was made to recruit a larger sample from a wider cohort of the general population via a

used to ensure that the research was not restricted to an undergraduate population. All participants were informed that they were taking part in a study investigating 'social strategies', where they would be asked to make a series of strategic choices against another unknown player.

The project received ethical approval (code: 2007/097) prior to the commencement of the study. All participants read an information sheet summarising the broad aims of the project and gave initial informed consent.

2.2.4 Measures

Paranoia Scale (Fenigstein and Venable, 1992)

The paranoia scale (PS) is a 20-item trait measure developed to assess paranoia in nonclinical samples. Each item is rated on a five point Likert scale ranging from 1 'not at all applicable to me' to 5 'extremely applicable to me', yielding a total maximum score of 100. Higher scores indicate greater levels of nonclinical paranoia. The authors used items from a clinical measure of paranoid symptomatology (Minnesota Multiphasic Personality Inventory MMPI) to devise their scale. The following 5 aspects of paranoia are measured on this scale: (1) the belief that other people or external powerful sources are trying to influence one's behaviour or thinking; (2) the belief of a conspiracy; (3) the belief of being spied upon and talked about behind one's back; (4) a general suspicion or mistrust of others; and (5) feelings of resentment. The paranoia scale has sound reliability and validity data, Fenigstein & Venable (1992) reported an

weblink posted on several research and social networking sites. Despite the change in recruitment and the adaptation of the experiment to an online format, the procedure, timings and measures within the study remained the same.

overall alpha of .84 (N=581 across four samples). They also reported a test-retest correlation of .70. For the current study the PS showed excellent internal consistency (Cronbach's alpha = .86). *The State Paranoia Scale (SPS)*

The SPS is a 4-item scale devised to measure state paranoia specifically within the PDG paradigm. The state paranoia subscale is used to assess a momentary experience of paranoia, the higher the score the greater the paranoid state at the time of response. Participants are asked to rate how they anticipate experiencing the other participant by marking responses on a 7 point Likert scale ranging from 'definitely' to 'unsure' on a scale that contains two opposing statements. One pole of each statement clearly indicates an explicit perceived intention to harm, a defining characteristic of paranoia (Freeman & Garety, 2000). The four paranoia items are '*is hostile towards me*' vs. '*is friendly towards me*'; '*wants to please me*' vs. '*wants to upset me*'; '*wants to help me*' vs. '*wants to harm me*' and '*respects me*' vs. '*has it in for me*'. Like Freeman et al's. (2007) state paranoia measure, all SPS items contain both elements of threat (items 1&2) and intention (items 3&4), such that clear persecutory thinking was assessed.

In a preliminary study conducted at Southampton University, undergraduate students (n=162, 131 female, 31 male, mean age = 20.7 years, SD = 4.49) were given the state paranoia scale in the context of a Two-Choice Prisoner's Dilemma Game. A factor analysis with varimax rotation performed on the 4 item scale revealed one factor that explained 75% of the total variance. All four items of the scale loaded heavily on one factor (factor loadings >0.6). The scale showed good internal consistency (Cronbach's alpha = .92). In addition, there was a significant positive correlation between the SPS and the Fenigstein & Venable (1992) Paranoia Scale, a validated measure of trait paranoia, $r = 0.25$, $p = 0.001$. This finding is consistent with previous reports of correlations between state and trait paranoia measures and attests to the

construct validity of the SPS (Bodner & Mikulincer, 1998; Freeman et al., 2007). For the current series of studies the State Paranoia Scale showed acceptable internal consistency across both studies ($\alpha = .80$, for Study 1, and $\alpha = 0.70$ for Study 2).

A seven point scale with two opposing statements was administered to all participants.

However, in additional post hoc analysis, the State Paranoia Scale data was re-coded to create a uni-dimensional scale of current paranoid state, thus removing the polar opposites of 'is friendly towards me', 'wants to please me', 'wants to help me' and 'has respect for me'. This modification produced a five point scale ranging from 'maybe' to 'definitely' on the items 'is hostile towards me', 'wants to upset me', 'wants to harm me' and 'has it in for me'.

Prisoner's Dilemma Game (PDG)

An example of the matrix used within the current study can be seen in Figure 1. The matrix depicts an interaction between two individual players (Person A & B). Each player can choose between two courses of action. In this example both Person A and Person B can both choose from two possibilities, they can choose to cooperate (X) or compete (Y). The combination of each players' choice determines the payoff that both players will receive (person A's payoff is presented within the blue sections, and person B's in the yellow). In the matrix below, the payoffs represent credits that players will exchange for money at the end of the game, the higher the credits the greater the monetary payoff.

		Person A	
		X	Y
Person B	X	90 / 90	120 / 30
	Y	30 / 120	60 / 60

Figure 1, Two player, Two-Choice Prisoner’s Dilemma Game Matrix.

As can be seen from Figure 1 if both players choose to cooperate (X) they each get a higher reward than if they both choose to compete (Y) (90 as opposed to 60 credits). However the maximum payoff an individual player can achieve is if they choose to compete whilst the other player chooses to cooperate (120 credits) and in this instance the cooperative player runs the risk of obtaining the lowest payoff (30 credits).

2.2.4.1 Development of the online PDG

In order to include a wider cohort of participants, an online version of the PDG was developed in collaboration with the IT department of Royal Holloway, University of London. The features and exact requirements of the online experiment were detailed in a 10 page IT specification document. The programme was structured using the SelectSurveyASP software package. The web application was designed to replicate the face to face experimental procedure, and to create the illusion that participants were playing against another online player. This was

achieved by programming timed waits within the online experiment, during which time participants were notified that the computer was searching for other on-line players, or that the other player was making their game choice (timed waits varied between 40'000 and 10'000 milliseconds). Additionally, popup messages were used to inform participants of the number of players currently logged onto the programme. These features were drawn from the characteristics of current online multiplayer games and were programmed into the web application to increase the plausibility that participants were playing against another online player.

After specifying the requirements and design, iterative development and test cycles were used to continuously modify and improve the programme until the final programme was deployed.

2.2.5 Procedure

The experiment was conducted through two possible methods; either a direct face to face experiment (n=40), whereby the researcher met with each participant individually, and conducted the experiment in person, or via an online version of the experiment (n=135). The web application was developed to closely reproduce the timings, procedures and measures used within the face to face experiment. Both online and face to face PDG procedures were modelled on extensive prior research (e.g. Cohen et al., 2010). All participants completed two questionnaires and took part in one-round of the PDG. Measures were taken in the same order for all participants.

2.2.5.1 Face to Face Procedure

Participants recruited from the participant pool were recruited independently with staggered arrival times to ensure that game partners did not know the identity of the other player before the game began. On arrival both participants were assigned to one of two rooms. The

participants filled out all the questionnaire measures and selected their choice on the PDG independently from each other in their individual rooms. They did not meet or communicate at any point during the experiment.

Participants first completed the trait measure of paranoia (Paranoia Scale) and were then given detailed written and verbal instructions on the PDG matrix including a step by step review of the possible combinations of choice and their subsequent outcomes (see Figure 1). Participants were then required to complete an exercise assessing their understanding of the outcomes of various combinations of choices (see Appendix B). Within this exercise participants were presented with a series of potential combinations and asked to calculate what the relative outcomes would be for each player. If participants did not complete the task successfully, written instructions for the game and the PDG matrix were again shown to the participants. All participants were given a maximum of three opportunities to answer the questions correctly. Participants that could not answer questions correctly after three attempts were prevented from progressing with the study. They were thanked for their time, presented with a debrief sheet and paid in full.

Participants that answered all four questions correctly were informed by the researcher that they would be playing between 1 and 6 rounds of the PDG. This was done to ensure that participants did not know that, in fact, there was to be only a single trial. When participants know that only a single trial is involved, this can strongly increase competition and thereby produce a restriction of range (Axelrod, 1984; Pruitt & Kimmel, 1977; See also Section 2.1.2). Participants were informed they would win a certain amount of money, up to a maximum of £5, and that the exact figure would depend on the combination of choices both players made during the game (Cohen et al., 2010). They were informed that their decisions would be made

independently and only once both players had made their decision would the outcome of round one and subsequent pay-offs for that round be given.

After participants selected their PDG choice on the first (and only) trial, they were asked by the researcher to fill out the state paranoia measure (SPS). Crucially this measure was completed after they had made their choice, but before they found out their opponents' choice. The timing of this measure was selected in order to ensure that individual responses were not influenced by the other players' game choice and to produce a condition of ambiguity and vulnerability (players had made their choice but were unaware of the choice of the other player). After completing the state paranoia measure, participants were verbally informed they would only be playing one round of the game, and were informed of the other players' choice and subsequent outcome. All participants were then debriefed fully and awarded the maximum pay-off.

2.2.5.2 Online procedure

The computerised version of the PDG experiment was accessed via an on-line link that was posted on several on-line psychological study websites in addition to two social networking websites. In order to avoid multiple entries and ensure full and valid participation in the online study, participants were assigned a unique I.D. code and the precise time each participant took to complete the study was recorded (Hewson, Laurent & Vogel, 2003). Online participants logged onto a website entitled 'Social Strategies', where they were given an outline of the study and gave consent to take part, in line with BPS ethical guidelines for online studies (*British Psychological Society, 2007, conducting Research on the internet: Guidelines for Ethical Practice in Psychological Research Online*).

All participants were told via an online instruction sheet that they would be playing between one and six rounds of the game. They were informed that their decisions would be made

independently and only once both players had made their decision would the outcome of round one and subsequent pay-offs for that round be given. As online participants could not be paid in person they were informed that they were playing for points to be redeemed at the online iTunes™ store, and that the amount of credits they won would be dependent on the combination of choices both players made during the game.

Participants first completed an online version of the Paranoia Scale. If participants missed an item of the Paranoia Scale, a dialogue box would appear informing participants of the item number for the missing question and asking them to please answer that item. On completion of the paranoia scale participants were automatically presented with written instructions for playing the PDG. Participants were shown the possible outcomes in the PDG matrix (Figure 1), and their understanding of the PDG matrix was tested by giving them a series of 4 questions to answer about the different possible combinations of payoffs. These four questions were identical to the ones used in the face to face procedure. Participants had to answer all questions correctly to ensure that they fully understood the matrix, before they were able to progress onto playing the PDG against an 'opponent'. If a participant got any question wrong, a dialog box would appear on the screen informing them of the question that they got wrong and asking them to try again, a link back to the PDG matrix was also provided. As with the face to face procedure participants were given a maximum of three opportunities to answer the questions correctly. Participants that could not answer questions correctly after three attempts were prevented from progressing with the study. They were thanked for their time, presented with a debrief sheet and given an iTunes™ of their choice.

When participants had got all 4 questions correct, they were then shown the PDG matrix again, and after a timed wait where participants were notified that the computer was searching for other on-line players, a popup message informed participants that there were currently 5 people logged on, and that the computer would randomly choose one as an

opponent. Participants then chose their strategy on the PDG (i.e. to either cooperate or compete with their opponent). Once they made their PDG choice, the application notified participants that the choice had been logged and that the computer was awaiting the other player's choice. As in the face to face procedure, after participants had made their choice and before they found out their opponent's choice, they completed the measure of state paranoia (SPS).

On completion of the final measure participants were then informed of their opponent's choice (the computer program always selected the co-operative X strategy) and were told that they would only be required to play one round of the PDG. Participants were then fully debriefed, asked to fill out an additional online informed consent form and give permission for their data to be used, all participants were offered an iTunes™ voucher for taking part in the study.

2.2.6 Results

There was no significant difference in either trait ($t(173) = 1.489, p = .138$) or state paranoia ($t(172) = .629, p = .530$) between participants recruited via the internet and those recruited through the participant pool. Additionally there was no significant difference in age ($t(173) = .850, p = .890$) between the two groups, and no association between gender and recruitment type was found ($\chi^2(1) = 0.19, p = .890$). Therefore the data from the two recruitment strategies were combined to form one sample for further analysis.

The data for both trait and state scales showed normal distribution, paranoia scale (skewness = 0.85 and kurtosis = -0.42), state paranoia scale (skewness = -0.17 and kurtosis = -0.58) and therefore fulfilled parametric assumptions (Howitt & Cramer, 2005). The mean scores and standard deviations for state paranoia and the paranoia scale are shown in Table 4. Within the PDG, 114 participants cooperated and 61 chose to compete. Gender was significantly related

to game choice $\chi^2 (1) = 4.318, p = 0.038$. Seventy five percent of men cooperated ($n = 48$) compared to 60% of the female participants ($n = 66$). This finding is consistent with previous research that has shown compared to men, women exhibit lower levels of cooperation when playing a PDG (Rapoport, 1965). Participants' age was not significantly associated with game choice, $r_{pb} = -0.134, p = 0.07$. No significant difference in game choice was found between participants that were employed, unemployed and those who were full-time students, $\chi^2 (2) = 4.677, p = 0.096$.

Table 4, Descriptive statistics for the Study 1 measures: State Paranoia Scale (SPS) and Fenigstein's Paranoia Scale (PS).

Measure	Possible Range	Actual Range	Mean Score (SD)
SPS	4 - 28	7 - 24	13.76 (3.393)
Paranoia Scale	20 - 100	21 - 71	37.51 (10.272)

A significant positive correlation between the State Paranoia Scale (SPS) and the Paranoia Scale was found within the current study, $r = 0.248, p = 0.001$. These findings indicate that both scales are measuring aspects of paranoia and therefore further demonstrate the construct validity of the State Paranoia Scale.

The descriptive statistics for each individual item of the State Paranoia Scale are presented below in Table 5

Table 5, Descriptive Statistics for each SPS item

Item	Possible Range	Actual Range	Mean Score (SD)
1. <i>Is hostile towards me vs. Is friendly towards me</i>	1 - 7	1 - 7	3.03 (1.174)
2. <i>Wants to please me vs. Wants to upset me</i>	1 - 7	1 - 7	3.79 (1.033)
3. <i>Wants to help me vs. Wants to harm me</i>	1 - 7	1 - 7	3.53 (1.055)
4. <i>Respects me vs. has it in for me</i>	1 - 7	1 - 6	3.39 (1.005)

A comparison of the mean scores for both trait and state paranoia measures for those that chose to cooperate and those that chose to compete is presented in Table 6 below.

Table 6, Mean Trait (PS) and State (SPS) paranoia scores and Standard deviations by PDG choice (cooperate X or compete Y)

PDG Choice	Mean Score and Standard Deviation (SD) on Paranoia Scale (PS)	Mean Score and Standard Deviation (SD) on State Paranoia Scale (SPS)
Cooperate	36.83 (10.439)	13.18 (3.224)
Compete	38.77 (9.914)	14.84 (3.460)

Because PDG choice is a dichotomous variable (players either compete or cooperate), point-biserial correlation coefficients (r_{pb}) were calculated. There was no significant correlation between trait paranoia (Paranoia Scale) and competition, $r_{pb} = 0.09$, $p = 0.236$. However, a

significant positive correlation between state paranoia (SPS) and competition was found, $r_{pb} = 0.234, p = 0.002$.

When analysed according to recruitment method, the main findings were the same for the both the face to face and online formats of the experiment. Within the face to face experiments there was no significant correlation between trait paranoia and cooperation ($r_{pb} = 0.105, p = 0.519$). However, a significant positive correlation between state paranoia and competition was found ($r_{pb} = 0.405, p = 0.010$). Using the online recruitment method, results again showed a significant correlation between state paranoia and competition ($r_{pb} = .250, p = .003$), with no correlation between trait paranoia and cooperation being found ($r_{pb} = 0.062, p = 0.478$).

2.2.6.1 Additional post hoc analysis

In order to address the bi-directional nature of the State Paranoia Scale, a further uni-dimensional scale was created by recoding all scores of 1, 2 and 3 on the original 7 point scale as '1', thus creating a five point scale ranging from 'maybe' to 'definitely' along the four items of 'is hostile towards me', 'wants to upset me', 'wants to harm me' and 'has it in for me'. Replicating findings using the original scale, a significant positive correlation between state paranoia (SPS) and competition was found, $r_{pb} = 0.28, p = 0.001$ using the modified 5 point uni-dimensional State Paranoia Scale.

2.2.6.2 Post-hoc Power Analysis

According to Cohen's (1992) effect size conventions the non significant association between trait paranoia and game choice (.09) indicate a very small effect size. Therefore, with a sample size of 175 the current study did not provide sufficient power to test a possible correlation between these variables. However, the relationship between state paranoia and game choice

indicated a moderate effect size (.234), the study was therefore adequately powered to test the primary hypothesis.

2.2.7 Discussion

The results from Study 1 suggest that the post choice measure of state paranoia is associated with the choice to compete. The findings thus supported the main hypothesis that behavioural choice on the PDG would be associated with state paranoia, offering encouragement that the PDG might provide a means to evaluate state paranoia in an interpersonal setting, in nonclinical samples. The data from Study 1 involved a combination of experimental and online methods, thus reducing risk of experimenter bias; recruitment of both students and members of the general population indicates that the relationship between state paranoia and competition is not limited to a student population. Furthermore, the main findings were consistent across the two recruitment approaches, therefore showing that the PDG paradigm can be adapted to an online method. In demonstrating that the prisoner's dilemma game produces the same findings through different recruitment methods, the results of Study 1 demonstrate the versatility of the PDG paradigm by showing that it can be reliably administered using either face to face or on-line methodology. Additionally, there was a positive association between state and trait paranoia. Whilst the association was modest, it is in line with those found in similar research that has examined state and trait correlations within experimental settings (Bodner & Mikulincer, 1998; Freeman, 2007).

Initially, the lack of an association between trait paranoia and the choice to compete in a PDG was surprising. However, the question of a player's motive is significant when understanding choice in the PDG. Within the Two-Choice paradigm, a player might choose to compete on the PDG either because of greed (i.e. wanting the maximum return in the hope an opponent cooperates) or fear of receiving the lowest outcome (i.e. predicting that the opponent will

compete, so responding defensively to this possibility). It is the fear perspective (also labelled 'schema-based mistrust', Wildschut & Insko, 2007) that is directly relevant to paranoia – fear is based on the expectation that the other player will select the competitive choice and therefore poses a threat. Thus, Study 1 predicted, and found, that those who competed score higher on state paranoia, based on an implicit assumption that fear was driving the choice to compete. However, this assumption was untested in the current study.

2.3 Study 2 – A Three-Choice version of the Prisoner's Dilemma (PDG-Alt)

2.3.1 Rationale

One solution to the challenge of separating greed and fear based competition is provided by a Three-Choice variation of the PDG that is referred to as the PDG-Alt (Figure 2), which was developed explicitly to disentangle motives of greed and fear. The corner cells of the PDG-Alt matrix constitute a PDG, but the matrix includes a third choice that guarantees intermediate outcomes regardless of the other players' choice. This third choice is referred to as 'withdrawal' because it affords the opportunity to neither cooperate nor compete but, instead, to make a defensive or 'safe' choice that renders the other persons' choice irrelevant. The withdrawal choice guarantees outcomes that are intermediate to those obtained when both players cooperate or both players compete. Whereas competition (option Z) yields the highest outcomes when the other player cooperates (greed), withdrawal (option Y) is the optimal choice when the other player competes (distrust). Therefore, the withdrawal choice is rational when one expects an opponent to be hostile and malevolent. The withdrawal option is therefore anticipated to be indicative of an underlying distrust (fear) of the other player (Insko et al., 1990; 1993; 2005; Schopler et al., 1993; 1995; Cohen et al., 2010). If a player simply

wishes to maximise their payoff the logical selection would be the competitive option rather than withdrawal. However according to behavioural game theory the possibility exists that players will not uniformly act in rational and self serving ways when selecting their choice (Camerer, 2003). Other reasons such as ‘risk aversion’ may make individual players more likely to choose the withdrawal option. In order to test this hypothesis a measure of risk aversion was also included in the current study. Study 2 therefore uses the PDG-Alt matrix to test the hypothesis that only those players who withdraw on the PDG-Alt would have significantly higher levels of state paranoia.

		Person A		
		X	Y	Z
Person B	X	90, 90	75, 75	120, 30
	Y	75, 75	75, 75	75, 75
	Z	30, 120	75, 75	60, 60

Figure 2, Three-Choice Prisoner’s Dilemma Game Matrix (PDG-Alt). X= cooperative choice; Y= withdrawal choice; Z= competitive choice.

2.3.2 Power Analysis

An a priori power analysis was conducted to determine the number of participants required for the current study. The findings from the previous study were used to calculate the effect sizes of the associations found between state paranoia and competitive choice selection. The

significant correlation between state paranoia and competitive choice $r_{pb} = 0.234$ indicated a moderate effect size (Cohen, 1992). With the conventional levels of $\alpha = .05$, a sample size of 85 is required to achieve power of 0.8 (Clarke- Carter, 2004).

2.3.3 Participants

A total of 99 university students (27 men and 72 women) age 18 to 49 (mean age 21.43, SD 4.673) participated. Inclusion criteria were as follows: (1) participants must be English speakers, (2) aged 18 years or above, (3) current students at a British University. Exclusion criteria included self reported diagnosis or treatment of a mental health problem. Participants were approached either by e-mail or through a paid research participation scheme. The project received ethical approval (code: 2007/097) prior to the commencement of the study. All participants read an information sheet summarising the broad aims of the project and gave initial informed consent.

2.3.4 Measures and Procedure

Due to the increased complexity of the PDG-Alt a face to face method was selected for conducting Study 2. Procedures and measures used in Study 1 were repeated in Study 2, with two main differences; firstly in place of the standard Two-Choice PDG, the PDG-Alt matrix was used, secondly, participants were asked to complete an additional risk aversion measure (RISK) immediately after the Paranoia Scale was administered (at the beginning of the experiment, before the PDG-Alt was introduced).

Attitudes Towards Risk Scale (Franken, Gibson and Rowland 1992)

The Attitudes Towards Risk Scale (RISK) is a 10 item scale pertaining to risk-taking beliefs and behaviours. An example of these items are "Being afraid of something new often makes it

more fun in the end” and “I often think about doing things that I know my friends would disapprove of”. Each item is rated on a 5-point scale ranging from ‘Like me’ to ‘Not like me’, yielding a total maximum score of 50. High scores indicate more risk aversion and low scores signify a greater tendency to take risks. Two aspects of risk taking are measured on this scale: a willingness to engage in activities that society does not approve (or thinks are foolhardy); and the second factor contains items pertaining to the enjoyment that comes from taking risks. Franken et al. (1992) named these two factors ‘Disregard of social approval’ and ‘Disregard of danger’. Together, these two factors contain items that measure a willingness to suffer the consequences of an activity that produces a powerful positive affective reaction. Franken et al. (1992) reported an overall alpha of .84 for the 10 item scale. The current study showed a good internal consistency for RISK (Cronbach’s alpha = .83).

2.3.5 Results

The data for both paranoia scales and the attitudes towards risk scale showed normal distribution; state paranoia scale (skewness = 0.059 and kurtosis = -0.289,) paranoia scale (skewness = 0.970 and kurtosis = 0.960), and RISK (skewness = -0.156 and kurtosis = -0.594) and therefore fulfilled parametric assumptions (Howitt & Cramer, 2005). The range, mean scores and standard deviations for all three scales are shown below in Table 8.

Table 7, Descriptive statistics for Study 2 measures: State Paranoia Scale (SPS), Fenigstein’s Paranoia Scale (PS), Attitudes Towards Risk Scale (RISK).

Measure	Possible Range	Actual Range	Mean Score (SD)
SPS	4 - 28	6 - 22	14.22 (3.39)
Paranoia Scale	20 – 100	22 – 80	40.87 (12.11)
RISK	10 - 50	18 - 50	35.49 (7.21)

Within the current study, 33 participants cooperated, 34 competed and 32 chose to withdraw. In contrast to the previous study, no significant gender difference in game choice was found, $\chi^2 = 4.132 (2)$, $p = .127$ in the PDG-Alt. A comparison of the distribution of choice selection across the two studies can be seen in Table 8 below.

Table 8, Participant numbers and sample percentages for each PDG choice for studies 1 and 2.

	Cooperate	Compete	Withdraw
Study 1 (n=175)	114 (65%)	61 (35%)	
Study 2 (n= 99)	33 (33.3%)	34 (34.3%)	32 (32.3%)

A significant correlation between the State Paranoia Scale (SPS) and the Paranoia Scale was found within the current study, $r = .240$, $p = .02$, thus replicating the findings of Study 1.

Table 9, Mean Trait Paranoia Scores (PS) ; State Paranoia Scores (SPS); Risk Aversion Scores (RISK) and Standard deviations by PDG choice (cooperate X , withdrawal Y or compete Z)

PDG Choice	Mean Score and Standard Deviation (SD) on Paranoia Scale (PS)	Mean Score and Standard Deviation (SD) on State Paranoia Scale (SPS)	Mean Score and Standard Deviation (SD) on Risk Aversion Scale (RISK)
Cooperate	40.75 (10.16)	13.06 (3.12)	35.59 (7.00)
Compete	39.29 (9.70)	14.38 (3.55)	35.76 (6.49)
Withdraw	42.58 (15.78)	15.25 (3.20)	35.10 (8.31)

Following Cohen et al. (2010), three dichotomous variables were calculated in order to identify whether participants selected a particular strategy or not (0 = absent, 1 = present). Point-biserial correlations were then performed to calculate associations between the three possible

choices and state paranoia.³ As predicted, there was a significant positive correlation between state paranoia and the withdrawal choice, $r_{pb} = 0.2, p = 0.04$, but not between state paranoia and the competitive choice, $r_{pb} = 0.03, p = .74$. Finally, there was a significant negative correlation between state paranoia and the cooperative choice, $r_{pb} = -0.24, p = 0.01$. No significant correlation between trait paranoia and cooperation $r_{pb} = -.007, p = 0.944$, competition $r_{pb} = -.092, p = 0.377$, or withdrawal $r_{pb} = .099, p = 0.340$ was found. Additionally, no significant correlation between risk aversion and cooperation $r_{pb} = -.010, p = 0.925$, competition $r_{pb} = -.028, p = 0.788$, or withdrawal $r_{pb} = -.038, p = 0.711$ was found.

In order to examine whether group differences on risk propensity or paranoia exist between those who choose to cooperate, withdraw or compete, a series of one-way ANOVAs were conducted on, RISK, trait and state paranoia measures, and PDG choice. No significant difference was found between withdraw, cooperate and compete choices on RISK $F(2, 94) = .073, p = .930$, or trait paranoia (PS) $F(2, 91) = .569, p = .568$. However, a significant difference did emerge between withdraw, cooperate and compete choices on the state paranoia scale (SPS) $F(2, 96) = 3.417, p = 0.03$. Mean state paranoia scores for each PDG choice are displayed in Table 9 above. Post-hoc Tukey tests revealed a significant difference between cooperate and withdraw ($p = .03$), but not between cooperate and compete ($p = .18$) or withdraw and compete choices ($p = .70$).

³ As noted by Cohen et al. (2010) a limitation of this approach is that when dealing with three categorical variables comparisons cannot be independent, in that knowledge of two choices allows for perfect prediction of the third choice (i.e. knowledge of correlations between state paranoia and both competition and withdrawal choices allow perfect prediction of any correlation between state paranoia and cooperative choice). However Wickens (1989) argue that a lack of independence when comparing categorical variables should not prevent researchers from asking important a priori questions about these variables. The failure of independence should only be noted in interpreting the results.

2.3.5.1 Additional Post hoc analysis

The same uni-dimensional 5 point State Paranoia Scale, as used in Study 1, was also used to analyse the data from this study. Replicating the findings using the 7-item measure, there was a significant positive correlation between state paranoia and the withdrawal choice, $r_{pb} = 0.198$, $p = 0.05$, but not between state paranoia and the competitive choice, $r_{pb} = 0.057$, $p = 0.572$. Finally, there was a significant negative correlation between state paranoia and the cooperative choice, $r_{pb} = -0.245$, $p = 0.014$.

2.3.6 Discussion

The findings of the current study therefore provide evidence for the notion that state paranoia is associated with distrust-based (but not greed-based) behaviour. Compared to the Two-Choice PDG used in the first study, the Three-Choice PDG-Alt is designed to distinguish between Prisoner's Dilemma choices based on distrust and greed. The current study therefore had the advantage of enabling a comparison of state paranoia levels between distrust-based and greed-based non cooperative decisions.

2.3.6.1 Behavioural Game Theory: Alternative Reasons for Choosing to Withdraw.

The finding that high state paranoia was associated with the selection of a withdrawal choice on the PDG-Alt indicates that high momentary feelings of paranoia about the other player are associated with the decision to select a defensive strategy that guarantees an intermediate outcome for both players which is the rational choice if distrust of the other player is high. Further analysis showing that those who chose to withdraw had significantly higher state paranoia than those who chose to cooperate, strengthens this finding. According to the tenets of traditional game theory, predictions of rational choices can be made on the assumption that players are essentially self serving (Camerer, 2003). However, according to

behavioural game theory psychological factors such as emotion, social preferences, mistakes, limited foresight and learning can all influence the game choices people make (Camerer, 2003). Therefore, before the PDG-Alt paradigm can be recommended as an un-confounded measure of state paranoia, alternative reasons for selecting the withdrawal strategy need to be considered.

It may be argued that the withdrawal choice may also be considered favourable due to its ability to reduce any interdependence and ambiguity from the game. People playing game theoretical tasks have been shown to be predominantly ambiguity adverse (Camerer & Weber, 1992; Camerer & Karjarlainen, 1994). Alternatively, it can be argued that the PDG-Alt is ambiguous is a central strength which enables it to be used as a potential behavioural indicator of paranoia, as perceptions of threat and intention to harm (i.e. paranoia) were evident in the absence of clear evidence (i.e. no information about the opponent was given, and participants didn't know their opponents' choice at the time they completed the state paranoia measure). By enabling a controlled ambiguity condition the PDG-Alt overcomes the difficulty of establishing the unfounded nature of paranoia apparent within self-report measures.

As well as the possibility of an ambiguity-minimising tactic, it might also be argued that people would choose to withdraw because they are risk averse. However this explanation is unlikely as the current study found no significant correlation between a measure of risk aversion and the choice to withdraw. Furthermore, no significant difference in risk aversion between those who chose to withdraw, cooperate or compete was found. Another potential reason for selecting the withdrawal option is that it is cognitively 'cheap' and requires very little estimation of potential payoffs to be calculated (i.e. each player always receives the same amount). It has been shown that the ability to assess another's intentions is related to

strategic play within game theoretical tasks (Sanfey, 2000). Further, individuals with theory of mind deficits have been shown to have difficulty shifting strategies in a standard Two-Choice PDG (Sally et al., 2006). It is therefore reasonable to question whether levels of cognitive ability and theory of mind capabilities influence the decision to select withdrawal. However, some account was taken of these possibilities in the design of this study, since all players had to successfully complete a comprehension task before playing the game, thus demonstrating that participants' cognitive abilities were sufficient to understand the potential outcomes of different strategies within the PDG-Alt. Therefore, by controlling ambiguity, accounting for risk aversion and providing a test of understanding of the PDG-Alt, the current study is able to demonstrate that the withdrawal choice within the PDG-Alt represents an index of paranoia concerning the intentions of the other player.

2.4 General Discussion

The aim of the current studies was to examine if the PDG could be used as an experimental paradigm to explore paranoia in nonclinical groups, and crucially one that might address Freeman al's (2008c, p. 263) observation that "no other markers of this experience are available" beyond self-report measures. These studies offer initial evaluation of the possibility that choice on the PDG-Alt might be a behavioural marker of paranoia.

The initial hypothesis was that high levels of both state and trait paranoia would be associated with competition. Both studies found a significant relationship between state paranoia and choice on the PDG and PDG-Alt, but did not find a significant relationship between trait paranoia and choice in nonclinical samples. Study 1 found an association between state paranoia and competitive choice in both undergraduate students and the general population, using two recruitment methods. In Study 2, the Three-Choice PDG-Alt was used to disentangle

the motives of fear and greed, and results indicated that higher state paranoia was associated with (distrust-based) withdrawal and not with (greed-based) competition. Overall, the withdrawal choice in the PDG-Alt seemed to provide the clearest behavioural indicator of state paranoia, in that state paranoia was positively associated with the action of selecting the distrust based withdrawal strategy. Furthermore, this relationship was replicated using a modified uni-dimensional version of the State Paranoia Scale. Therefore, the PDG-Alt is recommended for use in future research.

2.4.1 Trust, Distrust & Paranoia

The findings of the current series of studies raise issues around the constructs of distrust, trust and paranoia in nonclinical groups. The constructs of trust and distrust are implicit in the nature of the PDG and have been widely studied within the field of behavioural game theory (Camerer, 2003). Individuals with a high degree of trust in others have been shown to be significantly more likely to cooperate in game theoretical tasks than those with a low degree of trust (Parks & Hubert, 1995). Further, within the field of mental health, reduced trust levels have been found among patients with borderline personality disorder in game theoretical tasks such as public goods games (Unoka et al., 2009). Additionally cooperation has found to be greater among both groups and individual participants with high levels of trust in the other player(s) on a Three-Choice PDG –Alt (Insko et al., 2005).

Although there is a lack of empirical investigation into the nature of the relationship between distrust and nonclinical paranoia it is reasonable to view them as related but independent constructs. Paranoia by definition contains an element of distrusting others, it can however be said that distrust can exist without paranoia; one may consider another to be untrustworthy without assuming hostility (for example one may consider them to be incompetent or self serving). A novel contribution of the current studies is that they directly investigate state

paranoia and current concerns regarding the deliberate hostility of others from within the Prisoner's Dilemma paradigm. By introducing Game Theoretical Tasks such as the Prisoner's Dilemma to the study of paranoia, the current studies use constructs relevant to clinical psychology, such as distrust and greed, to illuminate behaviour.

2.4.2 Current Findings and PDG Literature

Previous studies using the Prisoner's Dilemma paradigm have investigated fundamental differences between players who compete with those who cooperate. A large body of work has used the PDG to study intergroup vs. interindividual interactions and results show that groups are more competitive than individuals (Insko et al., 1990; 1993, 1994, 1998, 2001; McCallum et al., 1985; Schopler et al., 1993; 1994; 1995; 2001). Previous research using the PDG-Alt in group vs. individual interactions has shown that groups are also more likely to withdraw than individuals (Schopler et al., 1993; 1995; Insko et al., 1993). Specifically, distrust of the other player is greater, and withdrawal more frequent, when people are playing a group of others acting collectively rather than an individual (Wildschut et al., 2003). The findings of the current study demonstrate that individuals with high state paranoia are also more likely to compete in a Two-Choice PDG and withdraw in a Three-Choice PDG-Alt. Intriguingly, paranoia in clinical samples is commonly about more than one person (Green et al., 2006). However this observation remains untested in nonclinical groups. Given that paranoia is commonly about groups in a clinical sample Studies 1 and 2 pose a tentative yet interesting question; would state paranoia and competition (Two-Choice PDG) and withdrawal (PDG-Alt) be higher when playing against a group rather than an individual? One possible direction for future research would be to investigate individual levels of nonclinical paranoia in both individual and group opponent Prisoner's Dilemma Games. Is it in the context of interactions with groups of others that people become particularly suspicious and likely to select the withdrawal choice? A

study which assesses both state paranoia in individuals playing a group and those playing other individual players and choices in a Three-Choice Prisoner Dilemma Game (PDG-Alt) may establish if state paranoia plays a role in observed differences between individual and group behaviour in the PDG.

2.4.3 PDG and Nonclinical Paranoia

In both studies trait paranoia (PS) was not associated with choice on the Prisoner's Dilemma Game. This result was initially surprising considering that state paranoia (SPS) and trait paranoia (PS) were correlated in both studies and that state paranoia was consistently correlated with choice on the PDG. When interpreting this lack of correlation between trait paranoia and game choice it is important to consider that aspects of the trait paranoia measure may be problematic. Fenigstein & Venable contend that self-consciousness, directly contributes to "the paranoid misperception of others' behaviours as being directed or targeted toward the self" (Fenigstein & Venable, 1992, p. 130) due to this approach items within the paranoia scale assess public self-consciousness (i.e. I am bothered by people outside, in cars, in stores, etc. watching me). Although self focused attention has been shown to be related to nonclinical paranoia (Ellett & Chadwick, 2007; Fenigstein & Venable, 1992; Fenigstein, 1995), it may be argued that they are two distinct constructs. It is therefore plausible that items within the paranoia scale would not be associated with the choice to withdraw on a PDG-Alt as fear of the other players' intentions rather than general levels of public self consciousness was the motivating factor.

In addition the paranoia scale provides an overall score of an individuals' propensity to paranoid thoughts. It does not however assess dimensional aspects of paranoia. It has been argued that paranoia is best viewed not as a single entity which is either present or absent but as multidimensional phenomenon (Chadwick & Lowe, 1994; Whaley, 1999; Haddock, et al.,

1999). Therefore, an alternative measure of trait paranoia such as Freeman's (2005b) paranoia checklist, a multi-dimensional measure of paranoid ideation that assesses the frequency and degree of both conviction, and distress is suggested for future study. Should an association be found between dimensions of paranoid ideation, and choice on the PDG, this would further establish choice in the PDG-Alt (i.e. withdrawal) as a behavioural marker of nonclinical paranoia. The conclusions of the two experimental studies are consistent with a growing body of research showing paranoia to be common in the general population (Fenigstein & Venable, 1992; Ellett et al., 2003; 2007 Bodner & Mikulincer, 1998; Freeman et al., 2003, 2005b).

Paranoid cognitions have been found to be induced under several conditions; when the focus of attention is on a 'threatening agent' in personal failure tasks (Bodner & Mikulincer, 1998), in everyday experiences which are open to misinterpretation such as a persons' facial expressions (Freeman et al., 2008c), or due to unusual internal experiences (Maher, 1974; 1988; 2003). The current studies allow another condition to be added to this list; being faced with a choice on a PDG against an unknown player. It may be suggested that it is this uncertainty that triggers a temporary paranoid response in certain individuals. Indeed uncertainty or ambiguity has previously been shown to trigger a paranoid response in nonclinical individuals (Ellett & Chadwick, 2007) However, the current study does not test whether this increase in state paranoia is due to either the lack of knowledge about the other player (ambiguity) or being put in a position where the achievement of maximum pay-off is dependent on that persons' choices (interdependence) or a combination of the two.

Further study that specifically addresses this aspect of uncertainty within a Prisoner's Dilemma Game would assess if interdependence or ambiguity are primary or interacting factors. One potential way of studying this would be to assess state paranoia levels within a Prisoner's Dilemma Game among two groups of participants; those that are allowed to communicate prior to making their game decision and those that are not. Communication has previously

been shown to increase individual cooperation in a Three-Choice PDG (Insko et al., 1993). In the proposed study, those that are allowed to communicate would have some prior knowledge of their game partner before they make their choice, they may still be unsure as to the game choice their partner will make, but comparing these scores to the no communication group would test if ambiguity alone has any effect on state paranoia or choice.

2.4.4 PDG-Alt as a Research Paradigm for Nonclinical paranoia

Based on the results of Study 2, the PDG-Alt appears to be a promising third experimental paradigm for evaluation of nonclinical state paranoia. It is both cost effective and easy to administer without the use of specialist equipment. It captures three key qualities that are at the heart of paranoia, it is interpersonal, it concerns threat, and it concerns the perception of others' intentions towards the self. It also embraces uncertainty, a variable found to trigger nonclinical paranoia in experimental settings (Ellett & Chadwick, 2007). That is, at the time of choosing how to behave in the PDG-Alt paradigm, the opponents' choice is unknown and one is vulnerable to exploitation.

Within the PDG-Alt paradigm the importance of the interpersonal nature of paranoia is clearly demonstrated. Direct observation of interpersonal behaviour is rare and difficult to obtain, one main advantage of the PDG is that it can provide a simulation of an interpersonal interaction (Rodebaugh, Klein, Yarkani & Langer, 2011). Thus unlike previous self report and experimental paradigms, the PDG-Alt constructs a clear interpersonal interaction. As a result the state paranoia measure administered within this paradigm does not therefore assess general levels of paranoia, but 'in game' paranoia about a specific other unknown person. In addition the measure provides further clarification of the definition of paranoia, i.e. that threat and intention to harm occur, but do so in the absence of clear evidence. To reiterate, within the PDG context, participants have no knowledge of, or direct contact with, their

opponent. Therefore, the resulting paranoia is intrinsically unfounded and can only be present in the absence of clear evidence. This facet of the paradigm overcomes difficulties with both self-report and some alternative experimental measures, in which the issue of falsity is more difficult to establish. Finally, the PDG paradigm has an important advantage of yielding a behavioural indicator of paranoia (distrust-based withdrawal) to complement existing self-report measures.

2.4.5 Limitations

It is important to consider the results from the present two studies within the context of their limitations. Firstly a potential limitation of the current study is that the state paranoia measure used (SPS) is a novel measure developed specifically in order to assess paranoia within a PDG. However, the SPS was significantly correlated with Fenigstien's paranoia scale in both studies ($r = .25$, $r = .24$ respectively). Freeman (2007) has reported comparable correlations in student groups with the 'State Social Paranoia Scale' (an alternative state paranoia measure) and trait measures, such as Green's Paranoid Thought Scale ($r = .24$) and Fenigstien's Paranoia Scale ($r = .31$). Furthermore, the SPS closely follows the criteria within Freeman and Garety's definition of paranoia. In containing items that assess feelings that another player they have never met before wants to harm, upset, is hostile or has it in for them, it goes beyond measuring a general distrust of the other player and clearly assesses the belief of intentional harm, in an ambiguous condition.

A second potential methodological limitation of the current studies is the timing of the state paranoia measure within the experimental procedure. Having the state paranoia measure presented after participants' game choice was made, but before the outcome of the game was revealed was crucial in determining that a condition of ambiguity and vulnerability was present. However, a consequence of this timing is that whether high state paranoia is a cause

or a consequence of game choice remains untested in Studies 1 and 2. Yet, the finding that high state paranoia was positively correlated with withdrawal and not competition suggests that it is state paranoia that leads to choice and not the other way around. Within the PDG-Alt paradigm, withdrawal is the logical option if state paranoia is high and competition would only be rational if one was expecting the other player to cooperate. Therefore unsurprisingly, withdrawal and not competition was found to be associated with high state paranoia.

However, a suggestion for future study would be to alter the timing of the state paranoia measure and to present the questionnaire before the participant makes their game choice. Such a study would enable any predicative relationship between state paranoia and game choice to be investigated. Establishing whether state paranoia can predict withdrawal would strengthen the proposal that PDG-Alt may be used as a behavioural indicator of nonclinical paranoia.

Previous studies have used repeated trials of the PDG in order to increase reliability (Sedikides et al., 1998). By contrast; the current studies do not assess the PDG-Alt as an independent measure of state paranoia, thus the need to establish test-retest reliability is not a central issue within these studies. Additionally, using only one trial may be considered a strength of the current studies in that it enabled an accurate snapshot of individual state paranoia whilst in the stage of ambiguity between making the game choice and discovering the other players' choice. Including further trials after the game outcome was known may result in a complex series of responses that simply reflect the strategy that the other player had chosen. One solution to this potential problem would be to have players play more than one round of the PDG against different opponents. Participants may be asked to complete a state paranoia measure several times with instructions to consider the intentions of a new opponent. By ensuring the measure was completed before participants knew the outcome of each game such a study may provide a repeated measure of both choice and state paranoia within a

series of one shot games. If such a repeated measures design was used in future study it would lend itself well to the online procedure presented within Study 1.

One further limitation of the current studies is that they include relatively few measures. Study 1 contains the three variables of game choice, trait and state paranoia; in Study 2 a measure of risk aversion is included. Although gender, age, and in the case of Study 1, employment status were measured, many other potential individual differences within the sample were not assessed. In order to address the question of why some individuals and not others experience high momentary paranoia when faced with a PDG, measures of distrust (The Interpersonal Trust Scale, Rotter, 1967; 1971; 1980), social anxiety (The Brief Fear of Negative Evaluation Scale, Leary, 1983) depression, (Beck Depression Inventory -II, 1996) and self esteem (Rosenberg's Self Esteem Scale, 1989) may be included in future studies. Development and use of trait measures of paranoia other than the Paranoia Scale might also be required.

2.4.5.1 Rational for Assessing Distrust, Social Anxiety, Depression and Self Esteem in Future PDG Studies

The construct of distrust is intrinsic within the PDG and levels of trust have been shown to influence game choice (Parks & Hubert, 1995; Unoka et al., 2009; Insko et al., 2005). When considering that distrust and paranoia are related concepts it is evident that further study is necessary to explore any potential moderating factor trust plays in the relationship between paranoia and game choice. Additionally, social anxiety and state paranoia have been shown to share many of the same predictive factors within a nonclinical population (Freeman et al., 2008b). Furthermore, social anxiety has been shown to lead to constrained reciprocity in relation to the other players' cooperation within iterated Prisoner's Dilemma Games (Rodebaugh et al., 2011). Therefore, assessing whether levels of social anxiety predict game choice within the PDG-Alt may be a fruitful avenue for further research. Similarly, paranoia is

consistently found to be associated with lower self esteem and higher depression (Ellett et al., 2003; Freeman et al., 2005a; Fowler et al., 2006b; Johns et al., 2004; Martin & Penn, 2001; McKay, Langdon & Coltheart, 2005b). Self deception (a psychological act in which one thought or belief about our own intentions or the intentions of others is held at the expense of another) has been shown to be associated with greater cooperation in PDG (Surbey & McNally, 1997). Intriguingly, previous research has shown the ability to self deceive to be lacking in depressed individuals (Abramson & Martin, 1981; Sackeim, 1983). Thus depression has been linked to both higher levels of paranoia within nonclinical groups and deficits in the ability to self deceive, a factor known to be associated with high likelihood of cooperating within a PDG. Such findings clearly illustrate the need for future research to closely examine the roles of depression, nonclinical paranoia, and the ability to self deceive on game choice within a PDG. One tentative hypothesis is that depressed individuals, due to deficits in their ability to self deceive, are more likely to view others as threatening. Then, by having higher state paranoia when tackling a PDG, these depressed individuals may be less likely to choose to cooperate within a PDG. Future study may measure these factors within a Three-Choice PDG-Alt and conduct a multiple regression analysis to assess the degree to which any of these factors contribute to game choice.

In addition to potential differences in trait measures, the possibility that individual differences in current emotional states may have existed cannot be ruled out. Current momentary emotional experiences such as high anxiety and depression, and low self esteem have all been implicated in the onset and duration of a current paranoid state in both clinical and nonclinical individuals (Thewissen et al., 2008; 2011). These factors may therefore be assessed in future study of the PDG paradigm. When one considers that state and not trait paranoia was associated with game choice, it would be particularly instructive to note if other current

emotional states known to be associated with state paranoia predict both state paranoia and subsequent game choice.

2.4.6 **Clinical Implications**

One particularly important direction for future research is to examine whether the PDG-Alt paradigm might be used as a behavioural indicator of clinical paranoia as well as nonclinical paranoia. However any potential clinical implication is firstly reliant on the association between state paranoia and withdrawal being established in a clinical group. If the results of Study 2 were replicated and further found within a clinical group then a tentative implication may be drawn, namely that a behavioural indicator of current paranoid state may be used alongside self report measures in studies assessing clinically paranoid groups. Further, previous research has shown that paranoia scale (PS) scores are higher among individuals with persecutory delusions when compared with non-patient controls (Craig, Hatton, Craig & Bentall, 2004). It is therefore possible that the non-significant small effect size on trait paranoia and game choice found within the current studies may be greater if the study were to be replicated with a clinical population. Problems with the self report measures of paranoia, such as social desirability and the stigma associated with paranoia (Wahl, 1999) may be more marked among clinical groups. Therefore, a behavioural indication (distrust based withdrawal) of current paranoid state or potentially even trait paranoia may be used alongside current self-report measures of persecutory delusions.

3 Chapter Three – Change in Nonclinical Paranoia

3.1 Introduction

Thus far, two experimental studies conducted within nonclinical populations have been presented. These studies demonstrate an association between increased levels of state paranoia and the choice to compete or withdraw within a Prisoner's Dilemma Game. In assessing levels of both trait and state paranoia in nonclinical groups, the findings presented in previous chapters support the growing body of evidence that paranoid ideation is common in nonclinical populations. The following study sought to better understand the phenomenology of nonclinical paranoia and its relationship to a range of other social and cognitive variables. Additionally, questions regarding the potential for paranoia to change naturalistically in nonclinical groups are addressed. In order to investigate naturalistic change, we examine idiosyncratic accounts of a past paranoid experience and variations in levels of belief conviction, degree of preoccupation, extent of distress and impact on overall well being associated with the experience.

3.1.1 The Persistence of Nonclinical Paranoia

In addition to its prevalence, the perseverance of paranoia has been observed nonclinical groups. In an experimental study using a sample of university students Ellett & Chadwick (2007) found environmental conditions, such as high self awareness and task failure could trigger an increase in levels of paranoia. However, once activated the removal of the same environmental triggers did not produce a comparable deactivation of paranoia. Once levels of paranoia were raised they appeared stable, even after the experimental conditions that triggered the paranoid state were reversed (Ellett & Chadwick, 2007). In recognising that nonclinical paranoia is both common and persistent, one is central question is raised; why isn't

everyone constantly paranoid? If the participants within Ellett and Chadwick's (2007) study had been retested hours, days or even weeks later, would the observed raised levels of paranoia have eventually subsided? Put simply; Do levels of paranoia change naturalistically within nonclinical groups? This question is the focus of the next two chapters within the thesis.

3.1.2 Ruminati0n

Freeman sees anxiety as key to understanding paranoia (Freeman et al., 2008a). Therefore, studying anxiety related processes, such as rumination can provide important information on the development and maintenance of paranoid thinking. Rumination has been defined as a 'repetitive form of thinking in which one ponders about oneself and possible causes, meanings and implications of one's sad and depressed feelings' (Nolen-Hoeksema, Wisco & Lyubomirsky 2008). There is a wealth of evidence that rumination exacerbates depression (Nolen-Hoeksema, 2000, Nolen-Hoeksema et al., 1999, Nolen-Hoeksema et al., 1993), enhances negative thinking (Lyubomirsky et al., 1998, McFarland & Buehler, 1998, Pyszczynski, Hamilton, Herring, & Greenberg, 1989), impairs problem solving (Lyubomirsky et al., 1999), interferes with constructive behaviour (Lyubomirsky & Nolen-Hoeksema, 1993), and erodes social support (Nolen-Hoeksema & Davis, 1999). Rumination has also been shown to be associated with other psychopathologies such as anxiety (Fritz, 1999, Noleen-Hoeksema, 2000, Abbott & Rapee, 2004) binge drinking (Noleen-Hoeksema & Harrell, 2002, Noleen-Hoeksema & Larson, 1999), and self harm (Hilt, Cha & Noleen-Hoeksema, 2008). However, to date no association between paranoid ideation and tendency to engage in ruminative thoughts has been examined in a nonclinical sample.

Paranoid beliefs among normal populations have been associated with, low self esteem (Ellett and Chadwick, 2003), greater depression (Zigler and Glick, 1988), social anxiety (Freeman et al., 2003, 2005a). The current study will therefore assess levels of trait paranoia, self esteem,

social anxiety and depression in order to investigate potential relationships between these constructs in a student sample. However, by assessing any possible association between rumination and paranoia, this study aims to add to this area by including rumination as a further repetitive negative thinking style that may play a role in the occurrence and persistence of paranoid thoughts.

3.1.3 **Personal Experiences of Paranoia**

The current study examines subjective experiences of paranoia in a nonclinical population. Previous research into personal experiences of paranoia has relied on questionnaire data to assess the cognitive, behavioural and affective components of paranoid experience within a sample of college students (Ellett, Lopes & Chadwick, 2003). Ellett et al. (2003) established that paranoia is preoccupying, has a negative impact on subjective sense of well being, and is often accompanied by feelings of anger, frustration and powerlessness. Trait paranoia was found to be higher among those who reported a paranoid experience. Additionally they found that the majority of participants reported no change in their beliefs about the event.

Following Ellett et al. (2003) the current study will also assess idiosyncratic paranoid experiences. These experiences will be assessed along several affective and cognitive dimensions. In addition to levels of preoccupation and overall impact on well being, the current study will assess the extent of distress caused by the experience and the level of belief conviction, dimensions known to be important in clinical paranoia (Chadwick & Lowe, 1994; Haddock et al., 1999). Freeman, Garety & Fowler (2008a) have listed these four dimensions of the paranoid experience as central to our understanding of persecutory delusions. By employing a multi-dimensional approach the current study measures change in response to a paranoid experience over time in a nonclinical group, an approach that has been shown to be

both a reliable and valid method for monitoring changes in the severity of psychotic symptoms (Haddock et al., 1999).

3.1.4 Experimental Changes in Paranoia

Recent studies have begun to go beyond establishing the prevalence of paranoia in normal populations and have examined it experimentally. In order to assess the impact of possible causal factors on paranoid thinking, measures of state paranoia such as the 'State Social Paranoia Scale' (Freeman et al., 2007), and the 'Paranoia and Depression scale' (Bodner & Mikulincer, 1998), have been used to assess momentary paranoid states in nonclinical groups following experimental manipulations (Freeman et al., 2007, 2008c & 2010; Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007). Implicit in the use of such state measures is the notion that paranoid thoughts and feelings are changeable and sensitive to recent events and experiences.

Experimental studies using the virtual reality paradigm have compared trait measures, including the Green et al. (2008) Paranoid Thoughts scale, taken prior to the experiment, with scores on the 'State Social Paranoia Scale', taken after participants had experienced a controlled virtual reality environment (Freeman et al., 2007; 2008c; 2010). However, as state paranoia measures were not taken prior to the experiment; no direct comparisons of changes in state paranoia were made. Additionally potential differences between the groups in state paranoia prior to entering the virtual reality environment were therefore not considered. Consequently, although Freeman's studies assess paranoia as a dynamic and variable entity, they do not directly assess change.

The few previous studies that directly investigate change in nonclinical paranoia predominantly assess increases in paranoid states following experimental manipulations

(Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007; Green, et al., 2011) and have produced mixed findings. Bodner and Mikulincer (1998) found increases in state paranoia following experimental manipulations. Whereas, Ellett and Chadwick (2007) found stable increases when manipulating levels of self awareness, and Green et al.(2011) found no change in response to experimental ambiguous events. One potential explanation for the discrepancies in these findings may be found by considering the methodological differences between them. Both Ellett & Chadwick (2007) and Bodner & Mikulincer (1998) found increases in paranoia in response to a combination of factors. Ellett & Chadwick discovered that ambiguous feedback within a task could produce a paranoid response when combined with high self awareness and Bodner & Mikulincer (1998) found that task failure and low self awareness produced paranoid responses. By comparison, Green et al. (2011) used only an ambiguous condition, and concluded that the lack of statistically significant increases in state paranoia provides evidence that the experimental events were ambiguous and non-hostile. To date no published work has investigated *reductions* in paranoia among a nonclinical group.

The experimental studies discussed above examine change by assessing differences in repeated measures of overall current feelings of paranoia in response to experimental manipulations. Additionally within experimental studies to date, the emphasis of enquiry is on factors that increase paranoid states. Although such studies can provide useful information on factors that may trigger or buffer increases in paranoia, little is known how paranoia reduces naturalistically among nonclinical groups. Paranoia has been shown to be common among the general population (Ellett, Lopes & Chadwick, 2003; Freeman, 2006; Freeman et al., 2005b; Johns et al., 2004; Peters, Joseph & Garety, 1999; Verdoux et al., 1998; Freeman et al., 2011), yet the vast majority of people do not go on to develop any psychopathology. Research which investigates how nonclinical groups deal with, and recover from, paranoid experiences will

provide useful insights into factors that may play a role in keeping individuals within the nonclinical domain.

3.1.5 Naturalistic Changes in Paranoia

Two studies that investigate naturalistic changes in paranoia and self esteem in both clinical and nonclinical groups were performed by Thewissen et al. (2008; 2011). Using the experience sampling method Thewissen and colleagues assessed fluctuations in self esteem over a six day period, between two separate time points. Findings indicated that fluctuations in self esteem can predict both the degree and duration of subsequent paranoid episodes (Thewissen et al., 2008; 2011). Although Thewissen and colleagues explored some of the dynamic aspects of paranoia by assessing the relationship between daily fluctuations in self esteem and state paranoia, the temporal relationship between changes in self esteem and state paranoia was examined by calculating changes in self esteem between two time points and comparing these scores to one measure of state paranoia at one of those time points. Thewissen et al. (2008; 2011) therefore do not directly investigate fluctuations in state paranoia per se. The focus of the studies was on emotional factors that predict the onset and duration of paranoid episodes. The actual degree of change and the underlying reasons for change were however not examined.

3.2 The Current Study

Two important points remain untested in previous studies of nonclinical paranoid experience. Firstly, the use of alternative methodologies to assess paranoid experiences in nonclinical groups is unexplored. Previous research into this area has predominantly relied on questionnaire data to assess paranoid experiences. By using a structured interview technique the current study provides several advantages over previous questionnaire based research; it

allows the validity of responses to be checked, it provides the opportunity to clarify questions, and to include further questions in instances where participants' responses are ambiguous or unclear. Secondly, the current study builds on previous research by measuring cognitive and affective responses to the paranoid experience at two time points, a retrospective recall of feelings at the time of the event and again at the time of interview. Therefore, a novel aspect of this study is that it will allow a comparison to be made between retrospective and current responses to a particular paranoid experience. By comparing responses at two separate time points this study will provide a preliminary insight into levels of change (or lack of change) in nonclinical paranoia. In assessing retrospective accounts of paranoid experiences, the current study relies on the long term autobiographical memories of negative events. The recall of autobiographical memories have been shown to have good test-retest reliability over periods of up to 20 years (Wilhelm et al., 2004). Further, memories for core autobiographical facts have been found to be highly consistent over a 40 year period (Field, 1981).

The current study addresses five main research questions:

1. Are there any associations between levels of trait paranoia, depression, self esteem, social anxiety and rumination in a nonclinical sample?
2. Do individuals who report a paranoid experience differ from those that do not, on a range of cognitive and clinical constructs, including trait paranoia, self esteem, depression, social anxiety and rumination?
3. Over what time periods are nonclinical paranoid experiences recalled?
4. How do individuals rate levels of preoccupation, distress, impact and conviction, in relation to a single paranoid experience at the time of its occurrence?

5. Do current ratings of the four dimensions significantly differ from retrospective ratings of the paranoid experience at the time of its occurrence?

3.3 Method

3.3.1 Participants:

A total of 75 students from a British University (23 men and 52 women) age 18 to 51 (mean age 24.1, SD 7.084) were recruited through a paid research participation scheme. Inclusion criteria were as follows: (1) participants must be English speakers, (2) aged 18 years or above, (3) be current students at a British university, (4) be able to report a paranoid experience that met Freeman and Garety's (2000) definitional criteria and (5) clearly state that they felt that harm was intentional (i.e. participants with high conviction) . Exclusion criteria included self reported diagnosis or treatment of a mental health problem. All participants approached agreed to take part in the study. The project received ethical approval from Royal Holloway Departmental Ethics Committee (code: 2009/044) prior to the commencement of the study. All participants read an information sheet summarising the broad aims of the project and gave initial written informed consent.

3.3.2 Power Analysis:

An a priori power analysis was conducted to determine the number of participants required for the current study. The conventional levels of $\alpha = 0.05$ and power = 0.8 were used for this analysis (Cohen, 1988). Published data from a similar study (Martin & Penn, 2001) were used to calculate the predicted effect size for the current study. Correlations between nonclinical paranoia and the constructs of interest, have been reported for depression ($r = .50$) and social anxiety ($r = .36$) (Martin & Penn, 2001), indicating a pooled medium effect size (Cohen, 1992). As a new comparison, no data was available for a possible association between paranoia and

rumination. Therefore, with power set to 0.8 and α at 0.05 with a medium effect size, a necessary sample size of 80 was required.

3.3.3 Measures:

Paranoia Scale (Fenigstein & Vanable, 1992).

The paranoia scale (PS) is a 20-item measure developed to assess paranoia in nonclinical samples. It is one of the most widely used measures of nonclinical paranoia, and the authors report sound reliability and validity data (Fenigstein and Vanable, 1992). For the current study the PS showed good internal consistency ($\alpha=.88$).

Rosenberg Self Esteem Scale (1965).

The Rosenberg Self-Esteem Scale (RSES) is a 10 item uni-dimensional measure of global self-esteem. This measure is well established and has been used to assess trait self esteem in several studies of nonclinical paranoia (Martin and Penn, 2001; Ellett, et al., 2003; Fowler et al., 2006b). The scale consists of five positive and five negative items. Items are scored on a 4-point scale ranging from “strongly agree” to “strongly disagree”. An example item is “I feel that I am a person of worth, at least on an equal plane with others.” It has been shown to have a good internal consistency, $\alpha= .85$ (Rosenberg, 1965). Additionally a test-retest correlation of .82 has been reported (Fleming & Courtney, 1984). The current study found the RSES to have an alpha of .89.

Beck Depression Inventory-2 (Beck, Steer & Brown, 1996)

The Beck Depression inventory- 2 (BDI-2) is a 21 item scale that measures the severity of depressive symptoms. Each item measures a symptom of depression on a four point severity scale ranging from 0 to 3, with total scores ranging from 0 to 63. The standard cut-offs are 0 –

13 for minimal depression, 14 -19 for mild depression, 20 – 28 for moderate depression and 29 – 63 for severe depression. Higher scores indicate increased severity of depressive symptoms. The BDI-2 is a widely used measure of depression. It has been shown to have good convergent validity, and is positively correlated with the Hamilton Depression Rating Scale ($r = .71$) (Beck, Steer & Brown, 1996). A test- retest correlation of .93 has been reported (Beck et al., 1996). The authors also report excellent internal consistency, $\alpha = .91$.

Brief Fear of Negative Evaluation Scale (Leary, 1983)

The Brief Fear of Negative Evaluation Scale (BFNE) is a 12 item measure that assesses various dimensions of social-evaluative anxiety. Responses are based on a 5-point Likert scale ranging from 1 “not at all characteristic of me” to 5 “extremely characteristic of me”, with total scores ranging from 12 to 60. The BFNE has been shown to have good internal consistency, $\alpha = .97$ and a test-retest correlation of .94 (Collins et al, 2005). The reliability of the BFNE has been established using nonclinical samples. A high level of internal consistency $\alpha=.90$, and a test-retest correlation of .75 was found over a 4-week interval (Leary, 1983). The current study found the BFNE to have excellent internal consistency ($\alpha =.93$).

Ruminative Response Scale (Nolen-Hoeksema & Morrow, 1991)

The ruminative response scale (RRS) is a 22 item measure assessing how often participants engage in responses to feeling sad or depressed. It measures responses to depressed mood that are self focused, symptom focused, and focused on the possible causes and consequences of depressed mood. Each item is rated on a Likert scale ranging from 1 “almost never” to 4 “almost always”. The measure has been found to have excellent internal consistency, $\alpha =.90$, and a test-retest correlation of .67 (Noleen-Hoeksema, 2000). Previous studies have reported acceptable convergent and predictive validity for the measure (Butler & Noleen-Hoeksema,

1994; Nolen-Hoeksema & Morrow, 1991). The current study found the RRS to have excellent internal consistency ($\alpha = .90$).

Interview Schedule

All participants were first asked “have you ever felt that someone was trying to harm you”. All participants that answered yes to this question were then asked to describe a paranoid experience. If these experiences clearly contained the belief that harm was intentional and did not contain objective evidence that harm had occurred, participants were asked to rate their experience along four dimensions; preoccupation, impact, distress and conviction. Two sets of ratings were taken for each participant: at the time of the occurrence of the event and at the time of the interview. Consistent with previous research in both clinical (Chadwick & Lowe, 1994) and nonclinical (Ellett et al., 2003; Freeman et al., 2005b) groups, all ratings were performed on a five point Likert scale ranging from 1 to 5, with anchor points specific to each dimension. For preoccupation ‘1’ indicated that they ‘never thought about it’ and ‘5’ that they ‘thought about it all the time’. For distress ‘1’ signalled that they ‘weren’t at all distressed or upset about it’ and ‘5’ reflected that they were ‘extremely distressed by it’. For impact ‘1’ indicated it did not have ‘any impact at all on overall well being’ and ‘5’ indicated that ‘it had a massive impact on overall well-being’.

However when rating conviction, the lower anchor point differed from the other three dimensions in that ‘1’ indicated they were ‘unsure of the persecutors’ intention’. The lower anchor point was limited to ‘uncertainty’ as a degree of surety had already been assessed when events were originally screened for belief of a deliberate intent to harm (see Figure 3). In accordance with the definition of paranoia provided by Freeman & Garety (2000), only examples that contained sufficient evidence of ‘belief that harm has occurred or was going to occur and that the persecutor intended to cause harm’ were included in this stage of the

study. This belief of intention was assessed by enquiring whether participants had at any point believed that the incident they described was a deliberate and intentional attempt to cause them harm.

3.3.4 Procedure

Participants were initially told they were taking part in a study regarding 'personality type and learning style' where they would complete a set of questionnaires assessing 'general thoughts and feelings' and would then be asked to take part in an interview regarding a particular personal experience. All participants read an information sheet summarising the broad aims of the project and gave initial written informed consent.

Participants completed five questionnaires in the same order: Paranoia Scale, Rosenberg's Self Esteem Scale, Beck's Depression Inventory-2, Brief Fear of Negative Evaluation Scale and Ruminative Response Scale. On completion of all questionnaires participants took part in a structured interview, where they were asked if they had ever had 'the feeling that someone was deliberately trying to harm them'. With participants' full consent, all interviews were audio recorded. Participants who could not recall such an experience, were thanked for their time, paid in full, debriefed and left the study at this stage. Participants who could recall a specific example were asked to describe an incident where they 'felt' harm was occurring or about to occur, but where no objective evidence of harm was apparent (i.e. someone being hit). In instances where the initial response contained a clear case of actual harm occurring, participants were asked for a further example where they felt that someone was deliberately trying to harm them, but had no firm evidence that this was the case at the time of the incident occurring. Additionally it was made clear to all participants that 'harm' could include emotional hurt as well as physical or other forms of harm (Freeman & Garety, 2000). If further clarification was sought examples of relevant instances were provided, for example thinking

that an examiner gave them a bad mark in order to get at them, having the feeling that people were talking negatively about them, or plotting against them.

After initial responses were obtained, the description of the event that participants presented underwent a paranoia check. Consistent with Freeman and Garety's (2000) definition of paranoia, the belief that the persecutor intended to cause harm was assessed by asking participants if at some point they felt that the persecutor(s) within this event actively meant to harm or upset them.

If this experience had been assessed by the interviewer as containing sufficient evidence to be considered paranoid, participants entered the next stage of the interview (see Figure 3). Those whose descriptions did not contain sufficient evidence of paranoia were thanked for their time, debriefed, paid in full and dismissed at this stage of the study. Participants who did volunteer a paranoid experience were firstly asked how long ago the incident occurred. The degree of preoccupation, distress and impact on overall well being and conviction that harm was deliberate; both at the time of the event and at the time of interview were assessed. All ratings for current feelings about the incident were measured directly after their retrospective feelings on each dimension were assessed and recorded by the interviewer.

At the end of the interview all remaining participants were asked if they wished to take part in a further study where the reasons for any potential changes in ratings between the time of the event happening and the time of the interview were discussed. This study is discussed in detail in Chapter 4. After the study was completed all participants were thanked for their time, fully debriefed, and paid the sum of £5.00. All audio recordings were manually transcribed by one researcher.

3.4 Results

3.4.1 The Selection of a Paranoid Experience Group.

The processes by which the sample of a 'paranoid experience group' was selected are detailed below.

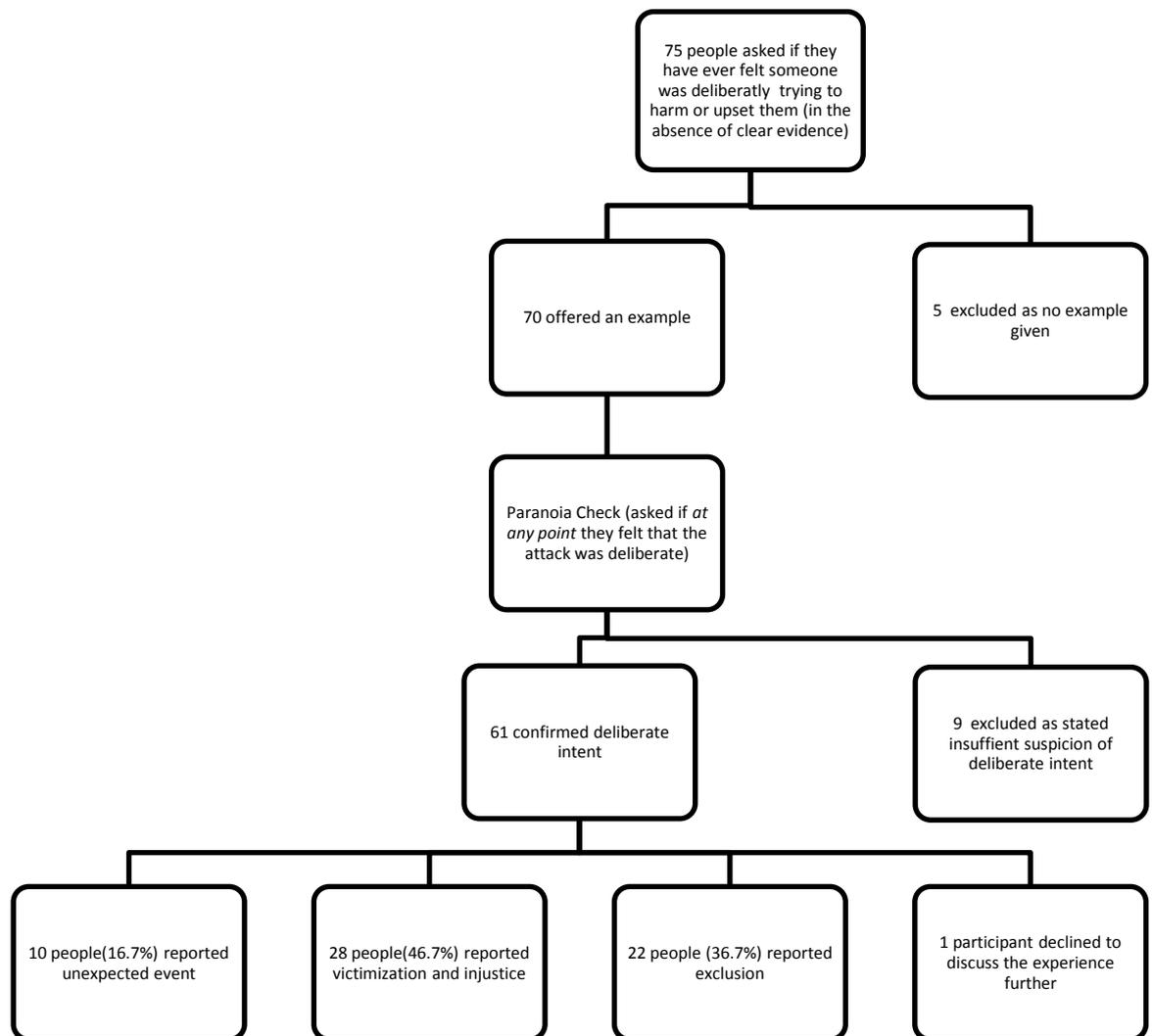


Figure 3, Flow Diagram of Participant Selection

As can be seen in Figure 3, of the total sample of 75, 70 participants initially responded positively to the question 'have you ever felt that someone was trying to harm you?' All 70

participants were asked to describe a single experience when they had this feeling in the absence of clear 'objective' evidence that harm had occurred (i.e. being hit). The paranoia check was then performed by establishing that at some point the interviewee felt that the persecutor(s) within this event actively meant to harm or upset them. At this stage 9 people were excluded from the study as it was clear that although they felt sure harm had occurred at no point did they feel that harm was intentional. This process produced a sample of 61 participants who reported a clear example of a paranoid experience. One participant was removed from the study at this stage due to a reluctance to discuss the experience further, leaving a total sample of 60.

3.4.2 **Overview of Types of Paranoid Experience.**

Taking the categories of types of nonclinical paranoid experience from those reported by Ellett et al.(2003), the examples provided by interviewees were initially classified into one of three categories: unexpected event (n=10), victimisation and injustice (n=28) and exclusion (n=22). The current study found that experiences describing victimisation and injustice were the most commonly reported. Following Ellett et al. (2003), an inter rater reliability calculation was performed on 20 randomly selected participant descriptions (33% of total sample) to ensure reliable assignment of experiences into the three categories. This calculation revealed a kappa value of 0.6, indicating a moderate level of agreement (Landis & Koch, 1977; Fleiss, 1981). The majority of inter rater disagreement was across the distinction between an unexpected event and victimisation. Many experiences discussed within the current study that described an unexpected event contained elements which could be interpreted as victimisation (see Table 10). Due to the lack of clear distinction between these two categories within the current sample they were collapsed into one category 'victimisation event'. A further inter rater

reliability calculation revealed a kappa value of 0.89, indicating a near perfect agreement (Llandis and Loch, 1977).

Table 10, Categories of types of paranoid event:

Type of experience	Characteristics of category	Percentage reported in Ellett, Lopes and Chadwick (2003)	Percentage Reported in Current Study (n=60)	Example 1	Example 2
Unexpected Event*	A single unexpected event interpreted as evidence that the persecutor means to upset them	33/153 21.5%	10/60 16.7%	“This guy at work did something I was supposed to do he was having a snipe at me and saying that I wasn’t doing my job properly.”	“At work this manager made me do something that he knows I don’t like doing, he is trying to make a point.”
Victimisation and Injustice*	A planned, sustained or antagonistic personal attack	72/153 47%	28/60 46.7%	“There was indirect, teasing in a way that I knew was not meant to be friendly.”	“She belittled and undermined me, sly remarks and snide comments, muttering in the background.”
Exclusion	Being deliberately excluded from a group activity	33/153 21.5%	22/60 36.7%	“There were a group of girls and they decided they didn’t like me anymore and I wasn’t allowed to sit at their table.”	“It was friendship group thing. I got on the wrong side of someone and then they started to exclude me. ”

* These categories were collapsed into one category ‘victimisation event’ due to lack of clear distinction between them within the current sample.

3.4.3 Comparisons between Paranoid Experience and Non-Paranoid Groups

A series of t-tests were performed to compare those who reported a paranoid experience (n=61) and those who did not (n=14) on a range of cognitive and clinical constructs. Despite the large differences in sample sizes a parametric test of difference was used as both samples were normally distributed (Gravetter & Wallnau, 2000). A series of Levene's tests were performed to calculate equality of variance between the two groups. Where Levene's test showed that equality of variances could not be assumed an unequal variance test was used (George & Mallery, 2006). Results are summarised in Table 11.

Table 11, A comparison of questionnaire means for participants who reported paranoid experience and those who did not:

Questionnaire Measure	Possible Range	Actual Range	Total Sample Mean (SD)	Published means	Paranoid experience n=61		No paranoid experience n=14		t-test	Sig
					Actual Range	Mean (SD)	Actual Range	Mean (SD)		
Paranoia Scale (PS)	20 - 100	21 – 79	41.20 (11.316)	42.7 (10.2)	23 - 79	42.25 (11.89)	21 - 51	36.64 (6.95)	2.33*	.026
Rosenbergs Self Esteem Scale (RSES)	0 - 30	5- 30	20.20 (5.490)	18.06 ⁴	5 - 28	19.66 (5.31)	12 - 30	22.57 (5.80)	-1.82	.073
Beck’s Depression Inventory (BDI-2)	0 - 63	0 – 45	12.11 (9.080)	21.25	0 - 45	13.31 (9.19)	0 - 23	6.86 (6.52)	2.48	.015
Brief Fear of Negative Evaluation Scale (BFNE)	12 - 60	19 - 60	34.99 (10.830)	28.7(5.9) ⁵	19 - 60	35.85 (11.38)	22 - 44	31.21 (7.10)	1.94*	.062
Ruminative Response Scale (RRS)	22 - 88	24 - 76	46.40 (12.243)	40.19 (10.25) ⁶	25 - 76	47.54 (12.22)	24 - 60	41.43 (11.42)	1.71	.092

* Levene’s test showed equal variances not assumed,

As can be seen from Table 11, those who reported a paranoid experience scored significantly higher on Fenigstien’s Paranoia Scale ($t(73)=2.33, p=.026$) and the Beck Depression Inventory - 2 ($t(73)= 2.48, p=.015$). As might be expected in a nonclinical sample, the mean score on the BDI-2 among both groups was in the minimal depressive symptoms range (6.86 to 13.31).

Although results indicated a trend towards those who reported a paranoid experience scoring more highly on the Ruminative Response Scale ($t(73)= 1.71, , p =.092$), Rosenberg’s Self Esteem Scale ($t(73) =-1.82 p =.073$), and Brief Fear of Negative Evaluation Scale ($t(73)= 1.94, p$

4 Mean taken from Raes and Gucht (2009) using adolescent population

5 Taken from Tavoli et al.(2009) using nonclinical Iranian population

6 Taken from Nolen Hoeksema (2000) respondents without major depression

= .062) than those that did not report a paranoid experience, these differences were not statistically significant.

3.4.4 Correlations between Questionnaire Measures.

Correlational analyses were conducted to investigate possible associations between clinical and cognitive measures within a nonclinical sample; results are shown in Table 12.

Table 12. Correlations between self report measures of paranoia, self esteem, depression, social anxiety and rumination across the entire sample (N=75).

Measures	Paranoia Scale	Self Esteem Scale	Depression Inventory	Negative Evaluation	Ruminative Responses
1. Paranoia Scale					
2. Rosenbergs Self Esteem Scale	-.382(**)	-			
3. Beck's Depression Inventory	.489(**)	.646(**)	-		
4. Brief Fear of Negative Evaluation Scale	.526(**)	.579(**)	.454(**)	-	
5. Ruminative Responses Scale	.465(**)	.558(**)	.628(**)	.348(**)	-

** p<.001

As can be seen from Table 12, paranoid ideation (as measured by the PS) positively correlated with: depression ($r = .489$, $p = .0001$); social anxiety ($r = .526$, $p = .0001$) and rumination ($r = .465$, $p = .0001$), indicating that as paranoia increased, so too did depression, social anxiety and rumination. Additionally a significant negative correlation between paranoid ideation and self esteem was found ($r = -.382$, $p = .001$), indicating that as paranoid ideation increased, levels of self esteem reduced.

3.4.5 How Long Ago Experiences Occurred.

Figure 4 displays the amount of time passed since a particular paranoid event occurred. Due to the unanticipated large time range across which events were recalled, scores were grouped into post-hoc time categories in order to examine the variance of time. These categories are rounded up to the nearest year, such that if the estimate of time given was as an exact year, it would be placed into the upper category (i.e. 2 years exactly is represented in the 2-3 year category). When participants reported events which occurred within the last year their estimations were provided in weeks months or days, however if the event occurred over a year ago all participants approximated time to the nearest year.

A proportion of participants (29%) reported a paranoid experience that occurred within the last year. Results are shown in Figure 4. Forty nine percent of participants reported an experience that occurred over 3 years ago, with 19% reporting an incident that happened over 10 years ago.

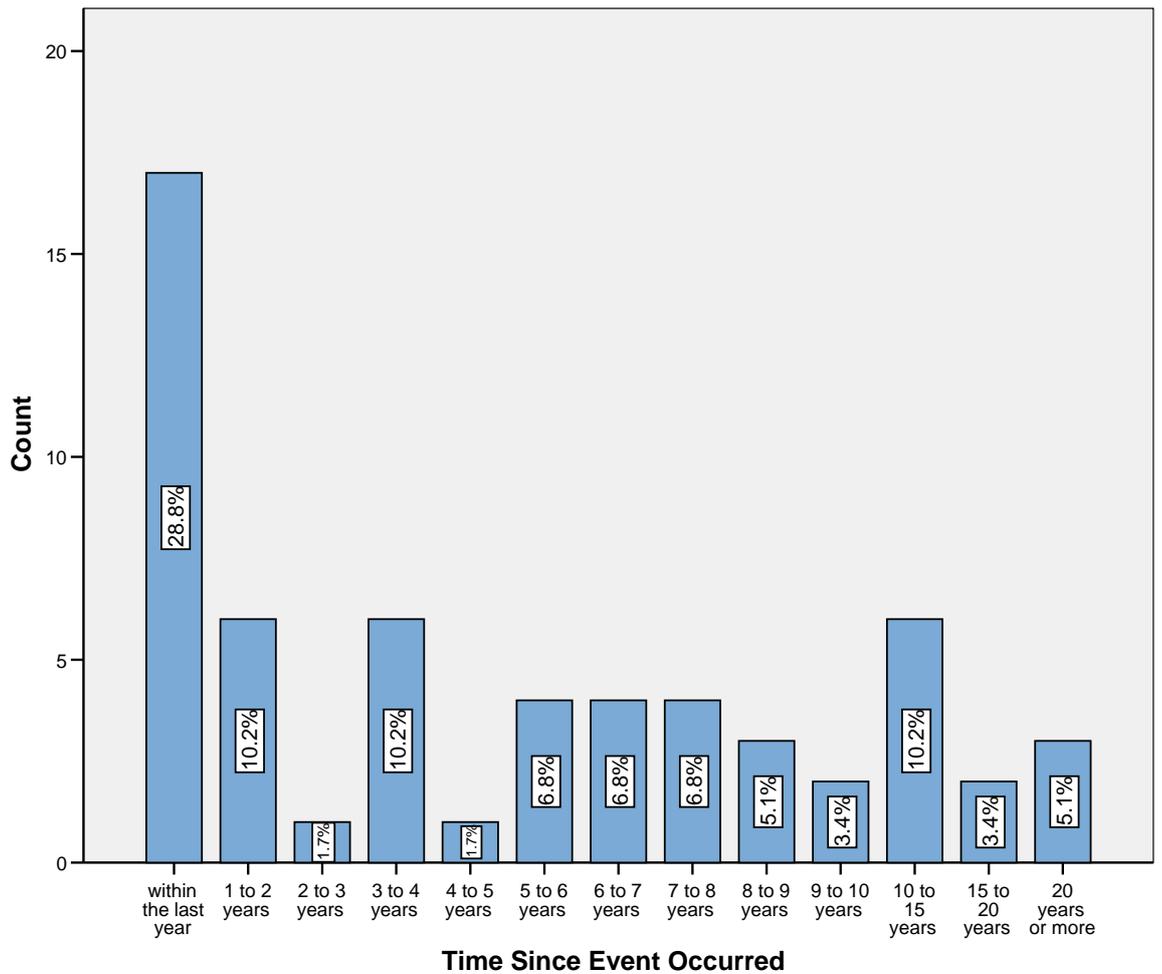


Figure 4, Variance of time since paranoid event occurred (in years).

Instances where the event occurred within the last year are displayed in greater detail in Figure 5. As participants who reported events that occurred within the last year gave the amount of time in months, weeks or days, in Figure 5 below shows the variance in days. Out of the total number of cases where the event occurred within the last year (n=17), 35% of those occurred within the last two weeks, 41% occurred between two to five months previously, and 24% occurred between 6 to 7 months before the interview took place. No participants gave a time approximation between 7 months and one year.

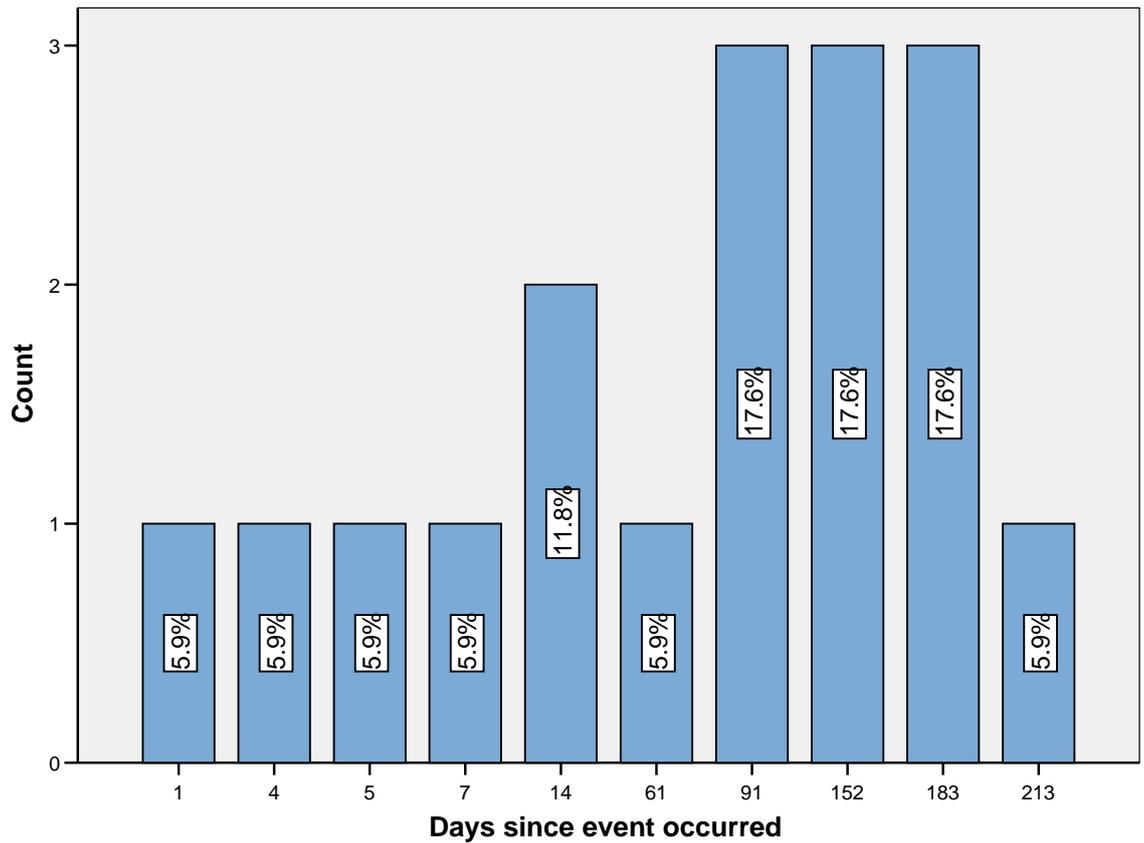


Figure 5, Variance of time of paranoid events occurring within the last year (in days).

3.4.6 Change in Paranoia Dimensions

Descriptive data and statistical tests of difference between the retrospective and current responses across the four key dimensions are displayed in Table 13 & 14 below.

Table 13, Number of participants and percentage of reductions, static and increased scores across the four dimensions

	Preoccupation	Distress	Impact	Conviction
Reduction	N = 59 (98.4%)	N= 56 (93.3%)	N = 51 (85%)	N = 26 (43.3%)
Static	N= 0	N= 3 (5%)	N= 9 (15%)	N= 30 (50%)
Increase	N= 1 (1.6%)	N = 1 (1.6%)	N= 0	N= 4 (6.6%)

The descriptive data presented in Table 13 show that when comparing retrospective with current ratings the vast majority of participants reported a reduction in levels of preoccupation, distress and impact. However, half (50%) of participants reported no change in conviction.

Table 14, Differences between Retrospective and Current ratings

Dimension	Possible Range	Actual Range	Retrospective Mean (SD)	Current Mean (SD)	t- value
Preoccupation	1 - 5	1 - 5	3.74	1.43	16.46 (***)
Distress	1 - 5	1 - 5	3.95	1.58	14.34 (***)
Impact	1 - 5	1 - 5	3.25	1.31	11.69 (***)
Conviction	1 - 5	1 - 5	4.07	3.36	4.69 (***)

*** $p < .001$

The mean scores in Table 14 show participants retrospectively rated themselves as considerably preoccupied with, and distressed by, their experiences at the time they occurred; paranoid experiences also had a substantial impact on well-being. Conviction that the attempt to harm was deliberate had the highest mean of all four dimensions (a mean of 4.07 on a scale of 1 to 5). In order to calculate differences between retrospective and current ratings across each of the dimensions, a series of paired samples t-tests were performed. Results showed that all dimensions significantly reduced over time (preoccupation, $t(59) = 16.46$, $p = .0001$; distress, $t(59) = 14.34$, $p = .0001$; impact, $t(59) = 11.69$, $p = .0001$; and conviction, $t(59) = 4.69$, $p = .0001$).

The descriptive data on change in conviction (Table 14) indicate that although conviction significantly differed between retrospective and current ratings, the current mean conviction score remained higher than those of the other three dimensions. A one-way ANOVA was used

to test for differences in current ratings among the four dimensions. Current ratings differed significantly across the four dimensions, $F(3, 240) = 57.21, p = .0001$. Tukey post-hoc comparisons of current ratings across the four dimensions indicate that conviction was significantly higher than preoccupation ($M = 1.93, 95\% \text{ CI } [1.46, 2.39]$), distress ($M = 1.78, 95\% \text{ CI } [1.31, 2.25]$) and impact ($M = 2.05, 95\% \text{ CI } [1.58, 2.52]$), $p = .0001$. Comparisons between the other three dimensions were not statistically significant at $p < .05$. Therefore, although a statistically significant reduction in conviction was found, current feelings of conviction remain comparably higher than current levels of preoccupation, distress and overall impact.

A further variable of 'change' was calculated by subtracting individual ratings at the time of the paranoid experience from ratings at the time of the interview, to determine mean change across each dimension (see Table 15). In order to investigate whether the amount of change in any one dimension was associated with changes in any other dimension (e.g. was a change in the frequency of thoughts about an incident associated with a change in levels of distress caused by it), a series of four correlational tests between the dimensional change scores were conducted. Results indicated a significant positive correlation between a change in preoccupation and distress ($r = .540, p = .0001$). A significant positive correlation was also found between change in ratings of preoccupation and impact ($r = .380, p = .003$). No significant correlation between change in impact and distress was found. Further, no correlation between change in ratings of conviction and any other dimension was found, see Table 15. Therefore, a degree of change in preoccupation was associated with a degree of change in distress, and overall impact. However the amount of change in ratings of impact and distress were not significantly related, with change in conviction being unrelated to change in any of the other three dimensions.

Table 15, Mean Change scores and Correlations between amount of change and dimensions

Change Dimension	Mean Change	Preoccupation	Distress	Impact	Conviction
Change in Preoccupation	-2.303	-			
Change in Distress	-2.369	.540(***)	-		
Change in Impact	-1.943	.380 (**)	.244	-	
Change in Conviction	-.713	.132	.141	.032	-

** p<.0.01, *** p<.0.0001

In order to examine if levels of change in participants' feelings about a past paranoid event were associated with the amount of time elapsed since its occurrence, a series of four correlations between change scores in each dimension and amount of time (in years) since the event occurred were calculated. No statistically significant relationship between the amount of change in feelings and time (in years) since the event occurred was found on any of the paranoia dimensions, see Table 16 below.

Table 16, Correlations between change in ratings and time (in years) since event occurred.

Dimension	Pearson	Significance
Change in Preoccupation	.050	.706
Change in Distress	.118	.375
Change in Impact	.073	.582
Change in Conviction	.144	.276

The findings of the present study therefore suggest that the amount of change in feelings about a paranoid experience is unrelated to how long ago it occurred.

3.5 Discussion

3.5.1 Summary of Main Findings

The present investigation found that the majority of a student sample interviewed could recall a single past paranoid experience. The amount of time over which such experiences were recalled ranged between 1 day and 25 years, with just under half (49%; n=29) reporting an event that occurred over 3 years ago. The current study found that those who reported a paranoid experience scored significantly higher on measures of trait paranoia and depression. Significant relationships between levels of trait paranoia and social anxiety, depression, rumination and self esteem among a nonclinical group were also found. Although participants reported that at the time of occurrence the experience elicited strong feelings of preoccupation, distress, impact on overall well being, and conviction that harm was deliberate, these dimensions significantly reduced over time. Interestingly, post-hoc analysis showed that time since the event occurred was not associated with the amount of reduction in these dimensions. In short, events that happened quite recently were as likely to show a change in responses as those that had occurred many years ago. The theoretical and clinical implications of these findings will now be discussed.

3.5.2 The Existence of a Paranoid Experience in the Current Sample

Consistent with previous research (Fenigstein & Venable, 1992; Olfson et al., 2002; Ellett et al., 2003; Freeman et al., 2005b), paranoia was found to be common in a nonclinical population. In a sample of 75 university students, 81% (n=61) provided a description of a paranoid experience that included a clear belief of a deliberate intention to harm, in the absence of clear 'objective' evidence.

3.5.2.1 Definition of Paranoia

By excluding instances that contained objective evidence of harm the current paranoia criteria for the current study can be seen as a refinement to Freeman and Garety's definition. In the pilot stages of the current study some initial examples included evidence of actual harm (eg. In response to the question 'have you have felt someone was trying to harm you?' one participant initially responded 'yes my brother used to hit me when we were younger'). Although such examples may contain evidence that harm was both occurring , about to occur and that harm was intentional, it was questionable whether they could be could defined as paranoid, as they were not beliefs but simple descriptions of actual past harm. This discovery highlighted a need to refine Freeman and Garety's (2000) definition of paranoia when assessing past paranoid experiences. The current study therefore included an additional clause to the definition of paranoia used by Freeman and Garety (2000); the belief that harm was occurring or about to occur, in the absence of clear 'objective' evidence. This refinement of Freeman and Garety's definition directly concerns debates surrounding the issues of falsity within paranoia.

3.5.2.2 Issues of Falsity

The idea of falsity is enshrined in traditional definitions of persecutory delusions. The DSM-IV definition for paranoid delusions states that delusions are 'false beliefs'. However in DSM-IV diagnostic interviews it is not always possible to establish falsity of belief. The issue of falsity has been referred to as "the spectre that accompanies the study of paranoia" (Freeman, 2008). When discussing if a persecutory belief is false the issue is further confounded by the fact that unfounded paranoid thinking is more likely given a real victimisation experience (Johns et al.2004; Fowler et al., 2006a). In addition a case of misdiagnosis has been reported where a

patients' seemingly implausible beliefs of persecution were later revealed to be true (Mayerhoff et al., 1991).

Given that falsity is so hard to establish within the clinical population using diagnostic interview methods, the measures used to assess delusional thinking in nonclinical populations are thought to be particularly problematic. However within clinical diagnosis there is evidence to suggest that the implausibility of experiences may not actually be related to illness status (Garety & Hemsley, 1994). Thus in many cases the issue of falsity is simply not relevant. Spitzer et al. (1992) state "A delusion is not a delusion because it is a false statement but because it is a statement made in an inappropriate context and, most importantly with inappropriate justification". When looking at normal populations, self-report scales such as the Paranoia Scale (Fenigstein and Venable, 1992) measure general attitudes towards feelings of others wishing the respondent harm and does not include specific experiences which may or may not be unfounded. Further, there is an argument for the term 'paranoia' to be released from its association with falsity and delusions in mental ill-health and describe "an ordinary psychological process characterised by perception of planned intention to harm by others" (Ellett, Lopes and Chadwick, 2003). The definition provided by Freeman and Garety (2000) clearly state that paranoia is primarily a belief. Thus the current study was less concerned with the implausibility of the particular belief than establishing that the experience was a belief and not an actual event that contained 'objective' evidence of harm (physical or otherwise). Thus by refining the definition of paranoia we are able to confidently state that the current study includes only past beliefs about intentional harm by others.

3.5.2.3 The Proportion of Paranoid Experience in the Current Sample

The percentage of the sample reporting a clear paranoid experience is much higher than previous estimations provided by questionnaire studies. For example, in one study, 25.5% of

questionnaire respondents within the general population agreed that they had, at some point in their lives, felt as though they had been persecuted in some way (Verdoux et al., 1998). In a recent large epidemiological study of paranoia in the general population, 18.6% of respondents reported that over the last year they had felt people were against them (Freeman et al., 2001). In comparison, Ellett et al.(2003) found that 47% of undergraduate students reported having at least one paranoid experience. Although they state this to be an underestimation due to participants not spontaneously including a clear statement of intent to harm, and estimate a true figure being somewhere between 47% and 70%. Clearly, how the presence of paranoid experience is assessed influences substantially the reported finding. Within the current study, 12% (n=9) reported feeling that someone had tried to harm them, although their descriptions lacked the necessary belief that this harm was deliberately intended. This figure is lower than that reported by Ellett, et al.(2003), who stated that 73 out of 324 (23%) of their undergraduate sample reported an experience that they themselves identified as paranoia, but that did not include an explicit statement of intention to harm.

One possible reason for the discrepancy between rates of paranoid experience found within the current study and those previously reported (Verdoux et al., 1998; Ellett, et al., 2003; Freeman et al., 2011) is that questionnaire studies may have underestimated the extent of paranoia within nonclinical groups. By using questionnaires Ellett et al.(2003) relied on the spontaneous inclusion of a clear description of intent to harm given within written responses. However, an advantage of the present study was in its ability to ask follow up questions and explicitly test the belief that harm was intentional via a verbal, rather than written, 'paranoia check'. It is therefore possible that including an explicit question on conviction may produce a more accurate estimation of paranoia rates within a nonclinical sample. The semi-structured interview technique, though more time-consuming, may thus be more sensitive to the measurement of individual experiences of paranoid ideation.

Alternatively, the apparent difference in paranoid experience rates may reflect higher levels of paranoia within the current sample. It may be argued that the student sample included in the current study was not representative of the general population. Indeed higher levels of paranoia have been found to be associated with youth (Freeman et al., 2011). However the age range and gender divide of the current sample (18 to 51 years, with a 69% female sample) is comparable to previous research (e.g. Ellett et al., 2003 reported an age range of 18 to 49 years, with a 77% female sample). Mean paranoia scale scores are also comparable between the two samples (41.2 within the current study, compared to 39.5 in Ellett et al., 2003). The higher rate of paranoid experience found within the current sample therefore cannot be wholly accounted for by underlying sample differences.

It is important to note that the current study does not aim to establish prevalence; it is measuring the existence of a single paranoid experience and not the overall frequency of paranoid thoughts. However, taken together with questionnaire based prevalence studies (e.g. Fenigstein & Venable, 1992; Olsson et al., 2002; Freeman, 2005a), the findings of the current research support the notion that paranoia is common among nonclinical groups.

3.5.3 Do Those Who Report a Paranoid Experience Differ from Those That Do Not?

The present research replicates the findings of Ellett et al.(2003), that elevated paranoia scale scores were found among those who recalled a paranoid experience. Two possible explanations for this finding are evident. Firstly, within a sample of university students, there may be a subsample of nonclinical individuals who tend to over report atypical and infrequent symptom like experiences (Merckelbach & Van de Ven, 2001). However, rather than assessing endorsement of experiences, the current study requires participants to give detailed verbal accounts of them, therefore minimising the likelihood of over reporting. The second main explanation of this finding is that there exists a link between trait paranoia and experience of a

single paranoid experience in college students. The direction remains to be tested: it might be that having a general propensity to paranoid thoughts may increase the likelihood of reporting a single paranoid experience – or vice versa, that a powerful experience of paranoia may establish a schematic paranoia (Chadwick, 2006) consistent with a trait. Further study which examines any potential correlation between paranoia scale scores and the ability to recall of a single paranoid experience may strengthen the predictive validity of the paranoia scale.

The current study is, as far as is known, the first study to compare participants who have and have not reported a single paranoid experience on measures of rumination, depression, and social anxiety. No significant difference on measures of social anxiety, rumination and self esteem were found between those that reported having a paranoid experience and those that did not. However, those who reported a paranoid experience had significantly higher levels of depression.

Two main alternative explanations for this lack of difference in social anxiety, rumination and self esteem between the two groups are apparent. First, it may be that the existence of a single paranoid experience is independent from self esteem, social anxiety, or tendency to ruminate on negative events. Another alternative explanation is that the current study simply failed to find any relationship between social anxiety, rumination and self esteem and the ability to recall a paranoid experience as the sample size of the non-paranoid group was too small to detect small to moderate effects. The effect sizes calculated for the current study for social anxiety (0.65), self esteem (0.54), and rumination (0.53), indicated medium effect sizes according to Cohen's (1992) effect size conventions. With a medium effect size, and α at 0.05, a necessary sample size of 128 (64 per group) would be required to provide the necessary power of 0.8 (Cohen, 1992). However post-hoc analysis revealed medium to large effect sizes for correlations between nonclinical paranoia and depression ($r = .49$), self esteem ($r = -.38$),

social anxiety ($r=.53$) and rumination ($r=.46$) (Cohen, 1992). We can therefore conclude that although the obtained sample of 75 was adequate to provide a power of 0.8 for the primary research question, the current study was unable to assess group differences on measures of social anxiety, rumination or self esteem.

However, the highly significant differences found between the paranoid and non paranoid groups on measures of depression and trait paranoia reflect large effect sizes (0.98 and 0.80 respectively). This finding is in keeping with those of Martin and Penn (2001), whose calculations reveal a comparably large effect size for the correlation between trait paranoia and depression ($r= .50$) with smaller effect sizes, for social anxiety ($r= .39$) and self esteem ($r= .42$). Further research using a larger sample may yield a sufficient number of participants who had not had a paranoid experience to test any potential relationship between the existence of a paranoid experience and social anxiety, rumination and self esteem.

While a comparison between those that reported paranoid experiences and those that did not can offer some initial insights into underlying differences between the two groups, the following section of this discussion will focus in more detail on the 60 participants who reported a clear example of paranoia.

3.5.4 The Subjective Experience of Paranoia

When examining the content of the nonclinical descriptions of a paranoid experience, the results of the present study support the findings of Ellett et al.(2003), in that both studies found that experiences of victimisation and injustice were the most commonly reported. These findings are consistent with previous studies showing variety in the content of persecutory thoughts in both clinical and nonclinical groups (Freeman, 2002; Campbell & Morrison, 2007).

Results from the 60 people who reported a paranoid experience show that nonclinical paranoia is distressing, preoccupying, and has a notable impact on overall well being. This result is in keeping with the findings of Ellett et al. (2003), and Olsson et al., (2002), who both report high levels of distress and impact associated with nonclinical paranoia. It might of course be argued that other participants had paranoid experiences which were not distressing, preoccupying etc, and that these events were not recalled because of the lack of affective impact. This seems unlikely given first, that paranoia is in part characterised by the presence of these dimensions, and second, a high proportion of the sample did report such an experience, and there were some instances where retrospective ratings were mild on at least one or more of the dimensions. Taken together this evidence for a marked negative impact of paranoia found in nonclinical samples raises the question of whether interventions may be beneficial for nonclinical groups? Additionally it lends weight to the idea of a continuum between clinical and nonclinical experiences of paranoia. Within clinical populations, persecutory delusions have been shown to be both preoccupying, obtrusive and distressing (Garety & Hemsley, 1987). Although the current study found high levels along four dimensions within a nonclinical group, no direct comparison with clinical levels can be made. Further, it must be noted that finding high scores on these measures among a nonclinical group does not directly verify the dimensional view. According to Costello (1994) in order to provide an adequate test for either the phenomenological or vulnerability view of dimensionality, future research needs to either determine if factors that control nonclinical paranoia also control their clinical counterparts or establish if degree of paranoia in the nonclinical population predicts the onset of paranoid psychopathology. A longitudinal study which assesses whether high paranoia scale scores predict the onset of persecutory delusions would be a potential way to examine the vulnerability view. One of the challenges facing tests of the phenomenological view of paranoia is to establish whether factors known to increase or decrease the severity of

persecutory delusions have a similar effect on nonclinical paranoid thoughts. Interventions such as cognitive behavioural therapy and mindfulness training have been shown to be effective in reducing the severity of symptoms of psychosis (Haddock, et al., 1998; Chadwick et al. 2009) leading NICE to recommend CBT for psychosis. Therefore, a study that assessed the efficacy of such treatments in nonclinical groups that score highly on the paranoia scale may provide an examination of the phenomenological view.

3.5.5 Time Scales and the Recall of Paranoid Experiences

The length of time passed between the event occurring and participants recalling it within the interview was assessed. Little is known about the lengths of time over which people may be able to recall a particular paranoid experience. The current study has contributed to this area by measuring how long ago the initial paranoid event occurred. What is striking when looking at the results is that nearly half of the sample reported an event that happened over 3 years ago, with just under a fifth recalling an experience that occurred over 10 years ago. The finding that nonclinical paranoid experiences can be recalled for many months and even years after the initial events occurred has wider implications for our understanding of the recall and persistence of paranoid experiences. A central question that emerges from these findings is why are such experiences recalled over a long time scale? One potential hypothesis is that the ability to recall events over long periods of time might be due to the impact they had on individuals at the time of occurrence. Indeed the current study found that just under half of participants reported being 'extremely distressed' by the event at the time of it occurring. Previous research suggests that emotionally rich life events are recalled in greater clarity and detail (Christianson & Loftus, 1990; Rubin & Kozin, 1984; White, 1989; Revelle & Loftus, 1990; Schacter, 1996; Conway et al., 1994; Brown, & Kulik, 1977). Additionally, clinical researchers have accounted for the often severe impact of trauma by proposing that it leads to the

formation of particularly durable representations in memory (Foa & Kozak, 1986; Lang, 1979). It is therefore possible the longevity in memory of paranoid events observed within the current study is due to the levels of negative impact and distress initially caused by the paranoid experience.

3.5.6 The Relationship between Paranoia, Depression and Social Anxiety in a Nonclinical Sample.

Consistent with previous studies (Martin & Penn, 2001; Ellett et al., 2003; Combs & Penn, 2004), trait paranoia was found to be positively correlated with levels of depression and social anxiety, and negatively correlated with self-esteem. The associations between these constructs have previously been used to support an emotion-consistent account of paranoia (Freeman & Garety, 2003; 2004). Freeman argues that a circular relationship between low self esteem, depression, anxiety and paranoia exists. Within this relationship low self esteem and high levels of anxiety and depression create a vulnerability to paranoid thoughts, paranoid thoughts in turn create a negative impact on self esteem and increase levels of depression and anxiety (Freeman, 2007). Further, it has been found that low levels of state self esteem predict the degree of subsequent state paranoia (Thewissen et al., 2008). In finding a series of significant relationships between trait paranoia, social anxiety, depression and low self esteem the current study strengthens the theory that these constructs are interrelated.

3.5.7 Rumination

A novel finding of the current study is the existence of a relationship between rumination and paranoia. Alongside its well established link with depression (Nolen-Hoeksema, 1991), rumination has been found to enhance negative thinking about the self (Lavender & Watkins, 2004; Rimes & Watkins, 2005). However little is known about its relationship to paranoid

ideation. The findings of the current study suggest that those with higher levels of trait paranoia also display an increased tendency to ruminate when feeling depressed or sad.

One possible explanation of these results is that rumination may encourage negative thinking about self and others. Alternatively rumination may simply facilitate all types of negative thinking, irrespective of whether such thoughts regard the self or others. This may be examined in future research by assessing both the amount and frequency of specific types of negative thoughts (others vs. self) within a nonclinical group who score highly on measures of rumination. One potential way to examine this is the use of the Experience Sampling Method (Larson & Csikszentmihalyi, 1983), a structured self-assessment diary technique used to assess frequency and fluctuations of momentary thoughts and feelings. By examining any associations between the day to day levels of rumination, paranoia and frequency of internal and external negative thoughts, we may gain a better understanding of the role rumination plays in both paranoia and depression. One tentative model may be that rumination could be a mediating factor between paranoid thoughts and distress and negative impact on overall well being. Although untested in the current study, one potential hypothesis is that repetitive thinking about past paranoid experiences may account for a certain degree of the distress and impact caused by such experiences.

Due to the correlational nature of the current study any causal link between paranoia and rumination has yet to be established, in particular, whether rumination is a cause or a consequence of paranoia. An experimental comparison of the effects of a ruminative training condition to a 'no training' control condition on pre and post levels of state paranoia in a nonclinical sample following a paranoia induction task would test whether ruminative thinking increases levels of state paranoia in nonclinical groups. If such a causal association was tested, and additionally found in a nonclinical group then a number of tentative proposals for

further research may be made. Firstly, it may provide a rationale for investigating the potential role of rumination as a mediating factor between paranoia and levels of distress within clinical groups. If reductions in rumination are shown to lead to reductions in distress associated with paranoia, then therapeutic interventions aimed at reducing rumination may be beneficial in treating persecutory delusions. Existing interventions shown to reduce ruminative thinking patterns may be considered. Cross sectional observation studies have shown that both trait and state measures of 'mindfulness' are associated with a lower tendency to engage in ruminative thinking (Brown & Ryan, 2003; Lau et al., 2006; Feldman et al., 2007). Mindfulness is defined as intentionally bringing one's attention to the internal and external experiences occurring in the present moment (Baer, 2003). Teasdale et al.(1995), suggest that mindfulness training encourages viewing internal negative thoughts objectively (decentering) and that this process may disrupt ruminative thinking patterns. Indeed it has been shown that mindful breathing techniques produce greater decentering of negative thoughts and a weakening of the association between frequency of repetitive thoughts and negative and distressing reactions to them in an undergraduate population (Feldman et al., 2010). Given the current findings of a significant association between paranoia and rumination, further study into the effect of decentering processes encouraged within mindfulness techniques on negative reactions to paranoid thoughts is needed. Scores on measures of state repetitive thought (RT, Moberly & Watkins, 2008), decentering (Toronto Mindfulness Scale, Lau et al., 2006), and state paranoia (Bodner & Mikulincer, 1998) could be assessed following a Mindfulness Breathing Exercise (MBCT, Segal et al., 2002).

3.5.8 Naturalistic Change in Nonclinical Paranoid Experience

In the present study, naturalistic change in nonclinical paranoid experiences was assessed along specific dimensions previously measured in nonclinical studies (Ellett et al., 2003;

Freeman et al., 2005b) and known to be important in clinical paranoia (Chadwick & Lowe, 1994; Haddock et al., 1999). By treating paranoia as multidimensional and assessing changes in preoccupation, distress, impact and conviction separately, the current study is able to go beyond simply noting the presence or absence of change, and instead is able to assess retrospective changes within specific dimensions of paranoid experience.

Findings show that at the time of the interview, participants were not substantially preoccupied with, or distressed by the reported paranoid experience. Although at the time it occurred, they frequently thought about the incident and felt the event caused them notable distress, most people (n=59) conveyed a significant reduction in preoccupation and distress over time. Additionally the vast majority of participants (n= 51) did not feel that the incident had any long-term impact on their overall well being. When assessing the overall amount of change in beliefs about a paranoid event, all participants included in the current study reported at least some change in one or more dimensions about the event. Further statistical tests showed significant reductions across all dimensions over time. Therefore, although the initial negative responses to a paranoid event may have been marked, they are impermanent for the majority of people. This finding raises important conceptual and empirical questions about how persistence is defined and measured. However, since the current study is limited to a student population, the generalisation of the impermanence of paranoid experiences to other nonclinical populations is limited.

Thus a particularly novel finding of the current study is the occurrence of naturalistic change over time in a single paranoid experience within a nonclinical group. To date, relatively little research has been conducted into change within nonclinical paranoia. Thewissen et al.(2008) have examined change by assessing day to day fluctuations of state paranoia within both clinical and nonclinical groups. However, the current study does not assess daily fluctuations

in levels of paranoia, it is primarily concerned with assessing change in responses to a single paranoid experience. By focusing on one particular experience the current study is able to provide an estimate of how much change occurs in response to a single paranoid event.

3.5.9 **Change in Conviction**

Whilst statistically significant, reductions in responses to paranoia occurred across all four dimensions, change in conviction was the only dimension out of the four not to be correlated with any of the other three dimensions. Additionally, current ratings of conviction were shown to be significantly higher than current ratings of preoccupation, distress or impact. This finding may be interpreted in several ways. Firstly, it may be argued that by performing a paranoia check to assess participant's belief that harm was intentional, the study is highly likely to include individuals whose current conviction is high, and more importantly, is likely to exclude individuals whose conviction naturalistically declined prior to the interview. Thus the comparably lower rates of reduction in conviction may due to an underrepresentation of individuals with low levels of conviction within the study. However, when considering the descriptive data for the dimension of conviction it is relevant to note that the full range (scores 1 to 5) of the scale were reported. Furthermore, the finding that current levels of conviction were statistically lower than retrospective ratings indicate that participants whose conviction naturalistically reduced were not entirely excluded from the study.

A second tentative interpretation of the findings may be that conviction functions quite differently to other dimensions of paranoia. Previous studies that have taken a multidimensional approach when studying clinical populations suggest that different emotional and cognitive processes contribute to different dimensions (Freeman, Garety, & Kuipers, 2001). In a study of patients with current persecutory delusions, Freeman et al. (2001) found that safety behaviours contributed to the persistence of persecutory delusions by

preventing disconfirmation of beliefs, whereas emotional distress was associated with the content of delusion, such as the perceived power of the persecutor, level of personal control over the situation or whether persecution was deserved. It is therefore possible that preoccupation, distress and impact are responses to a paranoid event that might be amenable to change in the absence of any disconfirmatory evidence. For example one may still believe that an event occurred where threat was real and harm intended, but over time may think about it less and be less upset about it. In clinical paranoia this phenomenon is called encapsulation, where a belief continues to be held with high conviction, yet has little impact on thought processes outside the delusional system (Crowe & Roy, 2008). Evidence for encapsulation is found within patients who often fail to exhibit emotional responses that would be expected to accompany their beliefs, such as Capgrass patients who do not appear distressed by their beliefs that a loved one has been replaced with an imposter (Bayne & Pacherie, 2005). This feature of delusions has been used to support the argument that they are distinct from 'normal' beliefs and to question the continuum model of delusions (Jones et al., 2003). In demonstrating that the levels of conviction at the time of the interview were statistically higher and that amount of change in conviction was unrelated to the degree of change in the other three dimensions within a nonclinical population, the findings of the current study tentatively indicate that the relative persistence of conviction may not be exclusive to clinical paranoia.

3.5.9.1 *The Degree of Change*

In comparison to the high levels of change found in the current study (100% of participants reported change in at least one dimension), Ellett et al. (2003) found only 37% of questionnaire respondents reported a change in their beliefs about a particular paranoid event. There are a number of possible reasons for this discrepancy. Firstly, the current study

includes a percentage of experiences that occurred over 10 years ago, although timescale was not reported in Ellett et al. (2003) so a direct comparison of time cannot be made, it is possible that the experiences reported in Ellett et al. included a higher percentage of recent experiences. Secondly, Ellett et al. (2003) assessed an overall change in respondents' beliefs about the event. In addition to preoccupation and impact on well-being, these beliefs included feelings of powerlessness, blocked goals and feelings of being judged negatively by others. However, by separating out four distinct dimensions of paranoid experience the current study is able to disentangle distinct changes in responses to the event. It may be argued that by employing dimensional questions regarding responses to a single paranoid experience the current study was able to repeatedly probe for specific areas of change. For example, asking a participant to rate how much they thought about an incident both at the time and now, explicitly explored any discrepancy in preoccupation. A multidimensional approach similar to the approach used to assess the severity of different dimensions of delusions in clinical groups (Haddock et al., 1999) may therefore be a more sensitive measure of naturalistic changes in responses to a paranoid experience within a nonclinical group.

Although the present study found significant reductions between retrospective and current levels of distress, impact, preoccupation and conviction, the amount of change was not associated with how long ago the event occurred. Whilst the majority of affective and cognitive responses to the nonclinical paranoid experiences reported in this study reduced, their reductions cannot simply be explained by time alone. Further study is therefore needed to investigate how such reductions naturalistically occur and this issue is the focus of the next chapter.

3.5.10 Limitations

Some limitations of the present study should be considered. Firstly the present study's largely correlational and descriptive nature prevents the formation of any causal conclusions in certain key areas. Whilst levels of rumination, social anxiety, depression, paranoia and self esteem have been shown to be related, any causal relationships have not been examined. Whether the level of scores in one of these constructs predicts scores on the others remains untested within the current study.

Second, the sample consisted of university students, therefore the extent to which the present findings can be generalised to a broader nonclinical population remain to be tested. This limitation could be overcome in future research by the inclusion of a wider cohort of participants within the general population.

Thirdly, any comparisons between those who reported a paranoid experience and those who did not are compromised by the large difference in sample sizes. Post-hoc power analysis showed comparisons between the two groups to be underpowered due to the small sample size. As these groups were self selecting; participants either reported a paranoid experience or not, the large difference in sample sizes were outside researcher control. Further, the large percentage of people who reported a paranoid experience may be interpreted as further evidence that paranoia is common within nonclinical groups.

A further limitation is the existence of a possible floor effect when assessing the relationship between length of time and degree of change. Results showed that events occurring many years previously did not show greater degrees of change than those that occurred quite recently. Before concluding that time itself is therefore not the main cause of change it is important to note that once an initial change had already occurred, it is feasible that further

change was of minimal levels. Therefore, the 1 to 5 ratings scale used within the current study may not have been sensitive to small changes in reactions over a long period of time. Future study is therefore needed to either assess change over shorter time periods or provide a larger scale to distinguish any potential differences between low degrees of change.

Another potential limitation of the current study is that the ratings of dimensions were all collected in the same order; retrospective preoccupation, distress, impact and conviction followed by current preoccupation, distress, impact and conviction. There is therefore a possible order effect of rating dimensions. Any future study assessing these dimensions may benefit from counterbalancing ratings to prevent any potential order effect. However, counterbalancing was considered in the current study but was not performed due to the difficulty of ensuring that counterbalancing four separate dimensions was entirely randomised. Additionally a virtue of this procedure is that it increases confidence in the finding that conviction did not reduce as much as the other dimensions. When one considers that the three preceding dimensions all showed greater differences between mean retrospective and current ratings, it was particularly striking although conviction significantly reduced the difference in mean scores was not as great as the other dimensions despite its position as the last dimension to be assessed.

A further limitation is the study's reliance on self report data. In addition to the well documented drawbacks of self report measures (Moskowitz, 1986; Paulhus & Reid, 1991; Paulhus & Vazire, 2007; Kagan, 2005; 2007), the possibility of false information cannot be excluded from this study. Additionally it may be argued that individuals with high levels of paranoia would be unwilling to disclose their paranoid experiences to a stranger. However, in response to this potential limitation it is important to note that those who reported a paranoid experience scored significantly more highly on measures of trait paranoia (PS). It is therefore

unlikely that the proportion of participants who did not report a paranoid experience contained highly paranoid individuals who did not wish to disclose their experiences.

One further potential limitation of the current study is that it relies on the autobiographical memory recall of past events. Although not measured in the current study, evidence exists for the test-retest reliability of autobiographical memories (Parker, 1989; Field, 1981; Norris & Kaniasty, 1992). When assessing recall of past emotional events it is important to distinguish between the precise recall of situational features such as the people, environment and actual order of events from the emotional internal response to them (eg. How you felt at the time); put simply it is necessary to distinguish between 'emotional memories' and 'memories of emotions' (DeLoux, 2007). Although, the recall of situational features in long term autobiographical memory may have potential limitations such as unreliable or inaccurate recall of events, the current study is essentially concerned with emotional and cognitive responses to a single experience, and not on the accuracy of the situational details.

A further validity issue of the current study was whether all experiences included were paranoid and not simply socially anxious. However, by employing Freeman and Garety's (2000) definition of paranoia as 'planned harm by others', the current study employed a 'paranoia check' and thereby ensured that all experiences included met the criteria of perceiving harm to be deliberate and intentional. Additionally by ensuring that all paranoid experiences occurred in the absence of objective evidence we can be confident that all experiences included in the current study are of paranoid beliefs and not simply recalled unpleasant events.

An additional limitation of this study is found in the measurement of time passed since the event occurred. It is important to note that participants were simply asked to state how long ago a single event occurred, thus the time scales provided can only be viewed as

approximations. A longitudinal study based on a nonclinical sample of people who report a paranoid experience would be able to accurately assess changes in responses to the event over fixed time periods. Such a study may provide additional information on any potential vulnerability factors for participants who transition to psychosis.

3.5.11 Clinical Implications

Although, the current study treats nonclinical paranoia as a topic of interest in its own right, it is important to consider some tentative clinical implications of the findings. Firstly, in finding that 81% of participants recalled and discussed in detail, a paranoid experience, with 49% reporting one that occurred over 3 years ago, it supports and extends the notion that paranoid experiences are common and enduring among the general population. By providing this information to both patients with current persecutory delusions and the wider population, the results of the current study may be used to support psychoeducation and the reduction of stigma associated with paranoid experiences (Kingdon & Turkington, 1994).

The finding of an association between paranoia and rumination in a nonclinical group may have a second potential clinical implication. A possible relationship between paranoia and rumination has yet to be investigated in clinical groups. Additionally, future study is needed to determine if any causal relationship between these two constructs exists in either clinical or nonclinical populations. However, if a comparable association is found within a clinical group, then it is possible that interventions that aim to reduce rumination (such as mindful self focus, Brown & Ryan, 2003; Lau et al., 2006; Feldman et al., 2007, 2010) may produce a consequent reduction in paranoia. Therapeutic interventions targeted to reduce the related construct of worry, have been shown to significantly reduce distress associated with persecutory delusions, and indicate a reduction in frequency of paranoid thoughts in a patient group (Foster et al., 2010). Although separate constructs, rumination and worry are related in that both are types

of repetitive negative thinking styles (Fresco et al., 2002). In finding an association between paranoia and rumination in a nonclinical group, the current study provides a clear rationale for further exploration of the role of rumination in clinical paranoia; namely testing the hypothesis that rumination could be a mediating factor between paranoia and both distress and overall negative impact on well being.

4 Chapter Four – Reasons for Change

4.1 Introduction

The previous study within the thesis established that nonclinical paranoid experiences were associated with high levels of preoccupation, distress, overall impact on well being and conviction at the time of their occurrence. However, reactions along all of these dimensions significantly reduced over time. Of particular interest is the suggestion that time itself did not appear to be the main cause for change. There is little published work on naturalistic change in nonclinical paranoid experiences that can provide possible explanations for this finding. A small but growing body of research has investigated changes in state paranoia in response to experimental manipulations. Also, there is a body of research looking at fluctuations in paranoid meaning over time (Bentall 2003; Thewissen et al.2008; 2011). However, no previous published research has established significant reductions in dimensional properties. Several studies have investigated factors that can lead to increases in momentary paranoid cognitions (Freeman et al., 2007, 2008c & 2010; Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007). Yet, the underlying reasons for the observed reductions in responses to nonclinical paranoid experiences found in the previous study are as yet unknown. Therefore, the current study uses qualitative methods to examine the reasons participants themselves provide for change, or lack of change, in their experiences of a past paranoid event. The reasons for change in responses to a single paranoid experience are assessed and examined for shared meanings.

4.1.1 The Current Study

As a new area of research, the current study required an approach that allowed the exploration of themes within participants' subjective accounts of change within paranoia. The current study is a phenomenological enquiry that focuses on participants' own meanings and

perspectives, an approach that has been previously used to assess change and the variability of delusional phenomenology within clinical groups (Sharp et al., 1996).

In examining subjective experiences of nonclinical paranoia, the present work builds on the work of Ellett et al. (2003), who researched paranoia in a sample of college students using the 'Personal Experiences of Paranoia Questionnaire'. However the current study extends this work by examining individual accounts of reasons for change in response to a single paranoid event. The study therefore has one central research question: what reasons do people give when discussing naturalistic change or a lack of change in emotional and cognitive responses to a past paranoid experience?

4.2 Method

4.2.1 Design

The current study aims to understand the phenomenology of change in nonclinical paranoia by examining participants' own descriptions of the reasons for change in their thoughts and feelings about a single past paranoid experience. A qualitative approach was chosen due to its suitability for exploring individual subjective experiences (Strauss & Corbin, 1998). Further, no previous studies have examined the underlying reasons for change in responses to paranoid experiences in the nonclinical population. The current study is examining a new area of research and as such is not testing any hypothesised relationships. As an exploratory work, the current study uses a qualitative methodology, an approach which is widely seen as well suited to investigating new and developing areas (Elliott, Fischer & Rennie, 1999).

The current investigation used semi structured interviews to study participants' accounts of naturalistic change. Semi structured interviews were employed for several methodological reasons. Firstly, they provide the researcher with the opportunity to clarify questions and gain

additional detail where necessary (Edelbrock & Bohnert, 2000). Secondly, the flexibility of the semi structured interview method allows the inclusion of both fixed and spontaneous questions. Thirdly, it permits participants to freely expand on answers which allows exploration of previously unanticipated research areas (Redding & Seamster, 1994). Finally, the aim of the present research was to provide a detailed description of the phenomena of change in nonclinical paranoia. Semi-structured interviews are particularly well suited to gathering rich and detailed data on participants' own thoughts and feelings (Buston et al., 1998; Edelbrock & Bohnert, 2000).

4.2.2 **Participants:**

A total of 61 students from a British University (14 men and 46 women) age 18 to 51 (mean age 24.4, sd 7.55) were initially recruited through a paid participation scheme. Participants were a subset of the sample used in Study 3, who were able to describe a clear example of a single past paranoid experience. The size of the sample was therefore determined by the amount of participants who responded positively to the question 'have you ever felt that someone was trying to harm you, in the absence of clear evidence?' within the previous study. All participants who were able to provide an example of a paranoid experience were asked if they wished to take part in a further study where the reasons for any changes or lack of changes in ratings would be discussed. The inclusion criteria were as follows: (1) participants who were able to provide a description of a paranoid experience that contained the belief that harm was deliberate and that occurred in the absence of objective evidence, (2) must be English speakers, (3) aged 18 years or above and (4) students at a British University. Exclusion criteria included self reported diagnosis or treatment of a mental health problem. Sixty out of 61 participants approached consented to discuss the experience and have audio recordings taken of their responses. One participant, who did not wish to take part, was fully debriefed,

thanked and paid in full for taking part in Study 3. The project received ethical approval from Royal Holloway Departmental Ethics Committee (code: 2009/044) prior to the commencement of the study.

4.2.3 Interview Procedure:

All participants read an information sheet summarising the broad aims of the project and gave initial written informed consent. During Study 3, all participants provided ratings on dimensions of preoccupation, distress, impact and level of conviction associated with a single paranoid experience. Ratings for these four dimensions were assessed along a five point Likert scale ranging from 1 'not at all' to 5 'very much'. Participants were required to provide two ratings; one rating at the time of the paranoid event and another rating at the time of the interview. The present study used semi-structured interviews to assess the reasons for change (or lack of change) in the ratings between the time of the event occurring, and the time of interview (See attached interview schedule, Appendix G). Changes across the four dimensions were discussed in a set order for all participants; preoccupation, distress, impact and finally conviction. The wording of each question was particular to one of three possible directions that each change took across the four dimensions (e.g. for preoccupation the question would be; e.g. 'So, your rating of [dimension] has [changed, not changed], can you tell me about that?')

Once the initial question regarding the change among scores on a particular dimension was asked, participants were encouraged to elaborate on answers given, and clarification of the meanings of responses given was requested, before proceeding to the next question. Each interview therefore contained 4 initial questions, followed by reflection, probes and prompts, and lasted between 20 to 40 minutes, depending on the length and detail of responses each

participant provided. All responses were audio recorded. Following data collection, interviews were transcribed by one researcher. The data were then analysed using thematic analysis.

4.2.4 **Thematic Analysis**

There are a broad range of qualitative analytical methods of varying complexity (Holloway & Todres, 2003). However, an elemental process shared among all qualitative methods is 'thematising meanings' (Holloway & Todres, 2003). The process of thematic coding is also recognised as a method in its own right (Braun & Clarke, 2006). Unlike many other qualitative methods, thematic analysis is not bound within a specific theoretical and/or epistemological position. The aim of thematic analysis is to identify, consider and report shared themes. This method was the preferred choice of analysis in the current study due to its theoretically flexible approach and its ability to assess shared meanings across the sample. Other possible strategies for analysis, such as IPA (Interpretative Phenomenological Analysis; Smith & Osborn, 2003) and Grounded Theory (Strauss & Corbin, 1998), were discounted as suitable for the current study due to their adherence to particular theoretical positions. In addition, IPA is an inductive approach concerned with understanding the lived experience of respondents, with limited directional control from the researcher (Smith, 2004). Given that the goal of the current study was not to create a theory of reasons for change in nonclinical paranoia, but rather, to examine participants' own experiences and explanations of change, it was not suitable to use Grounded Theory. Additionally, the description of a large data set (60 interviews) is best suited to a thematic analysis (Braun & Clarke, 2006), where shared meanings across the sample can be identified and reported. Within the current study respondents' own accounts of the experience of change in paranoid experiences are treated as valid sources of knowledge. The process and stages of analysis are described below as discreet stages for clarity. However the analytic process within the current study moved fluidly

between these discreet stages, occasionally going back and forth between the different stages until a comprehensive thematic framework was produced (Braun & Clark, 2006).

4.2.5 Stages of Analytic Process

The analysis of the transcribed interview data was approached in accordance with published criteria for good thematic analysis (Braun & Clarke, 2006). Following Braun & Clarke's (2006) guidelines on what counts as a theme, the themes identified from the current data set were not dependent on quantifiable measures such as frequency. Rather their inclusion was based on their ability to "capture something important in relation to the overall research question" (Braun & Clarke, 2006). Therefore, the aim of the analytic process was to capture an inclusive list of themes that accurately represented the wide range of reasons people gave for change. Consequently some themes may have occurred many times across the entire data set and others may have occurred rarely, but were central to participants own explanations for why their feelings about a paranoid experience had changed. The analytic process within the current study closely followed the six phase guide for thematic analysis described by Braun & Clarke (2006), whilst adhering to their criteria for good thematic analysis (See Table 23).

4.2.5.1 Phase 1: Familiarising Yourself with the Data

All interviews were conducted, recorded and transcribed verbatim by one researcher. Ensuring that interviews were transcribed by the primary researcher provided an early opportunity to become immersed and familiar with the data (Riessman, 1993; Bird, 2005). As recommended by Braun & Clarke (2006), transcripts were checked against audio recordings for accuracy, and a selection of 3 transcripts were given to a reviewer (Lyn Ellett, primary thesis supervisor), alongside audio recordings to ensure data was transcribed to an appropriate level of detail, and that transcriptions were an accurate written translation of verbal responses. All

transcripts were read and re-read by the primary researcher until a comprehensive overview of the data set was achieved.

4.2.5.2 Phase 2: Generating Initial Codes

Transcribed interviews were approached one at a time and analysed for initial codes of reasons given for change. The researcher worked systematically through the entire data set ensuring full attention was given to each transcribed interview. This process of coding is an important part of analysis (Miles & Huberman, 1994), as it marks the beginning of assembling data into meaningful groups (Tuckett, 2005). However, in keeping with the recommendations of Braun & Clarke (2006), this coded data differed from the eventual themes. No attempt was made to interpretively analyse the data, thus at this stage the codes were essentially 'data driven' and initially drawn from the participants' own choice of words. These initial codes were generated manually and noted in the margins of the transcribed interviews in a Word document. Once a comprehensive list of codes had been drawn, all relevant extracts for each code were collated. Due to the large data set, this process followed a framework analytic data management format (Ritchie & Spencer, 1994), a recommended approach for organising large and complex qualitative data sets (Ritchie & Lewis, 2003). Individual codes were placed along the top row of an Excel spreadsheet and all excerpts were placed in columns underneath the corresponding code. Participant numbers and page references were placed alongside excerpts to ensure that the researcher could refer from the Excel spreadsheet back to the raw transcribed interviews where necessary. Ensuring that all codes and extracts could be linked back to the original text was done to prevent any loss of context (Bryman, 2001). Codes were checked against each other, and checked against the original transcribed interviews, to ensure that the list was comprehensive and encompassed all transcribed data (Braun & Clarke, 2006). This process resulted in a thorough, inclusive and comprehensive list of 58 different codes.

Table 17, Thematic Analysis Example 1

Extract	Code
"I think I am more mature and less bothered by it now. Because when you are young you can only think about yourself"	Maturity

4.2.5.3 Phase 3: Searching for Themes

Once codes were collated, excerpts from transcribed data underneath each code were thoroughly examined for similarities and differences between them. In accordance with Braun & Clarke's (2006) guidelines, the large list of codes was refined by collapsing, subdividing and rewording codes into principal themes. The themes represent an attempt to interpret meaning of the statements and go beyond simply paraphrasing or describing them. The wording of these themes was no longer tied to participants own use of language but were based both on the transcripts and the interpretation of the analyst (Braun & Clarke, 2006).

Table 18, Thematic Analysis Example 2

Excerpts	Original codes	Collapsed into one theme
"I learnt not to care about what those guys thought"	Persecutors' opinion no longer important	Loss of Importance or Relevance
"I think because I have so many other things to think about. I play a lot of badminton and I go out with my current friends, family, work"	Positive Distractions	

Although the two excerpts in Example 2 differ in the particular reasons respondents gave, they can both be considered examples of reduction in importance of the paranoid experience. The respondents are using these examples to describe why their feelings about the incident changed. By focusing on people, activities and opinions that are external to the paranoid experience they are actively describing a sense that the event is no longer important or relevant to them.

4.2.5.4 Phase 4: Reviewing Themes

Once the list of initial 32 themes was produced, a further check was made to ensure that all themes and corresponding transcribed extracts were internally coherent, consistent, and distinctive (Braun & Clarke, 2006). In accordance with Patton's (1990) dual criteria for judging categories, *internal homogeneity* was verified by ensuring that extracts within each theme contained clear and shared meanings and *external homogeneity* was considered by checking for clear distinctions between the themes.

A two way check between themes and extracts was performed to ensure that the extracts accurately reflect the theme, and that the theme was a plausible interpretation of the reason respondents gave for their change in feelings about a paranoid experience. Within this phase some data extracts were moved to themes which better encompassed their meaning. Many themes were again reworded, subdivided or collapsed to improve their ability to represent the range of meaning found within the transcribed data.

Table 19, Thematic Analysis Example 3:

Excerpts	Original code	Recoded into two themes
“Well first of all I forced myself not to think about it. I did it deliberately, like saying to myself it is a regular thing and you have to recover because everyone does and you will do, so you know I just forced myself.”	Conscious attempt not to dwell on it	Letting go and moving on
“I have used other things to help me take my mind of it. I made myself go out and do other things and meet people and that sort of thing, making myself go out and make different friends. “		Social Choice

Although this phase primarily reduced the data set, within this process several new themes emerged. The researcher then went back to the transcribed data and recoded extracts that now fitted within the new theme. At the end of this stage an initial thematic framework was produced.

4.2.5.5 Phase 5: Defining and Naming Themes

Once the thematic framework was established, the researcher produced a table containing the initial list of 14 themes, with two to three examples of extracts that supported each theme and a description of the particular aspect of change each theme represented, what it incorporated and what it excluded. In defining and describing the themes, the essence of each theme was identified. According to Braun & Clarke (2006), this process of describing what is of interest within each theme, and why it is vital to the analytic process, helps to develop a broad overall story about the data. At this stage the themes were refined through a series of discussions

between the researcher and two PhD supervisors. Through this process of analyst triangulation, themes were reviewed using multiple researchers to minimise selective perception within the interpretive process (Denzin, 1978; Patton, 1999). Differences in interpretations of the meaning of any extracts or themes resulted in rewording or restructuring themes until all three researchers reached a shared interpretation. During this process the themes were grouped into sub-themes and over-riding themes. Shared meanings between different themes were developed. As the study assessed all instances of change, it contained discussions about reductions in feelings as well as increased feelings, and instances where no change had occurred. These three different possible directions of change occurred both across the sample, and within individual interviews. Some participants reported a reduction in one dimension and an increase in another (e.g. they may think about it less, but be more convinced that the attack was deliberate). As a result some sub-themes were polar opposites and therefore represented a range of meaning within the main theme

Table 20, Thematic Analysis Example 4:

Initial code	Sub-theme
Reduction in Threat	Level of Current Threat
Continued Threat	

In other examples the range of meanings within the theme were not polar opposites, but were grouped together according to their shared meaning.

Table 21, Thematic Analysis Example 5:

Initial code	Sub-theme
Supportive Partner	Support from Family and Friends
Family Support	
Peer Support	

When defining and searching for themes within thematic analysis, it is accepted and recognised that some themes may appear as polar opposites and others may seem to involve similar phenomena (Boyatzis, 1998).

4.2.5.6 Phase 6: Producing the Report

A final thematic framework was produced that contained 7 main themes each containing 2 to 4 subthemes (a total of 20 subthemes). The final framework table with extracts can be found in Appendix I (see Table 23 for summary table).

4.2.6 Methodological Quality Controls

The 15 point quality checklist for thematic analysis developed by Braun & Clarke (2003) was adhered to throughout the analytic process (see Table 22). As Braun & Clarke's quality criteria relate specifically to thematic analysis, they were chosen as the most appropriate methodological quality control for the present study.

Table 22, Braun & Clarke (2003) 15-point checklist of criteria for good thematic analysis

Process	Number	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'.
Coding	2	Each data item has been given equal attention in the coding process.
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated.
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analysed, interpreted, made sense of, rather than just paraphrased or described.
	8	Analysis and data match each other, the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organized story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written Report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done, i.e., described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as active in the research process; themes do not just 'emerge'.

Whilst each qualitative research method has its own differing traditions of quality control, as Elliott, Fischer & Rennie (1999) note, they all share a central purpose “to contribute to a process of revision and enrichment of understanding, rather than to verify earlier conclusions or theory” (Elliott et al., 1999 pp. 216). Thus, the types of questions asked within all qualitative research differ from those posed within quantitative approaches. Elliott et al. (1999) therefore

argue that criteria that evaluate how well qualitative research questions are addressed, rather than particular standards within a specific research method will provide a more effective evaluation of qualitative research. Consequently, an additional overall quality control check suitable for all qualitative research and distinct from the methodologically specific criteria set out by Braun and Clarke was performed, in order to ensure rigorous standards were met within the current study. There is a vast array of published quality control guidelines for qualitative analysis (e.g. Mays & Pope, 1995; 2000; Boulton, Fitzpatrick & Swinburn, 1996; Hoddinott & Pill, 1997; Seale & Silverman, 1997; Malterud, 2001). The accessible and well established criteria described by Elliott, Fischer and Rennie (1999) were chosen for the current study. Therefore, in order to ensure that the current study met the quality criteria for both thematic analysis and qualitative research in general, the seven quality criteria described by Elliott, Fischer and Rennie (1999) are listed below with a description of how they were met within the current study.

4.2.6.1 *Owning ones Perspective*

Elliott, Fischer and Rennie (1999) state that in order for readers to understand and consider possible alternative interpretations of the data it is important for the authors of qualitative research to specify their theoretical orientations, interests and personal assumptions about the phenomenon they are researching.

The principal researcher of the current research is a female PhD student at Royal Holloway, University of London. The current investigation is the final work in a series of studies looking at paranoia within nonclinical populations. The principal researcher has previous experience of conducting and transcribing semi-structured interviews within a nonclinical sample. She worked under the supervision of two senior clinical psychologists who were involved in the latter stages of refining themes. Although the researcher had no prior expectations of the

reasons people would give for changes in their responses to a paranoid experience, the amount and direction of change were assessed and known prior to the interview. The researcher and supervisors are advocates of the dimensional view, and support the notion of a continuum between clinical and nonclinical experiences of paranoia.

4.2.6.2 *Situating the Sample*

In order to clarify the range of persons and situations to which the research findings may be relevant, Elliott, Fischer and Rennie (1999) advise that authors provide some description of the research participants and their life circumstances. In order to meet this criteria basic demographic data (age, gender) and the selection procedure of a sample of university students are presented in the previous 'participants' section.

4.2.6.3 *Grounding in Examples*

Elliott, Fischer and Rennie (1999) propose that authors should provide examples of the data to illustrate the precise analytic procedures used and to show how an understanding of them has developed, in order to allow the reader to consider possible alternative interpretations. In order to meet this criteria a minimum of two direct quotations extracted from the transcribed interviews are provided to illustrate the range of each theme. The thematic framework table including examples can be found in Appendix I. Additionally a single case account of an entire interview and the corresponding themes are provided in Appendix J. Further, examples of decisions made within the stages of the analytic process are provided to improve transparency of the analysis.

4.2.6.4 *Proving Credibility Checks*

Within their criteria Elliott, Fischer and Rennie (1999) state that researchers may use several methods for checking the credibility of categories, themes or accounts. Within the current

study two reliability checks were used. Firstly, a consensus review and appraisal of themes was conducted with the primary researcher and two supervisors as an initial reliability check. Secondly, a list of the 20 sub-themes and 40 sample quotations were given to an independent researcher (a colleague who was external to the research process) to determine inter rater reliability. This revealed a Kappa value of 0.90, indicating an excellent level of inter-rater agreement (Llandis & Koch, 1977; Fleiss, 1981). A 'respondent validation' was considered in order to check the credibility of researcher interpretation. A summary of the analysis and themes would have been provided to two or three participants to check for agreement between the respondents understanding of meanings and researchers interpretation of the interview data. However due to the transient nature of the student sample, only an opportunistic selection of available participants was possible. Therefore, 'respondent validation' was not conducted to avoid any bias caused by a lack of random selection of participants for follow up.

4.2.6.5 Coherence

In order to address the criteria of presenting the interpretations of the data in a coherent and clear way whilst protecting more subtle nuances within the data, the current study divides the thematic framework into themes and subthemes to distinguish between thematic categories and larger underlying concepts that link these categories together (see Appendix I). A description of the relationships between themes and subthemes are clearly presented in the results section below.

4.2.6.6 Accomplishing General vs. Specific Tasks

The aim of the current research was to achieve a general understanding of the range of reasons a nonclinical group gave for changes in their feelings about a single paranoid

experience, rather than understanding the experiences of one or two people. The sample contained a variety of men and women who were either British or International students. The sample also contained both undergraduate and postgraduate students and represented a broad age range (18 to 51). However, the findings can only be generalised to a student sample and are not transferable to other nonclinical groups. Elliott et al. (1999) suggest that if a general understanding is sought, then it must be based on an 'appropriate range of instances'. A total of 60 interviews were conducted, transcribed and coded, representing a large range of instances and ensuring complete saturation.

4.2.6.7 *Resonating with Readers*

The final criterion for quality stipulated by Elliott et al. (1999) is that the material is presented in a way that is judged to be an accurate reflection of the subject matter, and will improve the readers' understanding of it. This particular criterion can therefore only be accurately assessed by the reader themselves. However, in an attempt to ensure this quality criterion is met, the write-up of the current study was discussed with supervisors and external advisors. By checking the resonance of the results with the reader it is hoped that the account of change in feelings about paranoid experiences is clear, accessible and recognisable to the large proportion of people who have had at least one paranoid experience.

4.3 Results

Seven major themes were identified in participants' explanations for changes in responses to a single paranoid experience. Within each of these themes two to four further subthemes emerged. In keeping with criteria for good qualitative practice, each theme is described below and the subsequent subthemes are grounded in a minimum of two examples (Elliott et al., 1999).

There is discussion in the literature about how (or even if) to report the prevalence of individual themes within thematic analysis (Braun & Clarke, 2006). One rationale for reporting prevalence is that it allows researchers to show that the theme *really* existed within the dataset. Prevalence has been reported either by using terms such as ‘the majority of participants’ (Meehan et al., 2000), or ‘many participants’ (Taylor & Ussher, 2001), or by reporting the numbers of respondents that referred to a theme (Woodward & Joseph, 2003). However as Braun and Clarke (2006) note, the fact that a theme frequently reoccurs does not directly infer its ‘keyness’, rather the inclusion of a theme should be based on its centrality to the person’s own account. In this chapter we apply this approach to deciding what constitutes a theme, but convey prevalence by reporting if particular themes were notably common or infrequently articulated by participants.

Table 23. Summary table of themes and subthemes

Theme	Subtheme
1. Changing Relationship to Persecutor	Viewing the persecutor more positively
	Power shift
	Face to Face Resolution
2. Normalising vs. Personalising	Likely to occur to anyone (Normalising)
	Depersonalising
	Taking it personally
3. Self Protection	Level of current threat
	Generalised distrust
	Self defence
4. Social Support	Support from family and friends
	Lack of support or understanding
5. Personal Growth	Incident as positive learning experience
	Self Esteem
	Improved coping skills
	Increased independence
6. All Consuming vs. Wider Perspective	Loss of importance or relevance
	Continued importance or relevance
	Social Choice
7. Letting go & Acceptance	Acceptance of the situation
	Letting go and moving on

4.3.1 Theme 1: Changing Relationship to Persecutor

Participants frequently described a change in their appraisal of the fundamental character or personality of the person or people who they felt were trying to harm them. Occasionally their

evaluation of the persecutor(s) was altered by further contact or observation of them. In other instances this change was a result of participants reflecting on the initial event. When reviewing the initial paranoid event they either changed their perception of the persecutors' original intentions and behaviour or reviewed their own actions and attempted to view the event from the perspective of the persecutor. This change in the relationship to the persecutor took three distinct forms:

4.3.1.1 Viewing Persecutor More Positively

Within this subtheme participants reviewed their original perception of the persecutor and came to view them in a more favourable light. The persecutor was often seen as benign or unthreatening.

"I got to know her and she was actually quite nice and friendly... I started to think that it can't be possible that someone who was that nice could do that" (Participant 14).

Changing their view of the persecutor in this way frequently resulted in a review of the intentions of the persecutor and led the participant to review their belief that harm was intentional.

"I've just thought, if I put the year all together, I can highlight like they have been nice to me when I have seen them outside our halls stuff like that and they have spoken to me every now and again, and like as a whole they haven't been completely ignoring me the whole time, so that sort of makes me think maybe ... if I look back in hindsight it was probably just a bit of fun. It was their idea of fun." (Participant 49).

4.3.1.2 Power Shift

Participants described feeling a change in the power dynamic of their relationship with the persecutor. In all instances where power was discussed participants initially felt a sense of power imbalance, in that the persecutor had greater control over the situation than they did.

Participants' perceptions of the power balance changed in one of two ways. In some examples participants described currently feeling a sense of superiority over the persecutor. This was often achieved via a self serving comparison of their own subsequent successes with a lack of success in the persecutors' life since the event.

"I'm at university now and they are not. I kind of just think; well hey you teased me and now I'm at university and I'm doing a masters and you're not... and the things they used to popular for they don't have them anymore" (Participant 66).

"I've also realised looking at what she has done with her life now and what I've done with mine... She is stuck in the same - like she hasn't moved on, like she got kicked out of school, she spends every evening down the pub, she has got like part-time work in a care home, like she hasn't progressed" (Participant 39).

Alternatively, participants felt a sense of equality had been established or that the persecutor had lost their initial hold over them.

"I don't think the power imbalance is there anymore over me. But when we were younger I think she had a lot of influence over me."(Participant 12)

This theme did not contain any examples where participants assigned the power shift to any direct action that they may have taken to address the problem. In some examples participants described a sense of providence or external events ensuring that fairness or justice had been achieved.

"People find their level as my mother always said, and she has. I mean I'm sort of 24 years into my relationship with my husband, and she ran off with her fitness cycling instructor" (Participant 4).

4.3.1.3 Face to Face Resolution

In instances where direct action had taken place, participants described a resultant change in their relationship with the persecutor. Here participants described direct contact with the

persecutor after the event; this either took the form of a confrontation or reconciliation with the persecutor.

“We have talked it through and there was a few misunderstandings that we have sort of straightened out” (Participant 24).

“I actually confronted her about it and we sorted it out..., we are fine now and she apologised, that is enough for me, just the fact that she acknowledged that she did something wrong” (Participant 33).

In some instances this subsequent face to face contact resulted in the participant forgiving the persecutor for the perceived attempt to harm them.

“I think it is because we sort of got along for a while after that... so I sort of forgave her” (Participant 14).

4.3.2 **Theme 2: Normalising vs. Personalising**

Participants frequently mentioned the degree to which they took the actions of the persecutor personally. When discussing this, participants either described a reduction in the amount they took the event personally, or they provided reasons for why they still felt the incident was a personal attack. All changes within this theme took place after the paranoid event occurred, and often as a result of witnessing similar interactions involving threat happening to other people. Taking the event less personally occurred through one of two mechanisms; participants either saw the persecutor as a flawed person who was wholly responsible for the event, and frequently discussed observations that they witnessed the persecutor attempting to harm others (depersonalisation). Alternatively participants cited seeing lots of people mistreat others in this way (normalising). In both cases participants discussed making an external attribution for the event and consequently taking it less personally.

4.3.2.1 Normalising (Likely to occur to anyone)

In several instances participants initially felt responsible for the event. They described feeling that they had in some way caused the persecutors desire to harm them. However, change occurred when they saw the event as a normal part of social interaction. Here participants can be seen to make an external situational attribution by placing the cause of the event as something outside both their and the persecutors control. In these cases they saw the event as something that was likely to happen to anyone and therefore something which they no longer felt personally responsible for.

“I think it could have happened to any other girl who had just been in the wrong place at the wrong time”

(Participant 1).

This process of normalisation was frequently the result of seeing the events as a common experience through witnessing very similar events occurring to other people.

“It was just a very common thing to happen. There were rumours about everybody really, so it was just my turn I guess” (Participant 14).

“I think it is just because it happens so often and it happens to everyone ... and you just have to forget about it. I saw it happening to everyone else and I saw that they got equally annoyed when it was going on. I know that everyone will probably have the same episode at some point, so it's fine” (Participant 71).

By seeing this as something that occurs frequently and that occurs to everyone, participants were able to take the event less personally and see it as a normal every day event.

4.3.2.2 Depersonalisation

An alternative mechanism through which participants took the event less personally was through seeing the persecutor as solely responsible for the event. This could be done in one of two ways; either participants made a clear, personal, external attribution by describing the

persecutor as a flawed person. The nature of the particular character flaw varied between each case, but frequently included seeing the persecutor as a bully, a person who lacked good social skills, the respect of others, or a weak or inadequate person.

“He was very much a kind of alpha male bully type ... I don’t think people had that much respect for him because he was very much giving commands all the time, do this, do that” (Participant 8).

“Now I can look back on it and can see that she was trying to show her dominance and show that she could control people, I then realised she wasn’t a very nice person... I think she had problems, I think she probably didn’t feel very happy with herself. I mean she would always be going on all these diets when she would only be eating broccoli... I wasn’t sure she had such a good grasp on her own life and maybe that was reflected in how she dealt with other people” (Participant 12).

“She was just a bitchy person, who wasn’t really suited to what she was doing, wasn’t particularly happy, I don’t think of her as a person who is deliberately set out to hurt me now. It doesn’t feel personal anymore” (Participant 2)

“ I know that there must have been something quite wrong with that boy to have done that at the time, cause who you know takes pleasure in someone else’s pain unless they’ve got some issue themselves that they need to resolve..., so yeah I don’t take it personally anymore” (Participant 35).

Occasionally participants were able to make a personal external attribution by witnessing the persecutor doing the same thing to other people.

“I saw she did it to other people as well. Back then I didn’t want to believe it, but now that I see it from a different perspective I do believe it. She just wanted to complicate stuff between, like friends and whatever, split them” (Participant 7)

“He like stirred up things, but it is just now like I’m kind of used to it, because he does that kind of thing to everyone, so obviously... it wasn’t just like me” (Participant 29).

“I mean that is the way he acted to most people... I think at the time I still took it quite personally... I think I now know that it was mainly him “(Participant 32).

Witnessing the persecutor doing the same thing to other people was occasionally cited as strengthening the participants' belief that harm was intentional

"I am very convinced that he did it on purpose, because he did it with me and he does it with everybody... I have seen the same behaviour repeatedly with me and with other people" (Participant 48).

However, it is worth noting that these descriptions were not always mutually exclusive, some participants described both witnessing the persecutor doing it to others and consequently viewing them as flawed.

"That is how she is with everyone, I think it's her being a cow, and so it's just a case of, it's her problem, if she is going to be like that let her get on with it. It's just trying to undermine someone and make them feel small and it's sort of pathetic really" (Participant 1).

"Finally she found someone else to do it to, something happened with another friend of mine, yeah she had some issues. I thought it was something to do with her" (Participant 15).

4.3.2.3 Personalising (Taking it personally)

However change did not always occur within this theme, in certain cases participants chose to discuss how they still believe that harm was meant as a personal attack.

"They say mean things about me and I feel sad that they do it, I do still take things personally" (Participant 40).

"They wanted to make someone feel uncomfortable, so that was their choice really. I knew it was being directed at me on a personal level" (Participant 20).

An infrequent theme that one participant discussed, was observing evidence which could potentially normalise the event, such as seeing similar things happen to others. However, this evidence was discarded as they described continuing to take the event personally.

“It’s still personal, because it happened to you so that makes it personal, whether it happened to other people or not, it still happened to you” (Participant 35).

4.3.3 **Theme 3: Self Protection**

Some participants discussed a change in their ability to protect themselves against the threat of harm. The current need for self protection was often discussed, and changes in their perceived capacity to protect themselves from danger were described. An increased ability to defend and protect themselves against future attacks was the most common type of change in this theme. This increase in self protection was perceived as a something they had learnt as a result of the particular paranoid experience.

4.3.3.1 Level of Current Threat

Central to many of the discussions about self protection was an appraisal of the current level of threat. This subtheme contained a range of changes. Some participants discussed a reduction in the current level of threat.

“At the time there was like a question mark over what was going to happen and whether he was going to basically disrupt one of my most important friendships, and so I was worried about that and because that’s not a threat or a risk anymore it is not something that affects me. The danger is passed. There is no hanging question mark there anymore” (Participant 13).

Reductions in current level of threat were frequently perceived as resulting from physical distance from the persecutor.

“The main thing would be coming here and knowing that like he can’t get to me here. It’s only about an hour, but -yeah it’s enough and erm I guess it’s because everything here is on campus, it just feels like a very closed, safe community, where it is like a little bubble that he can’t ruin really” (Participant 48).

“I don’t have to see him anyway because he is in another country and don’t have to work anymore with him. It is because I feel distant from him.” (Participant 38)

Alternatively the current level of threat could be perceived as unchanged since the original event, thus producing the need for continued self protection.

“If he had the opportunity... he might just want to repay me back. He is still very angry with me”
(Participant 62).

“She’d still say the same, she’d still do exactly the same if put in the same situation, I can still see her face and how kind of angry and aggressive she looked... It was a bit threatening.” (Pilot participant 1).

4.3.3.2 Generalised Distrust

This self protection occasionally took the form of anticipating the possibility of threat in future social interactions and consequently being indiscriminately distrustful of others. The distrust participants feel was frequently generalised to all new people participants met, and occasionally extended to people they already knew. They frequently described being cautious and guarded with others.

“I think I have kind of learnt from it and now I know not to get too close to anyone. It has just made me cautious really. I’ve got my guard up with other people. Like also if one person could do it then it makes you think anyone could do it, so yeah” (Participant 25).

“Sometimes I do feel a little bit suspicious of people... I don’t tell anyone my secrets anymore, only my best best friends and so I am really, really careful. I’m still sort of careful, I think that is just what I’ve learnt from the experience“(Participant 14).

There are a lot of people that I don’t trust anymore, it does affect how close I get to people” (Participant 48)

In certain instances this distrust was generalised only to a specific group or type of person that best described the persecutor.

“Say one of my lodgers got a girlfriend who was a bit like that I would be quite wary of her, do you know what I mean? ... I just wouldn’t open up too much and I wouldn’t buddy up with her very much and if I got

the opportunity to get rid of that lodger I probably would. Perhaps what I have taken forward is a kind of slightly unjustifiable belief that there are certain kinds of women who are trouble and who I would be very wary of" (Participant 4).

4.3.3.3 Self Defence

Another form of self protection that was discussed was the notion of emotional detachment as a form of self defence. Within these cases participants discussed a perceived change in the way they shield themselves from the threat of future attacks:

"I tried to like consciously remember these bad experiences and not to be hurt in the future in the same way, yeah I like built a wall and it is still there. The easiest way to deal with the problem to build a wall" (Participant 42).

"I surround myself with almost like a shield from different goings on... I suppose you could call it a safety zone, where I can just escape from it all" (Participant 20).

As with generalised distrust, self defence was often perceived as directly resulting from the original event:

"I have learnt from the experience and I have protected myself" (Participant 4).

"I've learnt to trust the right people and since then, nothing like that has happened to me... I'm not perfect but I think I have learnt from that though, yeah" (Participant 14).

4.3.4 Theme 4: Social Support

When explaining the reasons for change in their feelings about a paranoid event, participants frequently chose to discuss their feelings of support they receive from others. When participants elected to discuss social support, the level of this support was seen as central to their ability to cope with the event. This theme is comprised of two sub-themes; firstly, a sense of support from others. This support is commonly provided by family, friends, or

partners. Secondly, participants describe feeling a lack of social support, when discussed this is frequently perceived as preventing them being able to deal with the experience.

4.3.4.1 Support from Family and Friends

Here participants described a sense of support from family and friends which resulted in a feeling of being able to cope or better able to manage with their feelings about the event. Participants perceive this support as helping them in one of two ways; either to help them cope with the event and manage their feelings after its occurrence or to minimise the likelihood of future events occurring.

“I think my mum at the time was really good about helping me deal with it... I had, yeah, other friends as well, – I guess that helps you” (Participant 26).

“That has kind of made me cope with it a bit better, having other people to sort of support you” (Participant 58).

In a few instances participants discuss feelings of support as leading to a reduction in the perceived level of threat. The support of others is described as making them feel safer.

“My new boyfriend has been very supportive... when I’ve been scared and worried about it, he has been really good at just protecting me and looking after me and making sure everything is alright” (Participant 48).

Some examples contained clear evidence that social support provided participants with the opportunity to discuss the experience with others, and gain a different perspective on the event. This was shown to lead to a change in their appraisal of the incident.

“I mentioned it to a couple of the friend ... they were inclined to think that the others probably just forgot to invite me... it made me less suspicious” (Participant 17).

“My family have helped, they have been able to look at it from a completely different point of view and help me understand it and that has helped as well” (Participant 48).

4.3.4.2 Lack of Social Support or Understanding

However, when discussing reasons for lack of change in ratings since the event happened, some participants reported no change or an increase in their feelings about the event due to a lack of social support or understanding from others.

“I was surprised that everyone was acting so normal, they thought that it wouldn’t affect me” (Participant 37).

“I didn’t have people really to talk to back home” (Participant 61).

In some instances this lack of support went beyond failing to comfort or defend the participant and they described a sense of others adding to the negative impact of the event.

“He had a lot of followers let’s say. In the presence of other people he would kind of put me down and said some things that other people would listen to and maybe I just felt that I was getting less respect than what I deserved from them. I mean if people see you being put down they are going to feel like maybe they can [put you down] too” (Participant 8).

4.3.5 Theme 5: Personal Growth

Participants often described a sense of personal development and growth leading to a change in their feelings about the event. Within this theme three distinct types of personal growth were identified: 1. Participants often reflected on the incident as a positive learning experience. At some point after the event participants reflected on the experience as an event that shaped their character in a positive way. 2. Participants articulated a subsequent increase in self esteem occurring independently from the event. 3. Participants described an improved ability to cope with threat related experiences. This improvement was either seen

as a direct result of the experience itself or something that occurred independently. These descriptions share some similarities with the subtheme 'seeing incident as a positive learning experience'. However, they differ in one key way, examples of 'improved coping skills' describe growth in one area; improved strategies for coping with threat. Whereas the examples included within the subtheme of 'seeing the incident as a positive learning experience' detail a general sense of personal development, where participants saw themselves as stronger or better people.

4.3.5.1 *Seeing the Incident as a Positive Learning Experience*

Within this theme personal growth was seen to occur as a direct result of the event itself. Participants frequently talked of the experience making them a better or stronger person. The notion of growth through adversity was a common focus within these discussions.

"I think having these sorts of experiences does toughen you up. I think being in that sort of situation predisposes you to feeling like you are a bit of an outsider or not in the centre of things, and that has its pros and cons. If you are one of the crowd then things are arguably easier, but when you reach an adult life you are not sure who you are. Whereas I knew who I was because I was different to everyone else" (Participant 70).

Because I have overcome this feeling... it shaped my character. At the time it was a bad experience, but now I see it as something good from it, because I learnt how to deal with these things and to look at people a different way, so I think it was good for me" (Participant 67).

"It helped me in the end because I just learned to handle it... I mean it was hard for me, but I think it helped quite a lot in the end" (Participant 51).

4.3.5.2 *Self Esteem*

In other cases, personal growth was detailed as something that occurred independently after the event had occurred. Within these examples a growth in confidence or self esteem was not

connected to the actual experience itself but was often perceived and linked to subsequent successes and achievements.

“I had so many different experience I can think of, and I know that I have been successful in many things and I have had very many experiences since, I have had many experience after that time and I’ve learnt many things as well “(Participant 67).

“I’ve also achieved something, I got married, I had my own home. I’ve grown in confidence on a completely different scale that has turned me into a completely different person than I used to be... So yeah I think it is personal development and growth. I am now a much stronger person now than I used to be” (Participant 6).

4.3.5.3 Improved Coping Skills

Another type of personal growth that emerged was the notion of improved coping skills.

Participants discussed their perceptions that such an event would be unlikely to happen in the future as they have subsequently developed better ways of coping with this type of threat.

Within this subtheme participants described a change in their ability to detach, walk away or confront threat where necessary.

“I think I have developed physically and mentally, like improved, and can take a step back if something like that happened again” (Participant 50).

“I now know how to cope with it; I could just walk away, or say something that would sort of stop them. No problem” (Participant 32).

“Sometimes you just have to stand your ground... when I try to have an argument with someone now; I’m a bit more rational I can talk my way through easier” (Participant 56).

4.3.5.4 Increased Independence

A further instance of personal growth that specifically reduced vulnerability to future harm concerned the notion that the participant is more independent, self assured and less

concerned about the opinion of others. Participants recognise that their need for others' company and approval in part contributed to what happened.

"Before I really tried to make an effort to please anyone and everyone and now I don't see the point, and if they are not willing to take me on as an individual then I don't see any point of being friends with them" (Participant 68).

"I really wanted to stay with people, like I was really dependent on other people and I wanted to stay friends with them and stuff like that, but now I don't really care, I'm good with myself"(Participant 51).

"I realised, maybe, you don't have to get on with everybody. If people are disrespectful or mean to you, you don't need them. You don't have to be close friends with everyone you meet - You know, when I was a kid I needed them because, I needed some people... I was only close to maybe two or three of them, so I clung, I really clung to them, what I've learned is by not clinging, and just by being casual with it, they'll call you, you can call them. It's not a big deal" (Participant 35).

"I got a completely independent life. I am my own person and I'm not necessarily dependent on an adult any more" (Participant 6).

4.3.6 **Theme 6: All Consuming vs. Wider Perspective**

This theme contains two contrasting stances regarding a sense of perspective and focus on the paranoid experience. Participants either discussed change in paranoid perception through gaining a sense of wider perspective (which was accompanied by seeing the paranoid experience as less significant), or they discussed continued significance due to the all consuming nature of the experience. When talking about a sense of wider perspective, participants frequently described feelings of gaining broader horizons and an increased feeling of choice. They commonly contrasted past feelings of being consumed or trapped by the event and current feelings of choice and freedom. They talked about previously having a narrow focus or a small world view which has now changed. Participants described two distinct reasons for this change; either subsequent events (either positive or negative) placed

the experience in perspective, or they gained increased feelings of choice, for instance through a new social network, that lessened feelings of restriction. In contrast, instances where participants discussed currently feeling that the event is still important or relevant were marked by still experiencing the event as all-consuming, and feeling compelled to ruminate on it.

4.3.6.1 *Loss of Importance or Relevance*

Participants discussed change as due to gaining a wider perspective on the event. A sense of perspective is associated with the event losing importance or relevance to the participants' current daily life. This change in perception is discussed as a direct consequence of comparing the event to specific other ones:

“I’m moving into a new house... and I’m going away travelling so I’m kind of looking forward to it, and focusing on that a lot more, so other things become a lot more important” (Participant 68).

Or generally seeing the event in relation to other activities or problems:

“In the great scheme of things it’s actually not that important in my opinion there is no point in making it any bigger than it is... It was a stupid comment” (Participant 5).

“Looking back it is such a small trivial part of my life in comparison to all the other things that have happened in the meantime. It is just something that has blended out and so it is just not that present in my memory anymore I suspect... it is just not that important anymore at all “ (Participant 14).

4.3.6.2 *Social Choice*

A highly frequent theme which emerged when participants were describing a change in the all consuming nature of the event was a sense of social choice. Participants often described the paranoid experience as having occurred within a context where they felt trapped, and the change in perception as occurring as they felt freed from this entrapment. Whilst this freeing

often involved social contact, the distinguishing feature for this theme was the sense of moving from feeling trapped to having choice. When describing how they felt at the time of the event participants commonly described feeling that they had relatively few social choices. This was often accompanied by a description of feeling limited in their ability to cope with the situation, being less able to walk away, or to put it in perspective.

“You’re kind of trapped in the environment, you don’t have an escape. Now I can choose who I talk to, I can choose who I’m friends with and I can choose my actions a lot more” (Participant 35).

“Having choice would have placed it into perspective because if you only have one thing and that is taken away then that’s 100% of all the things you have, whereas if you have other friends then you still have something to do. I mean just objectively it’s less bad” (Participant 3).

Change was seen to occur when they were able to make new friends and have a wider social circle to choose from. This was seen as giving them a sense of choice and control.

“It made me realise that I don’t have to just be friends with that group. I can make other friends; I don’t have to stick with one set of friends. There are lots of other people” (Participant 24).

Occasionally participants described increased social choice as improving levels of social fit and belonging.

“I have more of a close social group now, and made strong friendships with other people... it doesn’t matter that that person doesn’t like you because there are actually other people, so it is fine” (Participant 22).

“If someone doesn’t like you then you have the rest of the world to be friends with, you can do well with different friends, so I don’t really pay attention to this specific person” (Participant 7).

“I found out that that group of girls was not my whole world and there is a lot nicer people out there, who I am now really good friends with” (Participant 16).

4.3.6.3 Continued Importance or Relevance

However, in certain cases participants elected to discuss a lack of change in this area. Here participants described a continuing sense that the event was important or relevant to their current life.

“I guess if somebody can betray you like that, then there is no - especially in such a heinous manner, I mean it is not something small... it still plays on your mind... It is not something that is going to go away I think” (Participant 37).

“She has done it to me on numerous occasions... it still is really horrible and I am still really offended by it” (Participant 16).

In some instances this continued importance was linked directly to a narrow focus resulting from a lack of choice.

“when I was back at home, I had more people, and I had more things to do and now I have less it is one of my main concerns, I think about it more” (Participant 27).

4.3.7 Theme 7: Letting go and Acceptance

When discussing a reduction in responses to the paranoid event participants mentioned a sense of letting go. These discussions were marked by a sense of acknowledging the event and their reactions to it and then consciously deciding to move on and put the event in the past. In all instances where letting go or acceptance were discussed participants portrayed this as associated with an overall reduction in negative feelings about the event.

4.3.7.1 Acceptance of the Situation

Participants described a change in their feelings as a result of being able to let go of their reactions to the experience by recognising the situation for what it is and accepting that it could not be altered.

"I accepted the fact that, you know, I'm not going to be the popular girl or belong in the popular group necessarily ... I accepted that that was going to be it for a while" (Participant 10).

"I accepted the fact that that was how it was gonna be, because when I came here I obviously had all these hopes and after 6 months you do accept it, you think this is not how I expected it to be but I've got to deal with it" (Participant 49).

"I just realised that you can't change how people feel" (Participant 9)

4.3.7.2 *Letting Go and Moving On*

In some instances participants discussed a sense of simply letting go. Although this sub-theme shares many similarities with 'acceptance of the situation', it is reserved for instances where participants did not explicitly state that they had accepted the situation, rather that they had simply let it go and consciously decided to no longer dwell on it.

"I think there are certain things in your life when you have these kind of moments, either you can dwell on them or you can just let them go, and I've just let it go rather than dwell on it" (Participant 5).

"I just believe that once something has passed it has passed and I have to move on... I told myself that I would just have to let it go and move on with my life" (Participant 62).

"I just let things go. I would just sort of say to myself life is too short to hold onto these things, and to hold a grudge against somebody, and I just don't see any point in it. I don't see any benefit in holding onto a grudge or sort of internalising that sort of thing or holding it. So I think it is healthier to let it go than hold onto it really" (Participant 69).

When discussing letting go many participants simply stated that it was a conscious decision and did not provide any rationale for why or how they now felt able to let it go. However, when participants did offer an explanation for why they can let it go, the most commonly stated reason was that it was a natural event that occurs over time. Within this group a common theme of 'time as the great healer' emerged. Participants frequently discussed a

sense of distance from the experience as time passed which allowed them to move on and reduce any feelings that arose from it.

“I suppose it’s time isn’t it, you know. You get over things and sort of move on” (Participant 1)

“I guess it was many years ago. I have had time to sort of think about it. The years passed... I mean, time heals all wounds” (Participant 9).

“I think with time you always get over these things a little bit more as well. It is just giving myself time and space” (Participant 8).

4.4 Discussion

The purpose of the current study was to explore the reasons people gave for naturalistic change, or lack of change, in response to one specific nonclinical paranoid experience.

Analysis revealed seven distinct themes within participants’ explanations of changes in their thoughts and feelings about the experience. In the vast majority of cases participants discussed positive change; however in some instances their responses remained static or even were more negative than at the time of the original event. The current study has thus investigated reasons for both types of change as well as stability in nonclinical paranoid experience. When interpreting the seven main themes it is apparent that although themes are distinct for the purposes of analysis, they may be interconnected when relating findings to what is already known about paranoia in both clinical and nonclinical groups. Several of the themes identified may be interpreted from the same theoretical accounts of paranoia. Thus the structure of the following discussion does not follow the precise order of the themes as presented within the results; rather it is directed by how and where these themes relate to existing literature.

4.4.1 **Change in the Relationship to Persecutor**

By examining change in the perceived relationship to the persecutor, the findings of the current study suggest this may be a key feature of change in nonclinical paranoia. To date, little published research has looked at the nature of the relationship to the persecutor in both clinical and nonclinical groups. Within the current study all participants knew their persecutor(s) personally, in no example was the persecutor a stranger. This result is in contrast to the identity of persecutors reported among clinical groups (Green et al., 2006). In examining the content of persecutory delusions, Green and colleagues found that just under half (46.4%) of individuals with current persecutory delusions reported that the persecutor was not personally known to them, with 18.8% reporting 'non-human or paranormal' persecutors (Green et al., 2006). Over seventy one percent reported auditory hallucinations (e.g. voices) that they directly linked to some aspect of their persecution. This discrepancy found within nonclinical and clinical samples leads one to question whether the identity of the persecutor is a defining distinction between these groups? In order to address this question, a detailed comparison of the precise nature and identity of persecutors within both clinical and nonclinical groups is needed.

Changes in the relationship between participants and persecutors took three main forms. Firstly, by reframing and therefore seeing the persecutor in a favourable or positive way, participants frequently reported a reduction in the conviction of their belief that the incident was a deliberate attack. Secondly, the relationship with the persecutor changed via a perceived power shift between the participant and the persecutor. Finally, a direct face to face confrontation with the persecutor was provided as a reason for change.

4.4.1.1 Viewing the Persecutor more Positively

When participants changed their initial perceptions of the persecutor and saw them as a good person, they frequently reassessed the initial paranoid experience itself, and often reported a subsequent reduction in the belief that harm was intentional; this resulted in a marked reduction in their responses to the event. One possible hypothesis for this finding is that in order to hold compatible beliefs about the initial event and the persecutors' character, participants reevaluated either their original assessment of the event or the persecutors' character. Indeed the need to reduce dissonance between inconsistent attitudes or beliefs is widely accepted to be a source of attitude and belief change (Festinger, 1957).

The findings of the current study show that nonclinical paranoid experiences do not consistently result in an external attribution being made. In some instances, the experience led to naturalistic change in perceptions of the persecutor as a good person and resulted in a reevaluation of the experience. This process of reevaluation was reported as a reason for a reduction in responses to paranoid experiences. The notion that a lack of external bias may play a role in nonclinical groups is supported by studies that suggest external attributional biases are only manifest when persecutory beliefs reach clinical or delusional levels (McKay, Langdon & Coltheart, 2005a).

4.4.2 Changes in Power Shift

An alternative way in which the relationship with the persecutor changed was via a power shift between the participant and the persecutor. Participants frequently described changes in past feelings of subordination to the persecutor. A gained sense of superiority to, or equality with, the persecutor was described as resulting from either external events, face to face confrontation or via self serving comparisons with the persecutor.

This finding may be examined from the perspective of 'social rank theory' (Price, 1972; Gilbert, 1992; Brown et al., 1995; Gilbert & Allan, 1998), an evolutionary account, in which depression is hypothesised to evolve from internal mechanisms designed to prevent futile continuation of challenging behaviour in the face of defeat (Gilbert & Allan, 1998). This notion is supported by evidence that people in depressed states are more likely to see themselves as inferior and of low social rank to others (Swallow & Kuiper, 1988; Allan & Gilbert, 1995; Gilbert et al., 1995), a finding which has recently been replicated in an early psychosis group (Richie, Harrop & Ellett, in submission). Freeman et al. (2005b) suggest that within nonclinical groups a lack of social self-confidence may make individuals feel more vulnerable to attack and contribute to the occurrence of paranoia, experimental evidence that interpersonal sensitivity predicts persecutory ideation support this notion (Freeman et al., 2003). By applying the tenets of social rank theory to the current findings it may be tentatively suggested that overcoming feelings of subordination towards the persecutor could deactivate some of the mechanisms associated with perceived low social rank in nonclinical groups. One potential hypothesis being that altering the power dynamic reduces negative emotional and cognitive responses associated with a paranoid experience.

One of the key ways in which feelings of subordination were reported to be overcome within the current study was through making frequent self serving comparisons with the persecutor. Previous research has shown that those with high self esteem engage in downward comparisons with others when self concept is threatened (Crocker et al., 1987; Wills & Ashby, 1991). The current study found that participants' subjective reports of a sense of personal growth, including an increase in self esteem, either as a direct result of the paranoid event itself or as occurring through subsequent successes, or an increased sense of independence and self assuredness, were discussed as causes for reductions in responses to the paranoid experience. Such a finding is in keeping with a growing body of research that links high levels

of paranoid thoughts in nonclinical samples with low levels of self-esteem (Combs & Penn, 2004; Ellett, Lopes, & Chadwick, 2003; Martin & Penn, 2001). Additionally the finding that a nonclinical group emphasise personal strengths and report this as leading to reductions in response to paranoia, is consistent with Chadwick's (2006) person-centred CBT for distressing psychosis, in which equal emphasis is placed on reducing distress and promoting strengths.

Another way in which the perceived power dynamic was altered was through direct confrontation with the persecutor. This was an atypical theme that occurred in only a few interviews. In the majority of cases where confrontation was discussed, it was described as reconciliation with the persecutor. The low frequency of examples of confrontation is in keeping with the findings of Ellett et al. (2003), who in a questionnaire study of nonclinical paranoid experience found that although 44% of their sample reported wanting to confront the persecutor, the majority did not.

4.4.3 **Social Choice**

A further finding that may be understood by considering social rank theory is that participants frequently cited increases in social choice as a reason for change. Social rank theory does not only involve feelings of imbalance of power and strength, but also comparisons of perceived belonging and social fit (Gilbert et al., 1995). Within the current study, participants frequently cited a change of social group as having several positive outcomes, among those were: improving social fit, gaining a sense of belonging, increased social support and feelings of choice and control. It may be argued that by gaining a wider social group, participants were able to overcome feelings of subordination and gain access to a social group where their comparative social ranking is more favourable.

4.4.3.1 Social Choice and Feelings of Entrapment

Participants frequently described the paranoid experience as having occurred within a context where they felt socially trapped, and the change in the all consuming nature of the experience as occurring through gaining increased social choice and consequently feeling freed from this entrapment. The notion of entrapment has been defined as a strong motive to take flight that is blocked (Gilbert, 1992). It has been suggested that the belief that one is trapped but with a strong desire to run away or escape may play an important role in the development of depression (Gilbert & Allen, 1998). Additionally, Freeman et al. (2005b) have hypothesised that experiences of paranoia and suspiciousness may be especially linked to feelings of entrapment, as such experiences elicit concerns about interpersonal struggle and threat. In a recent study of patients with schizophrenia, feelings of entrapment were shown to mediate between suspiciousness and suicidal ideation (Taylor et al., 2010). In addition, patients with early psychosis have been shown to report more feelings of entrapment than healthy controls (Ritchie, Harrop & Ellett, in submission).

The term entrapment contains three distinct feelings; internal entrapment (feeling trapped in a state of depression), feeling trapped in a subordinate role, and external entrapment (feeling trapped in relationships or life circumstance, Gilbert and Gilbert, 2003). The descriptions of initial feelings of social entrapment described within the current study appear to share some similarities with descriptions of both subordination and external entrapment described by depressed patients (Gilbert and Gilbert, 2003). What is striking about the nonclinical reports within the current study is that overcoming the feeling of entrapment through improved social choice was spontaneously provided as a reason for reductions in distress, impact, preoccupation and conviction following a paranoid experience. By gaining a wider social network, participants frequently described gaining a sense of increased choice, a wider

perspective and improved social rank, which led to positive changes in their thoughts and feelings about a paranoid experience. Taken alongside previous research showing that feelings of social entrapment are linked to clinical depression (Brown et al., 1995; Gilbert and Allan, 1998), and schizophrenia (Taylor et al., 2010) the findings of the current study offer the tentative hypothesis that the ability to overcome such entrapments may be a distinguishing feature of nonclinical groups.

4.4.4 **Feelings of Subordination and Paranoia**

The current study has thus far detected several ways feelings of subordination are altered naturalistically. One is left to question what impact continued feelings of subordination would have on participants' responses following a paranoid experience. If naturalistic increases in perceived social rank are associated with reductions in responses to paranoia, are feelings of subordination involved in the maintenance of reactions to paranoid experiences? Without naturalistic changes in perceived social rank would some participants continue to be distressed by or preoccupied with past paranoid experiences? The precise nature of the relationship between feelings of subordination in nonclinical paranoia would benefit from further investigation. Of particular interest would be a study that investigates whether levels of perceived social rank, social choice and self esteem can predict levels of distress, preoccupation, impact and conviction associated with paranoid experiences.

4.4.5 **Social Support**

In addition to viewing a wider social choice as the opportunity to improve social fit and thus potentially alter perceptions of social rank and feelings of entrapment, one aspect of gaining a wider social network of friends was that they provided greater levels of social support. A feeling of social support was a strong theme that was commonly discussed as central to

participants' perceived ability to cope with the paranoid experience. This finding is in keeping with a large body of evidence that shows a clear predicative relationship between mental health and perceived levels of social support (Rhodes & Lakey, 1999). Within the current study, social support was discussed as having two positive outcomes; it either helped participants manage their thoughts and feelings about the specific event by providing the opportunity to discuss the experience with others, or was seen to increase perceived psychological resources, thereby protecting against the potential impact of similar events occurring in the future.

The finding that social support is subjectively described as increasing psychological resources is consistent with the 'Stress buffering model' (Cohen et al., 2000). Cohen and colleagues suggest that perceived social support and feelings of being connected with others reduces emotional responses to stressful situations, by providing the belief that they have additional resources (such as other people) to help them. The notion that increasing psychological resources may act as a buffer against paranoia in nonclinical groups is supported by experimental evidence that shows increased positive mood is associated with lower levels of paranoia (Ellett et al., 2007).

In addition to the sense of increased psychological resources described by participants who felt they had the support of others, the current study has also found some clear examples of participants talking about the event with significant others in order to gain a different perspective. This finding may be explained by looking at the 'social cognitive model' (Cohen and Willis 1985; Rhodes & Lakey, 1999). This model differs from the stress buffering model in that the presence of stressful life events are not seen as necessary for the positive effects of social support to occur. Instead it is argued that positive mental health benefits occur because

the supported individual has access to others who share information or advice about engaging in appropriate mental health-related behaviours (Rhodes & Lakey, 1999; Cohen et al., 2000).

In finding that discussing a paranoid experience with supportive others is reported to alter subsequent emotional and cognitive responses, the current study supports the ideas of Freeman & Garety (2004) and Cohen et al. (2000) who hypothesise that the ability to openly review beliefs in a supportive environment may be an important feature of nonclinical paranoia. Additionally, this finding is consistent with the common CBT technique of generating an alternative meaning for events (Freeman & Garety, 2006).

In addition to discussing positive benefits of social support, participants often cited a lack of social support as important in maintaining and increasing their responses to the paranoid experience. A lack of social support and feelings of social isolation have been conceptualised as mediating factors in the development of persecutory delusions (Freeman & Garety, 2004). In the absence of supportive others such individuals are seen as unable to review their ideas of threat on the basis of positive interactions. The findings of the current study suggest that this account may be extended to nonclinical groups, a notion that is supported by recent evidence that high levels of paranoia are associated with less perceived social support in a nonclinical group (Freeman et al., 2011).

4.4.6 **Self Protection**

Another frequent theme associated with reductions in responses to paranoia was perceived increases in participants' ability to protect themselves against any future threat. This self protection was either through the employment of generalised distrust of others to prevent future attacks occurring, or by becoming emotionally detached in order to minimise any harm to the self that may result from such attacks.

The current study has found that 'self defence' is explicitly discussed by a nonclinical sample when explaining reasons for change in paranoia. In discussing self defence participants describe 'building a wall' or 'developing a shield' in response to the paranoid experience. These accounts were interpreted as containing descriptions of emotional detachment. When discussing self defence, participants frequently described a consequent sense of emotional detachment from the past experience, as well as a sense of protecting themselves from any future harm. They frequently depict detachment as a positive learning outcome from the paranoid experience that has served to make them more resilient to future situations that may contain threat. This interpretation of detachment as a positive coping style is in keeping with the findings of Freeman et al. (2005b), who discovered that lower levels of trait paranoia were associated with higher levels of rational and detached coping styles within a nonclinical population. Freeman notes that we are unable to determine if poor coping encourages the production of paranoia, or if paranoia interferes with effective coping strategies. However, alongside previous research, the findings of the current study propose a tentative indication that detachment may moderate the occurrence of suspicious thoughts in nonclinical groups.

Detachment is a factor included within the coping styles questionnaire (Roger, et al., 1993), after Roger (1992) observed that subjects participating in a study validating a stress management programme frequently reported that they felt more able to cope with negative events by feeling less involved with them. The detachment they described did not involve denial or any deliberate attempts to avoid stress, but could be defined as feeling independent of the event and emotions associated with it (Roger, et al., 1993).

This description of detached coping closely matches those provided by participants in the current study when discussing the themes of both self defence and loss of importance and relevance. When explaining a reduction in the importance of the paranoid experience,

participants often described gaining a sense of distance and wider perspective to the experience. This feeling of distance and detachment resulted from seeing the paranoid experience as less important by comparing it to other life events, and was frequently cited as a reason for reductions in responses to it. Conversely, a continued sense of importance, narrow focus on, and current involvement with the experience was commonly cited as a reason for a lack of change.

Existing cognitive behavioural interventions for psychosis encourage detachment and feelings of control (Chadwick et al., 1996). The current study therefore corroborates the importance of detachment and control by finding these themes to be central to descriptions of naturalistic reductions in responses to paranoia within a nonclinical group.

4.4.6.1 Generalised Distrust

The alternative form that the theme of self protection took was a description of a generalised distrust of other people. In these instances participants described being indiscriminately cautious and guarded with others as a direct result of the paranoid experience. Participants who described feelings of generalised distrust frequently cited this as a way of keeping themselves safe from future harm. Elements of these descriptions of generalised distrust parallel attributes associated with 'schematic paranoia' described as occurring in patients with persecutory delusions (Chadwick, 2006). In distinguishing between symptomatic and schematic paranoia, Chadwick (2006) described symptomatic paranoia as referring to specific persecutory beliefs, and schematic paranoia as a "generalised fear of harm by others driven by enduring underlying rules" (e.g. "If you get close to people they will betray you" Chadwick, 2006, p.50). Chadwick observes that within clinical practice, schematic paranoia is commonly developed in childhood and adolescence and often predates any specific symptomatic paranoid beliefs. Schematic paranoia is therefore viewed as a learned response to traumatic

events. Although this distinction is made in relation to clinical examples of persecutory delusions, accounts of change within the current study contain examples of generalised fear of harm by others that bear some notable similarities to those described by Chadwick.

This finding has several implications. Firstly, it suggests that forming generalised distrust in response to negative events might be a common process that is not exclusively located with clinical groups, consequently studying examples of generalised distrust in nonclinical populations may provide information relevant to clinical groups. One tentative and interesting hypothesis is that high levels of generalised distrust may be a risk factor for developing clinical paranoia. Secondly, it appears that such generalised fear of others is associated with processing a variety of negative events that include paranoid ones. The findings of the current study therefore suggest that elements of generalised distrust found in schematic paranoia might develop through attempts at self protection following a single paranoid experience among nonclinical individuals.

4.4.7 **Letting Go & Acceptance**

Within the current study, themes of 'acceptance' and 'letting go' have been shown to occur naturalistically in a nonclinical group and are associated with a reported positive change in responses, such as distress and preoccupation to a single paranoid experience. Descriptions of acceptance were marked by consciously deciding to acknowledge the experience, move on and put the event in the past. Many participants used the term 'letting go' to describe their ability to move on and not dwell on the experience.

The terms 'acceptance' and 'letting go' are both elements described within mindfulness- based therapy designed to alleviate distress for patients with current psychosis (Chadwick et al., 2005b, 2009). Chadwick and colleagues describe two ways of relating to experiences such as

having paranoid thoughts; individuals may either have a mindful response, whereby they accept the experience, do not judge it and let it go, or they may attempt to avoid the experience, leading to judgment, rumination and distress. Mindful responses to voices have been shown to be negatively correlated with both subjective levels of distress and general negative affect in patient groups (Chadwick, et al., 2007). It is theorised that 'decentering' from thoughts enables individuals to relate to internal experiences as passing objects rather than reflections of self or reality, and it is this process that leads to a reduction of distress (Chadwick et al., 2007). Although the majority of research surrounding mindfulness examines its efficacy with patient groups, mindful breathing techniques have been shown to produce greater decentering of negative thoughts and negative reactions to them in an undergraduate population (Feldman et al., 2010). The current study has found that descriptions of accepting and letting go of a paranoid experience are associated with perceived subjective reductions in emotional responses within a nonclinical sample. Such results tentatively indicate that this way of relating to a paranoid experience may be associated with reducing distress in a nonclinical group. This finding suggests that mindfulness interventions may be both plausible and useful for nonclinical groups. Further study is therefore needed to examine both the prevalence of 'acceptance' and 'letting go' as responses to paranoid experiences within nonclinical groups, and whether these ways of relating to experience are significantly associated with lower levels of distress. Additional study into the efficacy of mindfulness training on nonclinical paranoia may provide some important insights into both the necessity and benefit of interventions in nonclinical groups.

4.4.8 Normalising vs. Personalising

Within the current study, participants discussed certain perceived blocks to viewing their paranoid experience objectively. One of the more prominent themes within these discussions was 'personalising'. Throughout this theme participants discussed why they still believed that harm was meant as a personal attack. Such discussions were marked by descriptions of a lack of change in their responses to the experience over time and a sense of being unable to gain a sense of distance from it. It is worthy of note that this was not a common theme, it occurred in a few examples and often co-occurred with a discussion of the 'all consuming nature' of the event.

In the majority of discussions regarding taking the event personally, participants discussed a change in their perceptions. They initially felt responsible for the event but this altered when they saw the event as something that was likely to happen to anyone and therefore part of normal social interaction. This change was often achieved by seeking evidence that similar things occur to others. Within Cognitive Behavioural Therapy for schizophrenia an emphasis is placed on normalising psychotic experiences (Turkington et al., 2006). In recommendations for treating patients with schizophrenia it is suggested that "Time is often spent looking at the prevalence of unusual experiences (e.g., voice hearing in the normal population) in order to eliminate catastrophic interpretations of what having these experiences may mean" (Turkington et al., 2006, p. 226). By reinforcing normalising explanations for unpleasant or paranoid experiences, patients are encouraged to view them as part of normal human experience and thus reduce some of the stigma associated with them. The findings of the current study suggest that a similar process is also spontaneously used by some participants from a nonclinical group, who themselves seek 'normalising' interpretations of a single paranoid experience resulting in a naturalistic reduction in responses to it.

Another way in which the event was taken less personally was by seeing the persecutor as wholly responsible for the event. Here participants made a personal external attribution for the event. This was often due to seeing the persecutor as a flawed person who is likely to harm others. The persecutors' subsequent behaviour and prior actions were cited as evidence of their flawed nature. The incident was discussed as part of a larger body of evidence which reinforced their belief that threat was intended. A similar process has been described in the development of persecutory delusions among clinical groups, whereby pre existing assumptions about the self and others mediate between events and the formation of a threat belief (Freeman et al., 2002). In searching for meaning about their paranoid experiences, people are faced with a choice between something being wrong with them, or something being wrong with the world, the latter being the less distressing belief. By making a personal external attribution for the event, individuals are able to lessen any impact on self esteem.

In gaining confirmatory evidence for their beliefs about the persecutors' character, it may be argued that participants within the current study displayed 'belief confirmation biases'. It has been shown that individuals have a normal tendency to only look for evidence consistent with their beliefs (Maher, 1988). Freeman, Garety, McGuire & Kuipers (2003) note that this confirmation bias is particularly strong in individuals with delusions. When discussing the development of persecutory delusions Freeman & Garety (2004) argue that confirmation biases are involved in maintaining delusional beliefs. Attentional biases towards threatening stimuli result in threat being overly detected (Bentall & Kaney, 1989).

However, participants within the current study also cited 'seeing the persecutor as flawed' as a reason for reductions in emotional responses to paranoia. Participants frequently described no longer feeling personally responsible for the event and this was often reported as strengthening their belief that harm was intentional. By making an external personal

attribution for the experience, participants reported feeling detached from it and consequently less distressed or preoccupied by it.

Two main theories seek to explain the role of attributional style and paranoia. Bentall and colleagues (Bentall et al.1994; Bentall & Kaney 1996; Kinderman & Bentall, 1996b; 1997) propose that paranoid individuals avoid negative self beliefs by making external, personal attributions for negative events. By blaming others for bad things they protect their self esteem and avoid a self standards discrepancy. Therefore, within this model paranoia is seen to function as a defence of self esteem. Although this model was developed in order to explain persecutory delusions, external attributional biases have been associated with paranoia in nonclinical populations (Sharp et al., 1997; McKay, Langdon & Coltheart, 2005a). In determining that within subjective reports people cite external attributions as the reason for reductions in distress, impact and preoccupation, the findings of current study are compatible with the paranoia as defence model. However, Freeman (2007) argues that external attributions are a 'plausible factor' in the creation of paranoid thoughts. If someone has a tendency to blame others for negative events, they have an external focus, it is thereby reasonable to assume there is an increased likelihood of having paranoid thoughts. Freeman thus argues that paranoia is not an attempt to protect self esteem but is a symptom of a particular thinking style. In finding that individuals describe seeing the persecutor as responsible for the incident as reinforcing the belief that threat was intentional, the current study also contains accounts of defensive attributions leading to the formation of threat beliefs within a nonclinical population. Therefore, making an external attribution appears to be involved both in producing a paranoid account of the experience, and acts to defend against distress, preoccupation and impact following the experience. In this way the current findings correspond to both Bentall's and Freeman's models of paranoia.

4.4.9 A Comparison with Persecutory Delusions

The current study has found that a nonclinical sample described a diverse range of reasons for changes in responses to a single paranoid experience. For most people responses reduced over time, this is in marked contrast to the persistence found among clinical groups (Green et al., 2006). An additional difference was that the current study contained no examples of a persecutor who was a stranger, or a supernatural entity, a finding which clearly contrasts with clinical groups (Green et al., 2006). However in discussing change in responses to a paranoid experience, five of the processes described by the nonclinical group appeared to be consistent with accounts of clinical paranoia. Firstly, in describing a change in feelings of subordination as a catalyst for reductions in emotional responses to a paranoid experience, parallels with studies investigating perceived social rank and depression in clinical groups can be drawn (Birchwood et al., 2000; Green et al., 2006). Secondly, participants described discussing the paranoid experience with supportive others as reducing responses to it, and detailed deficits in social support as a reason for a lack of change. Comparably, social isolation and the consequent inability to review threat beliefs have been linked to the development of persecutory delusions (Freeman & Garety, 2004). Thirdly, the findings of the current study tentatively indicate that forming generalised distrust in response to paranoid experiences might be a common process that is not restricted to clinical groups. Fourthly, findings indicate that participants' describe a sense of detachment from, and objectivity to, the paranoid experience as subjectively reducing their emotional and cognitive reactions to it. This detachment was frequently linked to descriptions of accepting and letting go of the paranoid experience. A similar process of detachment or 'de-centered awareness' leading to acceptance and the ability to let go, has been found to be effective in reducing distress associated with paranoia in clinical groups (Chadwick et al., 2005b; 2009). Finally, in developing a more positive view of the persecutor, some individuals within the nonclinical

sample reported re-evaluating their conviction that harm was intentional. Although at the time they felt harm was intentional, this appraisal changed in the face of contradictory evidence. The efficacy of challenging existing beliefs and the benefits of searching for disconfirmatory evidence are well documented in CBT for psychosis (Tarrier et al., 1993; Chadwick & Lowe, 1990; 1994).

In drawing parallels between clinical and nonclinical groups, an interesting and tentative hypothesis emerges; could it be that the ability to change their view of the persecutor, overcome feelings of subordination, talk about the experience with supportive others, let go of the experience, or search for disconfirmatory evidence, naturalistically without therapeutic intervention, is what keeps these individuals within the nonclinical domain? Put simply; is the naturalistic occurrence of these processes of change a distinguishing feature of nonclinical paranoia? Further study which investigates the extent to which these processes occur naturalistically in both clinical and nonclinical groups, and the consequent level of change associated with them, would provide a constructive test of the phenomenological view of paranoia, as well as offering potential implications for the treatment of persecutory delusions.

4.4.10 **Limitations**

In interpreting the findings of the current study several methodological constraints need to be considered. Firstly, the sample was restricted to university students, and a marked gender skew was evident within the sample (75% were female). However, as a qualitative piece of work, the current study sought to provide an in-depth description of subjective accounts of change in paranoia within a student sample and did not aim to produce findings that can be generalised to other populations. According to Adelman, Jenkins & Kemmis, (1980), despite not seeking generalisable findings, the knowledge generated by qualitative research is significant in its own right. Although the exploratory and qualitative approach of the current

study does not permit causal inferences to be made, it aimed to provide a rich description of reasons for change in nonclinical paranoia that may be used to inform quantifiable hypotheses in future study. The findings of any future quantitative study based on the current research may have implications for the clinical treatment of persecutory delusions. Additionally with the inclusion of 60 interviews, the current study contained a large sample size for a qualitative study, ensuring that the themes were produced from a wide range of individual experiences.

A further limitation is that any stigma attached to discussing paranoid experiences may discourage participants from discussing their most paranoid experience, and instead provide one which they deem to be appropriate enough to discuss with a researcher. It may be argued that more unlikely paranoid thoughts, extreme reactions to them, and lack of change in feelings over time, may be underrepresented in the sample. However in order to minimise this potential limitation, the researcher began each interview with a brief description of the range of experiences that people commonly report and attempts were made to normalise suspicions of harm. Additionally, when enquiring about change or a lack of change, the researcher ensured the wording remained neutral and did not make any indication that change was expected or preferable. One methodological limitation is that the current study did not include a diagnostic screen prior to participation. However, as the student sample were drawn from a previous study, mean data from the BDI and paranoia scale were available and show that participants scores were comparable to published means for a nonclinical group. In addition, no interviews included in the current study contained explicit reference to therapeutic interventions, therefore we can be confident that all transcribed discussions contained descriptions of naturalistic change.

Finally, in using thematic analysis the current study has further methodological limitations that must be considered. It may be argued that thematic analysis is a predominantly descriptive

methodology and therefore has limited interpretive power (Braun & Clarke, 2006). However, by moving beyond a simple description of accounts, interpreting the meaning behind them and linking this meaning to existing theoretical models of paranoia, the current study can be seen to mitigate this potential limitation of thematic analysis. An additional disadvantage of thematic analysis is that, unlike discourse analysis or conversational analysis, it does not permit the researcher to examine language use or the detailed functionality of discourse (Braun & Clarke, 2006). By treating the language used by participants as describing reality, rather than actively constructing it, it may be argued that the current study favours a more realist approach. However, in focusing on participants' own accounts of experiences and the meaning they attributed to these experiences, the current study provides an initial exploration into the reasons for change in nonclinical paranoia from the perspective of those experiencing it.

4.4.11 **Clinical Implications**

It has been suggested that delusions of clinical intensity and paranoid ideation are related experiences and that the study of paranoia in nonclinical groups could inform the understanding of paranoid delusions in the clinical population (Freeman, 2006). Therefore, although interviews were conducted with a nonclinical group, a number of tentative clinical implications may be considered.

Firstly, the current study has established that when asked, the majority of a nonclinical group were able to recall and discuss in detail a paranoid experience. Sharing this information with clinical groups may help to alleviate some of the stigma attached to such experiences, and could be a useful tool in reducing distress by normalising such experiences (Kingdon & Turkington, 1994). Additionally the findings of the current study suggest that nonclinical individuals themselves seek to normalise paranoid experiences, and that they associate this

process with a subjective reduction in their responses to the experience. This finding may therefore support the extension of normalising practices in interventions within clinical groups to include evidence that the process of 'normalising' distressing experiences is itself something that is a common part of everyday experience.

Within the current study, naturalistic reductions in the distress, preoccupation, impact and level of conviction following a paranoid experience have been linked to several key factors; normalising unpleasant or paranoid experiences, talking about paranoid beliefs with supportive others, overcoming subjective feelings of social subordination and low self esteem and gaining feelings of acceptance and detachment from the experience, all of which are important elements in existing cognitive behavioural interventions for persecutory delusions (Chadwick, et al., 1996; 2006; Freeman & Garety, 1999; Garety et al., 1997; Kuipers et al., 2006; Foster, et al, 2010). The findings of the present study are therefore consistent with the importance of these processes in current therapeutic interventions.

In addition, the current study has found several factors associated with naturalistic reductions that are not central to current clinical interventions. Therefore, the efficacy of interventions aimed at reducing reactions to paranoid experiences within clinical groups may be strengthened by their inclusion. In particular, changes in the perceived relationship to the persecutor were found to be a key feature of change in nonclinical paranoid experience. Indeed, little is known about the role this relationship plays in clinical paranoia. Investigations that establish whether changes in the relationship to the persecutor have similar effects in clinical groups might be beneficial when working therapeutically to reduce levels of distress associated with paranoid experiences. Initially, changes in relationship to the persecutor would have to be quantifiably tested in order to establish if they are statistically associated with reductions in distress, or impact within a nonclinical group. If the results were replicated

and found in a clinical group then implications for the development of clinical interventions may be considered. Interventions that encourage people to view the persecutor in a different way, either by promoting self serving comparisons to the persecutor, or seeking evidence that allows the persecutor to be viewed in a more positive way, may also be incorporated into existing treatments. Using cognitive behavioural techniques to encourage patients to reevaluate their perceptions of the persecutor and their relationship with them may change the meaning of the experience and could potentially result in change in clinical groups.

Several blocks to naturalistic reductions were also identified within the nonclinical sample; taking the event personally, a lack of social support or understanding, continued importance or relevance and a currently high level of perceived threat. These have all been found to be reported as relevant to continued feelings of paranoia. Identifying the existence of these potential blocks to change and tailoring treatments to address them may improve the outcome of existing clinical interventions. For example, if a perceived lack of social support was found to be relevant to either the development or maintenance of an individual's persecutory delusions, an intervention aimed at increasing social support may act as a buffer against paranoid cognitions by increasing feelings of psychological resources. Evidence suggests that there is often a reduction in peer networks following the onset of psychosis (Reed, 2008; MacDonald et al., 2005). Helping people negotiate their relationships with others is a central component of existing cognitive behavioural interventions for psychosis (Fowler et al., 1995a, Chadwick et al., 1996). It may therefore be possible to extend this component to specifically address increasing feelings of social support. Thus, encouraging individuals to seek evidence of existing support or to consider how their remaining support networks may help them deal with their current feelings may be beneficial for some individuals. Such a notion is supported by evidence which shows that guided peer support interventions are a useful

intervention for people with psychosis as they can improve their social network (Castelein, et al., 2008).

5 Chapter Five - General Discussion

Within this final chapter the main findings and conclusions that can be drawn from the 4 studies within this thesis will be considered. Additionally the limitations, theoretical and clinical implications of the studies will be examined and several areas for future research will be discussed. In conclusion the original contributions the current thesis makes to the literature on nonclinical paranoia will be considered.

5.1 Review of Thesis Aims & Main Findings

This thesis examined the phenomenon of paranoia in the nonclinical population and addressed several unanswered research questions within this area: 1. Are paranoid cognitions evident within a nonclinical group taking part in a Prisoner's Dilemma Game? 2. What percentage of nonclinical individuals can recall a single past paranoid experience and over what time frames are they recalled? 3. Do those who report a paranoid experience differ from those who don't on a range of social and cognitive constructs? 4. Does nonclinical paranoia change naturalistically over time across a number of dimensions, and if so, what explanation do people give for change?

The findings of the 4 studies all provide further evidence that paranoia is a commonly occurring, ordinary response to particular interpersonal events and experiences. Thus throughout the thesis the finding that paranoia is both common and persistent in the nonclinical population is taken as consistent with the continuum view of paranoia. The thesis represents a mixed methods approach to the study of nonclinical paranoia and through using a wide range of different methodological approaches, attempts to provide a thorough multifaceted investigation of the phenomenon. A brief overview of the studies conducted,

main research questions, findings and conclusions within this thesis are provided in Table 24 below.

Table 24, A summary of the thesis: Question, Method, Main findings and Conclusions

Study	Question	Method	Main findings	Conclusions
Study 1 Two-Choice PDG and Paranoia	Is choosing a competitive strategy against another player in a Two-Choice PDG associated with higher levels of nonclinical paranoia?	Experimental and online study N= 175	Competition was positively associated with state paranoia but not trait paranoia in a nonclinical population.	PDG appears to be a promising paradigm for the study of nonclinical state paranoia. However players' motivations when choosing to compete need to be disentangled.
Study 2 PDG-Alt and Paranoia	Will state paranoia be associated with withdrawal and not competition in a two player PDG-Alt? Additionally, is risk aversion associated with game choice?	Experimental study N = 99	State paranoia was positively correlated with withdrawal, not correlated with competition and negatively correlated with cooperation. Risk aversion was not associated with game choice. A significant difference between cooperate and withdraw choices and state paranoia was found, with no significant difference between PDG-Alt choice on RISK or trait paranoia emerging.	The PDG-Alt provides the clearest behavioural indicator of state paranoia in nonclinical groups and is therefore recommended for use in future research.

Table 24 Continued. A summary of the thesis: Question, Method, Main findings and Conclusions

Study	Question	Method	Main findings	Conclusions
<p>Study 3</p> <p>Naturalistic change in nonclinical paranoia</p>	<p>1. What percentage of nonclinical individuals report a past paranoid experience, and over what time period do people recall them?</p> <p>2. Do individuals who report a paranoid experience differ from those that do not on a range of social and clinical constructs?</p> <p>3. Do responses to a nonclinical paranoid experience change naturalistically over time across 4 quantitative dimensions of paranoia?</p>	<p>Questionnaire and structured interview</p> <p>N= 75</p>	<p>1. Participants recalled paranoid experiences occurring up to 25 years before the interview.</p> <p>2. Those who reported a paranoid experience scored significantly higher on measures of depression and trait paranoia.</p> <p>3. 100% of participants who described a past paranoid experience reported naturalistic change in at least one dimension. The majority of change constituted a reduction in responses over time. However, some evidence of persistence of nonclinical paranoia, particularly along the dimension of conviction, was found.</p>	<p>Past paranoid experiences can be recalled over long time periods among nonclinical groups. These experiences are associated with initial distress, preoccupation, impact and conviction at the time of occurrence. However there is a very high degree of dimensional change within nonclinical paranoia.</p>
<p>Study 4</p> <p>Reasons for change:</p>	<p>What reasons do people give for changes in their responses to a paranoid experience?</p>	<p>Thematic analysis of semi structured interviews</p> <p>N = 60</p>	<p>Seven main themes were found within descriptions of naturalistic change in responses to a nonclinical paranoid experience. These themes were identified as: change in relationship to persecutor, normalising vs. personalising, self protection, social support, personal growth, all consuming vs. wider perspective, and letting go and acceptance</p>	<p>Many of the reported reasons for naturalistic change support existing theoretical accounts of the production and maintenance of paranoia. Additionally several factors reported by nonclinical participants as relevant to naturalistic reductions in paranoia also feature within interventions for persecutory delusions. However other themes such as ‘change in relationship to persecutor’ appear to be a novel aspect of change and warrant further study.</p>

Table 25 (overleaf), represents a summary of four main original contributions of the work conducted within this thesis, which area of theoretical work they contribute to, the evidence produced within the thesis that support these contributions, and the corresponding study numbers. This chapter will now address each contribution in turn: Extension of the definition of paranoia, a third experimental paradigm to investigate nonclinical paranoia, the persistence of nonclinical paranoia and finally naturalistic change and potential factors that may keep individuals within the nonclinical domain.

Table 25, A summary of the main contributions of the thesis, with theoretical link, evidence and study number.

Contribution	Theoretical Links	Evidence
Clarification of definition; paranoia in the absence of clear evidence.	Freeman & Garety's (2000) definition of paranoia Issues of falsity in paranoia	State paranoia established within the ambiguous condition of PDG, showing that nonclinical paranoid thought can be unfounded (Studies 1 &2). High rate of paranoid experiences found within a nonclinical group using the extended definition of "intention to harm in the absence of 'objective' evidence" (Study 3).
Introducing a third experimental paradigm for the study of nonclinical state paranoia: PDG-Alt.	Camera paradigm (Ellett & Chadwick, 2007; Bodner & Mikulincer 1998) Virtual reality (Freeman et al., 2003, 2005c, 2008c, 2010) Novel approach (Green, 2011)	A significant relationship found between state paranoia & the selection of the withdrawal choice PDG-Alt (Studies 1 &2).
The persistence of nonclinical paranoia	Ellett & Chadwick (2007) experimental findings that once activated nonclinical paranoia does not reduce Freeman & Garety's model of paranoia Bentall's (2001) 'paranoia as defence' model Evolutionary perspectives of paranoia	Paranoid experiences recalled for a long period after their occurrence (Study 3). Compared paranoia across two time points, retrospective and current ratings therefore addressing the persistence of paranoia along four dimensions known to be important in clinical paranoia (Study 3). Reports of current levels of preoccupation, distress, impact and conviction regarding a past paranoid experience within a nonclinical group (Study 3). Reasons offered for why some dimensions of paranoia did not reduce (Study 4).
What keeps people in the nonclinical domain? Naturalistic reductions in nonclinical paranoia	Dimensionality of paranoia	Reductions in responses to a past paranoid experience commonly found in a nonclinical group (Study 3). Range of reasons given for naturalistic reductions (Study 4).

5.2 Clarification of Definition; Paranoia in the Absence of Clear

Evidence

Previous experimental research has employed Freeman and Garety's (2000) criteria to define nonclinical paranoia (Ellett & Chadwick, 2003, 2007; Freeman et al., 2003; 2005c; 2008c; 2010). This definition is particularly useful within nonclinical research for two key reasons; firstly, it is a comprehensive and detailed definition that encompasses key aspects of paranoia, such as the belief that harm is occurring or about to occur. By establishing that a belief needs to include perceived intentional harm it clearly distinguishes paranoia from social anxiety. Secondly, it is concerned with the concepts of harm and intent, but does not explicitly assume falsity. The falsity of a belief is a problematic aspect to determine in both clinical and nonclinical groups. Therefore, Freeman and Garety's definition of paranoia enables researchers to distinguish paranoia from other socially anxious concerns, without first assuming falsity. However, when considering definitions of clinical paranoia, the issue of falsity is addressed in diagnostic criteria. For example, the DSM-IV describes 'unfounded suspicions' (American Psychiatric Association, 1994). Criteria used by the National Institute of Mental Health describe threat beliefs that are 'highly exaggerated or not warranted at all', whereas the Schedules for Clinical Assessment in Neuropsychiatry/PSE-10 list paranoia as an 'unsupported belief' (WHO, 1992). Thus, the notion that paranoia is essentially a false belief is clearly manifest in clinical definitions.

The issue of falsity is a challenge to current research investigating nonclinical paranoia. Without an objective measure it is almost impossible to confidently state that an individual's concerns of threat are unfounded. This concern is best illustrated by the clinical case of a patient whose seemingly implausible beliefs of persecution were later revealed to be true

(Mayerhoff et al., 1991). Within self report studies of nonclinical paranoia this issue can be particularly problematic, in part due to the methodological constraints inherent within all self report measures. By employing a measure that essentially relies on an individual's own subjective account of events it is difficult to assess whether such accounts would be verified or not by others, or whether they contain accounts of events supported by objective evidence. An attempt to address this issue using a self report measure was made by Ellett et al. (2003). Using the Personal Experiences of Paranoia Scale (PEPS), respondents were asked whether they ever had the *feeling* that people were deliberately trying to harm them. Although explicitly stating they required a description of a *feeling*, this is not equivalent to a direct request to only include beliefs rather than actual events.

The issue of falsity has also been recently addressed within experimental research. Using the camera paradigm Ellett and Chadwick (2007) demonstrated that conditions of ambiguity could produce a paranoid response in a nonclinical group under conditions of high self awareness. Additionally, within a series of virtual reality (VR) studies conducted by Freeman et al. (2003; 2005c; 2008c; 2010) the issue of falsity was dealt by placing participants in a VR environment where all avatars were programmed to behave in ways 'deemed by a consensus' to be neutral and non-threatening. By controlling the participants' environment in such a way, Freeman and colleagues were able to ensure that all beliefs regarding intentional harm reported directly after this experience were unfounded. Within a more recent experimental study, Green et al. (2011) demonstrate that spontaneous paranoid explanations can be elicited in nonclinical individuals by the arguably neutral events of having an experiment interrupted and hearing people laughing outside the testing room.

The findings of such work highlight the possibility that falsity is in an issue that can be addressed in nonclinical research. The challenge to future research is therefore to directly address the unfounded nature of paranoid beliefs within nonclinical groups.

The current thesis addressed the issue of falsity in two ways. Firstly, two experimental studies ensured participants were in an ambiguous condition when completing a state paranoia measure. In this way the studies were able to ascertain that paranoid thoughts regarding the other player were unfounded. To reiterate; participants did not know the identity of the other player, they had not met or communicated with them and they did not know what the other players game choice was, yet participants within this experiment endorsed items such as 'the other player wants to harm me' or 'upset me' or 'is hostile towards me'. In keeping with the findings of Freeman et al. (2003; 2005c; 2008c; 2010), these studies demonstrated that unfounded paranoid beliefs were present within a nonclinical group.

Secondly, the current thesis added the criteria 'in the absence of clear evidence' to Freeman and Garety's definition when assessing individual paranoid experiences. During the pilot stages of Study 3 it was discovered that some participants initially responded to the question 'have you ever felt someone was deliberately trying to harm you?' by describing an incident where there was actual physical evidence of intended harm (e.g. they were hit or their belongings stolen). Therefore, in order to ensure that objective physical events were not included, the initial question was lengthened to include 'in the absence of clear evidence'. The results of this study found that a high ratio (81%) of participants drawn from a nonclinical population reported a past paranoid experience using these arguably more stringent criteria.

Therefore, the findings of the current thesis provide two contributions to the issue of falsity in nonclinical paranoia. Firstly, by showing that nonclinical paranoia occurs when real events which include clear evidence are discounted, and when ambiguity is controlled by experimentally ensuring a neutral or uncertain condition. The findings strengthen the notion that incidents of nonclinical paranoia may contain unfounded or false beliefs. Secondly, the findings suggest that Freeman & Garety's (2000) definition can be extended to include this aspect of paranoia, thus bringing the nonclinical definition more in line with clinical classifications. This extension can be incorporated in future research by experimentally ensuring a neutral or ambiguous environment, or by including the criterion in the 'absence of clear evidence' in existing self report measures of paranoid experience.

However, it is important to note that the addition of 'in the absence of clear evidence' to a self report measure can only establish that the measure assesses a *belief*. Due to the constraints inherent within self report measures they are unable to establish the falsity of a belief. Only experimental control over the environment in which the paranoid thought occurred can ensure that it was unfounded. However, by confirming that the experience occurred in the absence of clear evidence future self report studies may ensure that only examples of a *belief* containing perceived intended harm are assessed.

5.3 A New Complementary Measure of Nonclinical State Paranoia:

PDG-Alt

Prior to the current thesis there were two established experimental paradigms for studying nonclinical paranoia: The Camera Paradigm (Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007) and the Virtual Reality Paradigm (Freeman et al., 2003; 2005c; 2008c; 2010). Thus a significant contribution of the thesis is that it has introduced a potential third experimental

paradigm; namely the Three-Choice Prisoner's Dilemma Game (PDG-Alt). This paradigm has three main advantages: unlike the virtual reality or camera experiments the PDG-Alt requires no specialist equipment and is thus highly cost effective and simple to execute. Secondly, as demonstrated within Study 1 it can be performed online and is thus is an experimental paradigm that has the potential to be used in large scale studies. Finally, it yields a possible behavioural indicator of state paranoia. Measuring the choice to withdraw on a PDG-Alt may provide a measure of paranoia that is based on someone's actions and choices, rather than relying solely on their responses to self-report measures of paranoia. Problems with social desirability (Paulhus & Reid, 1991), acquiescent or extreme responding (Paulhus & Vazire, 2007) and distorted self perceptions (John & Robins, 1994; Fiske & Taylor, 1991) apparent in self report measures may be addressed by including a behavioural indicator of current paranoid state to complement self-report measures.

5.3.1 **Agenda for Future Research**

It is important to note that the findings of the current thesis do not support the PDG-Alt as a sole method for assessing state paranoia in nonclinical groups or as a diagnostic tool in clinical groups. As a novel paradigm it is yet to be replicated outside the current thesis. Furthermore, several issues need to be addressed in future research to strengthen the paradigm. Firstly, further study is needed to investigate why the state measure, and not the trait measure, of paranoia is correlated with game choice, despite the correlation between both state and trait measures. A wealth of other variables such as current levels of anxiety, propensity to trust and cognitive ability that may moderate the relationship between state paranoia and game choice, require further investigation.

Additionally, it is important to be mindful of possible alternative reasons for choosing to withdraw within the PDG-Alt. Addressing or eliminating some of these potential reasons may further support the use of the PDG-Alt paradigm. For example perceptions of relative entitlements or 'inequity aversion' may lead some players to select the withdrawal strategy in order to maintain a sense of fairness (Fehr & Schmidt, 1999; Gill & Stone, 2010). Further research is therefore needed to investigate whether ideas of fairness or deservedness play any role in the observed relationship between paranoia and withdrawal. By assessing game choice and state paranoia under differing conditions of a *fair* (equal effort) and *unfair* (unequal effort, (i.e. one player made to take part in hard 'screening' test before taking part and being made aware that the other player did not) may provide a test of the degree to which a sense of equity or fairness was driving the choice to withdraw. However, if the correlation between state paranoia and withdrawal was replicated in the unfair condition, it may provide evidence that fear of the other player is the central motivating factor for withdrawal, rather than a sense of equity.

One crucial aspect of paranoia is that it is an interpersonal concern. It is therefore important to address this issue when further establishing the PDG-Alt paradigm. One of the potential advantages of the PDG-Alt is that it constructs an interpersonal interaction, an aspect that has been difficult to capture in previous measures of nonclinical paranoia. Although Freeman and colleagues' virtual reality studies assess participants' appraisals of the intentions of others, they are experiencing programmed avatars and not real people. Additionally, the ecological validity of a 'controlled' virtual reality environment that is not reflective of more complex real world interactions is questionable. In order to further establish if the PDG-Alt captures specifically interpersonal paranoia, further study needs to assess whether any correlation between state paranoia and game choice would still exist if

players knew they were playing against a computer. Previous research suggests that playing a PDG against a 'programmed other' eliminates the interpersonal character of the interaction and alternatively creates a problem solving task, rather than interdependent concern (Schopler & Insko, 1992; Wildschut, Lodewijx, & Insko, 2001). A suggestion for future research is therefore a comparison of any association between paranoia and game choice under two conditions; firstly, a condition whereby individuals believe they are playing the PDG against another person; and secondly, a condition in which they are informed they are playing against a computer. Finding an association in the 'real person' condition and not the 'computer condition' would demonstrate that the PDG-Alt measures specifically interpersonal concerns.

5.3.2 PDG-Alt Paradigm and Research with Clinical Groups

A further issue that remains to be investigated is whether the PDG-Alt paradigm could be used to investigate state paranoia in clinical groups. Primarily, an association between state paranoia and withdrawal would have to be tested and further found within a clinical sample. It is however important to recognise that confounding variables such as receiving a diagnosis, stigma, compulsory treatment, unemployment and medication may complicate any findings within this group (Freeman, 2007). However, if the results of the current study were replicated in a clinical group, several implications could be considered. Firstly, any finding that shows underlying parallels between clinical and nonclinical paranoia further strengthens the dimensionality view. Secondly, considering issues of social desirability, stigma and desire to conceal psychiatric status that may accompany a clinical diagnosis (Wahl, 1999), providing an additional behavioural indicator of state paranoia (i.e. withdrawal on a PDG-Alt) may compliment results of more explicit self report measures.

5.4 The Persistence of Nonclinical Paranoia

A further key contribution of the current thesis is that it has established a degree of persistence in nonclinical paranoia. To date little is known about the duration and intensity of nonclinical paranoid ideation over time. The majority of prior research investigating nonclinical paranoia relies on self report questionnaire measures, which either assess overall levels of paranoia traits, or note the presence or absence of a paranoid experience. Self report measures such as Fenigstein and Venable's (1992) Paranoia Scale require respondents to rate a series of statements that include both current concerns, i.e. "It is safer to trust no one"; and past events, i.e. "People have said insulting and unkind things about me". Other self report scales focus on a specific time period, for example Green's (2008) Paranoid Thoughts Scale assess feelings that respondents have had over the last month. Alternative measures such as Ellett and Chadwick's (2003) Personal Experience of Paranoia Scale focus on one individual past experience, but do not assess when it occurred. Such measures are therefore designed to quantify individual levels or experiences of nonclinical paranoia but do not consider their duration or intensity over any period of time.

Although it is widely assumed that paranoid delusions are persistent in clinical groups (e.g. Kantor, 2004; Green et al., 2006), little empirical evidence supports this assumption. One experimental study that has investigated the persistence of nonclinical paranoia was conducted by Ellett and Chadwick (2007), who demonstrated that once raised, paranoia is impervious to environmental change such as removal of triggers of high self awareness or task failure. The authors conclude that this persistence of paranoid cognitions may be explained by the notion of hyper-vigilance. Once perceptions of threat are activated, it makes sense from an evolutionary point of view to remain vigilant even once the danger has

apparently passed (Ellett et al., 2003). However, this experiment involved a same-day test-retest administration of a paranoia measure under differing conditions. Therefore, although it showed that once triggered under conditions of high self awareness, paranoia continued under conditions of low self awareness, it did not assess either the duration or intensity of paranoia over a time period longer than one day. Similarly, research on clinical paranoia using time sampling methods by Thewissen and colleagues (2008; 2011) looks at very short term changes in paranoid meaning.

In comparison Study 3 of the current thesis explores the novel area of individuals' own estimations of the duration and intensity of their reactions to a single paranoid experience. Although the majority of participants reported reductions in responses to their experience along the dimensions of preoccupation, distress, impact and conviction; some participants reported still experiencing some emotional and cognitive responses to the experience long after the event occurred (on a scale of 1 to 5, mean scores for current feelings ranged from 1.3 to 3.36 across all four dimensions). Participants reported still thinking about the incident or feeling distressed about it, to a lesser degree than they did when it occurred. However, relatively few participants reported having a complete absence of thoughts or feelings about the experience at the time of the interview. This is particularly noteworthy when one considers that some of these experiences occurred over 10 years ago. In considering the multidimensional nature of paranoia Study 3 was able to disentangle changes in one dimension from changes in another. A striking finding within this study is that although current conviction levels were significantly lower than at the time of the event, they appeared to reduce less overall than the other three dimensions. With almost half of the interviewees reporting no change in their conviction that others intentionally meant to harm them. This study therefore demonstrated that cognitive and emotional responses to a

paranoid experience are still present in a nonclinical population often some years after the event, and that conviction may be a comparable stable feature of nonclinical paranoid experiences. Notwithstanding issues of the reliability of long term memory for difficult experience, it remains interesting that subjectively participants felt conviction had changed less than other dimensions. Although it must be noted that the recruitment strategy to the paranoia group excluded participants who had very low levels or no conviction at the time of the event, consequently the study may therefore contain a higher proportion of participants with high levels of conviction. However it still remains that just under half the sample did report a reduction in their levels of conviction over time, thus perhaps this finding touches on a more general phenomenon discussed in the clinical literature on paranoia, that of *encapsulation* (Crowe & Roy, 2008), whereby beliefs continue to be held with strong conviction, but have diminished impact and importance.

Apart from demonstrating a degree of persistence in nonclinical paranoia, the findings of this study raise some important questions about how the persistence of nonclinical paranoia may be defined and measured in future study. Within the current study, persistence refers to enduring levels of preoccupation, distress, impact or conviction after the paranoid experience had occurred. When considering the findings of Ellett & Chadwick (2007), persistence refers to paranoid cognitions that endure once the original 'paranoid condition' passed. The paranoia inducing conditions are no longer present, yet paranoia remains. However, it is not clear how long paranoia should remain before being considered persistent. Is persistence simply the existence of paranoia after the initial experience has passed, or does it have to be there for a specific length of time after the event? Such a question exposes the need for further study in order to establish for how long paranoid feelings typically endure in nonclinical groups, and at what point can they be considered

persistent. A further methodological difference between Ellett & Chadwick (2007) and the current study is that Ellett & Chadwick have shown persistent paranoid cognitions, whereas the current thesis has demonstrated persistent emotional and cognitive reactions to a single paranoid experience. Therefore, persistence of nonclinical paranoia may also include cognitive and emotional responses such as distress, or preoccupation associated with a paranoid experience, as well as enduring paranoid cognitions. Such findings highlight the necessity to clarify the definition of persistence in nonclinical paranoia. Based on the findings of Study 4 and Ellett & Chadwick (2007), it is proposed that in order for paranoia to be considered persistent it must meet at least one of the following two criteria:

1. Enduring paranoid cognitions in the absence of the initial contributing factor(s).
2. Enduring emotional and cognitive responses to a paranoid experience after its occurrence.

Future study may therefore employ the above criteria, firstly to replicate the finding that paranoia is persistent in nonclinical groups, and secondly to establish if paranoid cognitions as well as emotional and cognitive responses to paranoia endure. Additionally, further study is needed to verify the length of time both paranoid cognitions and responses to paranoia occur. Although the current study suggests that in certain individuals some responses remain after 10 years, it is not known if this finding can be generalised to a wider population. Longitudinal research is clearly needed to address a number of these points.

5.4.1 Why is Paranoia Persistent in Nonclinical Group?

The current thesis provides several tentative explanations for why paranoia may be persistent in a nonclinical group. In the following section four potential explanations will be

considered; 1) rumination as a potential factor in the maintenance of paranoia; 2) the reasons participants themselves gave for persistence; 3) the notion that the underlying mechanism of 'encapsulation' used to explain the persistence of delusional beliefs may also be present in nonclinical paranoia; 4) evolutionary perspectives of paranoia. It is important to note that these explanations are not mutually exclusive accounts, but rather are potential hypotheses for why nonclinical paranoia may be persistent based on the findings of the current body of work and existing empirical and theoretical accounts.

5.4.2 Rumination as a Potential Factor in the Maintenance of Paranoia.

When considering potential reasons for the persistence of nonclinical paranoia, it is relevant to note the association found between rumination and nonclinical paranoia within Study 3.

As the study was correlational it is unknown whether rumination is either a cause or a consequence of nonclinical paranoia. However, it is plausible that the existence of a repetitive negative thinking style may contribute to the persistence of paranoia. If an individual rehearses, analyses and continually thinks over a past paranoid experience it may potentially encourage them to remain vigilant and be highly sensitive to such threats occurring in the future. Further study that assesses the possible role of rumination in the persistence of nonclinical paranoia is therefore needed.

In examining the nature of the relationship between rumination and nonclinical paranoia future study firstly needs to address the possibility of a causal link between the two constructs. A future study may assess trait levels of self esteem, depression, paranoia, anxiety and rumination prior to experiencing the 'high paranoia' conditions of high self awareness and task failure, according to the procedures within Ellett and Chadwick's (2007) camera paradigm; state paranoia would then be assessed following the condition.

Conducting a multiple regression on these constructs may enable researchers to examine which factors are the best predictors of subsequent levels of state paranoia. If a causal relationship was found, a possible a next generation study could further investigate the role of rumination in the persistence of nonclinical paranoia. Again employing the camera paradigm, participants could complete several trait measures including rumination and then be exposed to a 'high paranoia' condition of high self awareness and task failure followed by a 'neutral 'condition of low self awareness and no task feedback. If rumination was found to predict state paranoia in the secondary 'neutral 'condition, then it could be suggested that rumination plays a causal role in the maintenance or persistence of nonclinical paranoia.

Freeman and colleagues see anxiety as key to understanding paranoia, as paranoia critically concerns fear (Freeman et al., 2008a). Therefore, studying anxiety related processes such as worry can provide important information on the development and maintenance of paranoid thinking. Although rumination and worry share certain similarities, they are separate concepts. Ruminative thinking is more strongly associated with feelings over past events, whereas worry is associated with potential future events (Papageorgiou & Wells, 1999). A central aspect of the current thesis concerns individual reports of past experiences of paranoia, thus a measure of rumination rather than worry was employed.

Freeman and Garety (1999) suggest that negative beliefs about worry (*meta-worry*) can produce counterproductive attempts to suppress worry and rumination, that through a 'rebound effect' create a greater sense of loss of control and more worrying. Is it therefore feasible to tentatively suggest that rumination is neither a direct cause nor consequence of paranoia, but rather negative beliefs about ruminating on paranoid experiences can conversely lead to greater detection of possible threats and increased paranoid thoughts. Additionally, Wells and Davies (1994) found a correlation between thought control strategies

marked by punishment and worry , meta-worry and trait anxiety among a student group, and conclude that therapeutic interventions for Generalised Anxiety Disorder may benefit from discouraging conscious attempts to suppress worry in favour of a 'detached letting go style' (Freeman & Garety, 1999, p.50). Interestingly, within Study 4 a detached 'letting go' style was a main theme that participants themselves discussed when explaining reductions in responses to a past paranoid experience. Future study that investigates both levels of rumination and nonclinical paranoia, and measures individual beliefs about rumination, may be able to detect if negative beliefs about rumination and conscious attempts not to dwell on paranoid thoughts are indeed counterproductively associated with higher levels of both rumination and trait paranoia.

5.4.3 Participant's Own Explanations for Persistence

Additionally, the current thesis attempts to examine reasons for the persistence of nonclinical paranoia by analysing the reasons that participants themselves provided for a lack of change in their responses to a past paranoid experience. Within Study 3, results showed that 5% of participants (n= 3 / 60) reported no change in levels of distress, 15% (n = 9 / 60) reported no change in overall impact and 50% (n =30 / 60) reported no change in levels of conviction. The main themes identified in participants' accounts of a lack of change were; still taking the event personally, a lack of social support or understanding, continued importance or relevance and a currently high level of perceived threat. Each of these factors in turn may be investigated in further experimental studies in order to assess how they might contribute to the persistence of nonclinical paranoia. For example interventions designed to reduce factors such as taking the event personally may be implemented to investigate if they are accompanied by a reduction in paranoid responses within a nonclinical

group. Existing cognitive behavioral interventions that encourage individuals to see events from a different and less self focused perspective may be used.

5.4.4 External Attributions and Current Models of Paranoia

A novel aspect of the thesis is that it has shown conviction to be a comparatively static dimension in a nonclinical student sample; it does not however address what prevents people seeking disconfirmatory evidence even once other emotional and cognitive dimensions have reduced. The theme of 'depersonalisation' found in Study 4 clearly illustrates the apparent disparity between reductions in emotional responses and a lack of reduction in conviction. In discussing why responses to a past paranoid experience reduced over time, participants described seeing the persecutor as solely responsible and subsequent feelings of taking the experience less personally. This external attribution typically had two reported outcomes; one was feeling a sense of detachment from the incident (i.e. 'it was them and not me'). This detachment was often cited as a reason for reductions in distress, preoccupation and impact. This finding may at first glance appear consistent with aspects of Bentall's 'paranoia as defence' model (Bentall et al., 2001). Within this model, paranoia is seen to serve a protective function against negative affective processes via self serving attributional biases. By blaming others for negative events the paranoid person is able to protect against both negative emotions and threats to self esteem. Thus, it is striking that participants described making an external attribution for responsibility as a pathway to reduced paranoia, rather than being associated with increased paranoia, as Bentall's model would suggest.

A second outcome participants described when making an external attribution for the event was that it reinforced their belief that threat was intentional. This finding is more consistent

with aspects of Freeman's cognitive model of paranoia (Freeman et al., 2002; Freeman et al., 2005a). Freeman et al., (2002) report that factors that maintain threat beliefs can be divided into two types; those that lead to obtaining confirmatory evidence, and those that lead to disconfirmatory evidence being discarded. In addition to maintaining a current threat belief Freeman, like Bentall, asserts that external attributions may play an active role in the production of paranoia (Freeman, 2005a). By having an external focus and blaming others for negative events, those with an external attributional thinking style are more likely to have further paranoid thoughts (Freeman, 2007). Consistent with this account, Study 4 also found that participants' descriptions contained a theme labelled 'generalised distrust'. Within this theme, participants described feeling a general sense of distrusting others and the anticipation of future harm. This response was reported as a direct consequence of the past paranoid experience. It may therefore be suggested that Study 4 also contains accounts of external attributions leading to both the maintenance of threat beliefs and increased likelihood of further paranoid beliefs occurring within a nonclinical population.

However, in finding results that are consistent with aspects of both models, one problem emerges. These models are frequently described in existing literature as opposing viewpoints (Freeman, 2007; Cicero & Kerns, 2010; Thewissen et al., 2008; 2011; Raes & Gucht, 2009; Combs et al., 2007; Melo et al., 2006). Freeman and Bentall have discussed the models in terms of contrasting accounts (e.g. Garety & Freeman, 1999; Freeman et al., 2002; 2004; 2005a; Freeman, 2007; Bentall et al., 2001). Whereas Bentall proposes that paranoia serves to protect discrepancies between implicit and explicit self esteem from ever reaching consciousness (Bentall et al., 2001), Freeman and colleagues propose that delusions build upon and are a direct reflection of emotional concerns and do not conceal distress or low self esteem (Freeman et al., 2002; Freeman & Garety, 2004a). Although in a

large review Freeman cites the literature on the link between attribution style and paranoia as mixed, he argues that differences in attributional style need not be tied to Bentall's 'paranoia as defence' account and that a tendency to blame others may be a 'plausible factor' in the development of paranoid beliefs (Freeman, 2007). More clearly Freeman states that there is a lack of clear evidence to suggest that paranoia serves to protect against threats to self esteem (Garety and Freeman, 1999; Freeman, 2007). This disagreement has been widely reported within current literature with evidence for both high or normal levels of self esteem (Candido & Romney, 1990; Krstev, Jackson & Maude, 1999; Lyon, Kaney & Bentall, 1994), and low levels of self esteem (Chadwick, et al., 2005; Drake et al., 2004; Freeman et al., 1998; 2001; Ellett et al., 2003; Freeman et al., 2005a; Fowler et al., 2006b; Johns et al., 2004; Martin & Penn, 2001; McKay, Langdon & Coltheart, 2005b) within both clinical and nonclinical paranoia being cited in reviews of either model.

The current study does not seek to adjudicate between these two models. Yet an advantage of the design of Studies 3 and 4 is that by looking at nonclinical paranoia across four dimensions they are able to compare differences in changes within each dimension. The findings of Study 4 therefore suggest that making an external attribution was reportedly involved in maintaining conviction and producing a paranoid account of the experience. Yet the same attribution was also reported as reducing negative emotions such as distress following the experience. Such results lead to the development of one tentative hypothesis: Could the external attribution within a paranoid account serve an initial defensive function against negative emotions, but also build on emotional concerns about the self and the world that maintains paranoia and increases the possibility of further paranoid thoughts occurring? If such a hypothesis were to be tested and not refuted then it may be possible to produce an alternative explanation for the role external attributions play in both the

formation and persistence of paranoid thoughts that may incorporate aspects of both accounts.

5.4.5 Encapsulation in Nonclinical Paranoia

A further potential hypothesis for why conviction does not reduce as markedly as other dimensions can be found when looking at the notion of 'encapsulation'. Encapsulation is a clinical term that is used to explain how delusional belief often continues to be held with high conviction in the absence of a comparable impact of thoughts and feelings outside the delusion system (Crowe & Roy, 2008).

This feature of delusions has been used to support the argument that they are distinct from 'normal' beliefs and to question the continuum model of delusions (Jones et al., 2003). In a debate regarding the dimensionality of delusions, Jones and colleagues draw on the work of Fodor (1983), who proposed that particular cognitive mechanisms (called 'modules') enable fast perceptions to be made. These modules are described as 'fast and dumb' and are used to explain several visual perceptual illusions. Fodor (1983) suggests that 'information encapsulation' prevents all relevant information from being taken into account. Just enough information is taken in to make a quick decision. Such a mechanism is presented as accounting for the differences between delusions and 'normal' beliefs. Jones et al. (2003) maintain that 'normal' beliefs endeavour to be reliable, and are therefore drawn from all relevant information, and as such are liable to change with new incoming information. In comparison, delusions are proposed to have the features of a 'module' and as such are fast, involuntary and often impervious to change. However, in finding that nonclinical individuals often retain high levels of conviction in the absence of comparably high emotional responses, it may be tentatively argued that there is some evidence for encapsulation within

a nonclinical group. The paranoid experiences discussed in Studies 3 and 4 were taken from a nonclinical population, and the vast majority of individuals reported significant naturalistic reductions in distress, preoccupation and impact over time. However, some people still strongly believe that the attempt to harm them was deliberate. If such a finding was replicated in future study then this clear distinction between delusions and 'normal' beliefs may be drawn into question. Demonstrating that both clinical and nonclinical paranoid beliefs are formed and maintained through comparable mechanisms would further strengthen the argument that paranoia is best viewed as a continuous variable, ranging from severe delusion beliefs at one end, to commonplace beliefs about threat at the other.

5.4.6 The Evolutionary Perspective of Paranoia

The prevalence and persistence of paranoia has been explained by hypothesising that paranoia performs an evolutionary function (Green & Philips, 2004; Ellett et al., 2003; 2007; Kelleher et al., 2010). Further, it has been argued that other psychotic symptoms, such as hallucinations or non-persecutory delusions, may derive from mechanisms originally developed to provide an evolutionary advantage (Kelleher, Jenner & Cannon, 2010).

The evolutionary perspective seems to provide a particularly coherent explanation for the prevalence and persistence of paranoia, in proposing that the survival of the species is dependent on the ability of individuals to make quick and decisive judgments about the danger of harm occurring. In a large review of evidence for an evolutionary account of paranoia, Green & Philips (2004) draw on work conducted within the field of cognition, which show that within nonclinical groups the detection of angry facial expressions are quick and efficient when compared with the detection of other facial emotions in a crowd (Fox et al., 2000; Hansen & Hansen; 1988; Öhman, Lundquist & Esteves (2001). In addition they

report psycho physiological evidence using eye tracking techniques that demonstrate greater visual attention is paid to feature areas (i.e. eyes, nose and mouth) in threat related facial expressions (Green, Williams & Davidson, 2001). Finally, evidence is drawn from neuroimaging studies that show the primary role of the amygdale and prefrontal cortex in detecting and processing social threat (Morris et al., 1996; Gur et al., 1992; Surguladze et al., 2004). Green & Philips (2004) conclude that that such neurocognitive mechanisms designed to facilitate fast and effective threat detection may have survived due to an adaptive advantage in accordance with Darwinian evolutionary theory (Green & Philips, 2004).

In addition to evolutionary accounts of quick and efficient detection of threat, it has also been argued that once a threat has been detected it makes clear sense to remain vigilant. It may be that evolution favours a selective bias towards false positives in the principle of 'better safe than sorry' (Ellett & Chadwick 2003; 2007; Dodgson & Gordon, 2009). Thus the persistence of paranoia may be explained by the clearly adaptive advantage of 'hypervigilance'.

Such an evolutionary perspective may not only explain the observed prevalence and persistence of paranoia in the general population but also provides an insight into the process involved in the development and maintenance of clinical persecutory delusions. The functional and necessary mechanisms that have evolved to ensure successful threat detection may simply become over used. The 'cliff edge fitness' theory maintains that psychosis may develop from an over reliance on adaptive traits (Nesse, 1990). Although the existence of these traits within an individual may provide an evolutionary advantage, once they go beyond an optimal peak they cease to become useful and may exert negative fitness effects (Kelleher et al, 2010).

The notion of over reliance on functional mechanisms is useful in explaining clinical levels of paranoia. Yet when one comes to address the 'healthy' or moderate use of these mechanisms within nonclinical populations, certain questions remain. Through establishing the prevalence and persistence of paranoid thoughts in this group, key questions are raised: Why isn't everyone constantly paranoid? What keeps the majority of individuals in the nonclinical domain? These questions are addressed in the latter half of this thesis.

5.5 What keeps people in the nonclinical domain? Naturalistic change in nonclinical paranoia.

The vulnerability view of psychosis suggests that "the degree to which a person possesses the apparent normal counterparts of the symptoms of a particular psychopathological disorder is an index of that person vulnerability for the disorder" Costello (1994, p.391).

Longitudinal studies provide evidence that psychosis-like symptoms are associated with vulnerability for development of psychosis (Poulton et al., 2000; Chapman, et al., 1994; Morrison et al., 2002). Further, research within paranoia has focused on how potential risk factors such as higher levels of anxiety, depression, and low self esteem may increase the likelihood of an individual developing a persecutory delusion (Freeman et al., 2002).

Therefore, much of the research effort to date has focused on the transition from nonclinical to clinical domains driven by the vulnerability dimensionality view. However, if the vulnerability account is accepted, a further novel contribution of the current thesis is that it asks a very different question: Why do most people *not* develop clinical levels of paranoia?

The findings within the current thesis are consistent with the view that paranoia is both common and persistent in nonclinical groups. One is therefore left to question: What keeps the majority of people from ever reaching the severe end of the paranoia spectrum? In order

to address this question the final study of this thesis employed a thematic analysis on the reasons participants gave for changes in their responses to a past paranoid experience. By exploring some of the key themes found when discussing change, this study was able to identify several potential factors that may be associated with naturalistic reductions in paranoia within nonclinical groups. Spontaneously changing their relationship to the persecutor, normalising the experience, discussing the incident with supportive others, viewing the incident as an opportunity for personal growth, gaining a wider perspective and accepting and letting go of the paranoid experience were all reported as relevant to naturalistic reductions in levels of preoccupation, distress, impact and conviction following a paranoid experience.

These findings may now be used to inform further studies that could quantify these factors, assess how frequently they are employed, and establish if they occur in combination with each other within nonclinical groups. A future quantitative study using established measures that assess some of these factors may provide initial exploration into this area. One example would be to look for possible associations between levels of nonclinical paranoia (PS) and the ability to 'let go' of negative thoughts (the University of British Columbia, cognition inventory-Letting Go, Revised Version, Frewen et al., 2008). If such a correlation was found then future study may address what, if any, role these factors have to play in keeping people within the nonclinical domain. If any of the above factors were found to directly contribute to the reduction of emotional and cognitive responses to a paranoid experience within nonclinical groups, then tentative clinical implications could be drawn. Firstly, further study would need to address the frequency with which these factors occur naturalistically within clinical groups. Secondly, the degree to which these factors are associated with multidimensional change would need to be assessed.

5.6 Strengths of the Thesis

The current thesis employs a wide range of different methodologies in order to study nonclinical paranoia. The first three chapters employ a laboratory based experimental design. By using the two player PDG and PDG-Alt to study nonclinical state paranoia these experiments were able to examine the interpersonal nature of paranoia. This design also provides the advantage of experimental control over the environment and by controlling the timing of the state paranoia measure was able to assess momentary paranoid states under the conditions of ambiguity. This ability to control ambiguity produced evidence of unfounded paranoid thoughts within nonclinical groups.

Further, the Prisoner's Dilemma studies also employed an internet based experimental research method. Employing this method within Study 2 enabled recruitment of a larger and more representative sample of participants drawn from the general population. By adapting the PDG to an online computer programme, the study was able to retain a degree of experimental control to the design. The game was programmed to precisely follow the procedure of the PDG paradigm, including crucial timings of the measure. In addition, the time people took to complete the experiment was recorded and monitored. A further advantage of the online experimental approach is that it removed the presence of an experimenter, and thus removed any potential experimenter demand effects from the study. The presence or absence of an experimenter has previously been considered to impact results of paranoia invoking tasks (Ellett & Chadwick, 2007). An additional advantage of this methodology is that the ability to pre-program the response of the 'other player' has the potential to achieve further experimental control. This internet based experimental

approach is a particularly easy to administer and cost effective methodology and is therefore recommended for future research using the PDG-Alt.

In addition to the experimental methodology, four out of the five studies presented within this thesis used an established questionnaire measure of trait paranoia designed for use with nonclinical groups (Fenigstein & Venable's 1992, PS). Use of a standardised measure of nonclinical trait paranoia enabled a quantitative investigation of the relationship between paranoia levels and a range of other constructs. Additionally, the first three studies within the thesis employed a questionnaire measure of state paranoia (SPS). In assessing momentary thoughts and feelings about the intention of another person, these studies were able to go further than assessing global levels and investigated dynamic aspects of nonclinical paranoia. Results gathered from the state measure were able to demonstrate that temporary paranoid thoughts occurred during the Prisoner's Dilemma Game within a nonclinical group.

As well as using questionnaire measures, Study 4 employed the alternative methodology of structured interviews to assess paranoid experiences within a nonclinical group. The structured interview technique provided several advantages; it allowed the validity of responses to be checked, it provided the opportunity to clarify questions, and included further questions in instances where participants' responses were unclear. This advantage was particularly valuable when assessing multidimensional changes in the paranoid experience across two time points. This was a novel approach and the use of the structured interview method enabled the researcher to ensure that participants clearly understood that they were rating their feelings at two different points.

The final study within the thesis explored idiosyncratic accounts of dimensional change and as an exploration of new area of research it employed a qualitative semi structured interview approach. The use of semi structured interviews provided several methodological advantages: it permitted the opportunity to clarify questions, gain additional detail and allowed examination of previously unanticipated themes. Additionally the semi structured interview approach provided rich and detailed data on participants' own thoughts and feelings regarding reasons for change in responses to a paranoid experience.

By combining multiple methods, the work within this thesis aims to overcome some the biases inherent within any one single method or approach (Denzin, 1989). The thesis employs complimentary and overlapping methods in order to gain a better understanding of nonclinical paranoia. The thesis does not employ a different method to ask the same question, but rather selects each method for its appropriateness to answer the research questions within each study. For example, the qualitative semi structured interviews in Study 4 were used to investigate participants' own perceptions regarding the quantitative data on dimensional change gained within Study 3, thus increasing the comprehensiveness of overall findings by using qualitative data to provide explanations for quantitative data. By employing a multitude of different methodological approaches, the current thesis is able to provide a detailed and comprehensive investigation into nonclinical paranoia.

5.7 Limitations of the Thesis

When evaluating the findings of the current body of work several broad limitations of the research need to be acknowledged. Firstly, the work is limited to a nonclinical sample and therefore clearly limits the generalisability of the conclusions to this sample. Secondly, cultural differences within the current samples were not explored. An increased prevalence

of paranoia in ethnic minority groups has been found at the more extreme end of the nonclinical continuum (Freeman et al., 2011). Thus it is possible that the levels of paranoia found within the current thesis may reflect a cultural bias within the samples. Further, with the exception of Study 1 the participants who took part in the studies were drawn from a sample of university students. Student samples have been previously shown to overestimate delusional beliefs when compared to the general population (Lincoln, 2008). However, the measures of trait paranoia used within the study were devised for use in a student population and mean scores within the two studies that used student samples (Study 2, 40.87, Study 3, 41.20) were comparable to the published mean (42.7) reported by Fenigstein and Venable (1992).

Further, although within each study participants were asked if they had any previous contact with mental health services, no clinical screen for paranoia was used. Previous research showing clearly overlapping distributions of paranoia between deluded and general population samples demonstrate that a proportion of the general population may contain individuals who may show signs of psychopathology without requiring treatment (Peters et al., 2004). Therefore, it is possible that a small number of individuals with symptoms of persecutory delusions that had not sought treatment were included in the current studies.

A further limitation is that work presented within the thesis does not establish any cause or consequence of nonclinical paranoia. Although experimental studies are presented, they are correlational in nature and are therefore restricted to establishing associations between state paranoia and game choice. Similarly quantitative questionnaire measures taken within Study 3 do not establish any causal connection between nonclinical paranoia and other social and cognitive constructs. Additionally, the correlation found between game choice

and state paranoia, found within Studies 1 and 2, rely on a novel measure of state paranoia. The short 4-item state paranoia scale was devised to measure state paranoia specifically within the PDG paradigm. As a new experimental paradigm, no appropriate previously established self report measure was available. The SPS has shown good internal consistency (Cronbach's alpha = .92), and all items load onto one factor (factor loadings >0.6). Additionally the SPS was consistently and significantly correlated with Fenigstien's (1992) paranoia scale (Study 1, $r = 0.25$, Study 2, $r = 0.24$). However, further validation of the measure outside the context of the current thesis is needed.

A further possible limitation of the experimental studies within the current thesis is that they take a single symptom approach to paranoia. Although within Study 3, measures of many other constructs such as depression, anxiety, rumination and self esteem were assessed, the PDG studies employed relatively few measures. It is therefore possible that there was a high prevalence of depression or anxiety amongst participants who took part in these studies. These issues would need to be addressed in future study. However, by employing a single symptom approach the experimental studies were able to focus specifically on state paranoia and its relationship with game choice within a nonclinical group without linking it to a range of other constructs.

Although many of the findings within the current thesis are consistent with the dimensional view of paranoia none of the findings directly support this view according to Costello's (1994) stance. To reiterate Costello argues that the best test of the dimensional view would be experimental research that assesses the extent to which factors that control the manifestations of psychosis also control their normal counterparts. However, as the focus of the current thesis is on nonclinical paranoia as a topic of interest in its own right, it does not

contain any direct comparisons between clinical and nonclinical populations. Nevertheless the studies do support the notion that paranoia is both common and persistent in a nonclinical group. Furthermore, the final study within the thesis finds many similarities between the reasons for change reported within a nonclinical group and factors known to be associated with therapeutic change within clinical populations. Although the studies do not directly test the dimensional view, specific suggestions for how the findings may inform future study into clinical groups are provided.

Furthermore, the work within the current thesis did not take a longitudinal approach. Although the final study assessed dimensional changes in paranoia over many years, these findings were based on a subjective retrospective recall of experiences. Longitudinal study is therefore needed to directly compare dimensions of paranoia over time. Such a study may incorporate the time sampling methods used by Thewissen et al. (2008; 2011), a method that has reliably been shown to assess fluctuations in state paranoia over a period of one week.

Finally, as the current thesis is consistent with a dimensional view of paranoia, the focus of the studies is on the existence of paranoid cognitions and experiences within a nonclinical group. However, one limitation associated with this focus is that the thesis does not fully address the absence of paranoid thoughts within this group. It is important to note that not all participants tested reported paranoid cognitions within the Prisoner's Dilemma Game. Similarly not all participants could recall a paranoid experience when asked within Study 3. By directing attention to instances of nonclinical paranoia, the thesis does not investigate why some individuals do not report experiencing paranoia. However this is an area that needs to be addressed. By focusing on paranoid cognitions and experiences within

nonclinical groups, the current thesis is in keeping with the approach taken by the vast majority of researchers in this area. However in order to fully investigate the continuum, one challenge to future research would be to examine factors associated with the absence of paranoia at the very lower end of the spectrum.

One potential hypothesis for the absence of paranoia is that these individuals experience the same external situational factors, i.e. threatening or ambiguous situations, yet have some buffers or protective factors that inhibit paranoid ideation. One example of such a buffer is high self esteem, or positive self schemata which has previously been shown to be associated with lower levels of paranoia in a nonclinical group (Ellett and Chadwick, 2007). Further study is therefore needed to address which, if any, psychological resources prevent situational factors such as the detection of threat or ambiguous conditions leading to paranoid concerns.

5.8 Conclusions

In conclusion, the current thesis has addressed the topic of nonclinical paranoia through a multitude of different methodological approaches. It contains experimental studies including an online experimental study, quantitative questionnaire, and structured interview measures and qualitative thematic analysis of semi structured interviews in order to gain a clearer a picture of the topography of nonclinical paranoia.

The thesis has made several original contributions to the area. Firstly it has introduced a third experimental paradigm for the study of nonclinical paranoia (PDG-Alt), which may compliment existing self report measures. It has also produced evidence for the extension of Freeman's and Garety's (2000) definition of paranoia, and has demonstrated that it may feasibly be extended to include beliefs of intended harm in the absence of clear evidence,

thus addressing some of the current concerns with establishing falsity. It has demonstrated a previously untested association between rumination and paranoia within a nonclinical group and therefore adds persistent negative thinking about past events to the concomitants of nonclinical paranoia. Additionally, studies within this thesis have established that memories of, and reactions to, a paranoid experience may persist for several years, and that the dimension of conviction is comparably resistant to change, a feature previously only thought to be associated with persecutory delusions. Finally, the thesis provides an in-depth exploratory account of potential factors that may contribute to keeping individuals within the nonclinical domain. If future study is able to establish that any one of these factors plays a causal role in the reduction of emotional and cognitive responses to paranoia among nonclinical groups, then several tentative clinical implications are suggested. Thus whilst the thesis is focused on ordinary, commonly occurring paranoid thoughts and feelings, and treats this as a topic worthy of investigation in its own right, several of the findings within this thesis have the potential to be further developed and applied to the knowledge and treatment of clinical groups.

6 References

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Appendices

Appendix A: Self Report Measures for Studies One & Two

(Fenigstein Paranoia Scale)

Please read each statement and tick the box that indicates how applicable each statement is to you. It is usually your initial response that is most accurate so please do not spend a long time considering each item.

	Not at all applicable to me	Slightly applicable to me	Moderately applicable to me	Very applicable to me	Extremely applicable to me
1. Someone has it in for me					
2. I sometimes feel as if I am being followed					
3. I believe that I have often been punished without cause					
4. Some people have tried to steal my ideas and take credit for them.					
5. My parents and family find more faults with me than they should.					
6. No one really cares much about what happens to you.					
7. I am sure I get a raw deal in life.					
8. Some people will use somewhat unfair means to get profit or an advantage, rather than lose it.					
9. I often wonder what hidden reason another person may have for doing something nice for you.					
10. It is safer to trust no one.					
11. I have often felt that strangers were looking at me critically.					
12. Most people make friends because friends are likely to be useful to them.					
13. Someone has been trying to influence my mind.					
14. I am sure I have been talked about behind my back.					
15. Most people inwardly dislike putting themselves out to help other people.					
16. I tend to be on my guard with people who are somewhat more friendly than I expected.					
17. People have said insulting and unkind things about me.					
18. People often disappoint me.					
19. I am bothered by people outside, in cars, in stores, etc watching me.					
20. I have often found people jealous of my good ideas just because they had not thought of them first.					

Appendix A: Self Report Measures for Studies One & Two

(State Paranoia Scale)

Please tick the boxes which best describe how you anticipate experiencing the other participant

	Definitely	Probably	Maybe	Unsure	Maybe	Probably	Definitely	
Is friendly towards me								Is hostile towards me
Wants to please me								Wants to upset me
Wants to help me								Wants to harm me
Respects me								Has it in for me

Appendix A: Self Report Measures for Studies One & Two

(Franken's Attitudes Towards Risk Scale)

Sex:

Age (in years):

Please indicate using the five point scale, the degree to which each of the following statements describes you. Tick the box next to letter to the A if the statement is a very good description of you (like me) and the letter E to indicate it does not describe you at all (not like me). Use the remaining points to indicate the varying degrees that the statement is like you or not like you.

LIKE ME

NOT LIKE ME

A B C D E

1. I like the feeling that comes with taking physical risks.

A B C D E

2. While I don't deliberately seek out situations or activities that society disapproves of I find that I often end up doing things that society disapproves of.

A B C D E

3. I often do things I know my parents would disapprove of.

A B C D E

4. I consider myself a risk taker.

A B C D E

5. Being afraid of something new often makes it more fun in the end.

A B C D E

6. The greater the risk the more fun in the activity.

A B C D E

7. I like to do things that almost paralyse me with fear.

A B C D E

8. I do not let the fact that something is considered immoral stop me from doing it.

A B C D E

9. I often think about doing things that I know my friends would disapprove of.

A B C D E

10. I often think about doing things that are illegal.

A B C D E

Information Sheet One

The interaction between you and the person with whom you are interacting will be represented using the matrix below. For the interaction, you will be asked to select a choice, either “co-operate” or “compete”. The person with whom you are interacting will be given the same matrix and asked to make a choice. Both you and the other person will make their decision in the privacy of their “home” rooms. Neither person will know which choice the other has selected until both persons have recorded and turned in their decision. The numbers in the diagram below represent the payoffs in credits for both persons for each of the possible combinations of choices that could occur. In each square of the interaction matrix, your payoff is located in the upper right corner and your opponent’s payoff is located in the lower left corner. You will be able to collect any coins you win at the end of the study.

		You									
		X	Y								
Other Player	X	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; height: 50%; text-align: right;">90</td> <td style="width: 50%; height: 50%; text-align: left;">120</td> </tr> <tr> <td style="width: 50%; height: 50%; text-align: left;">90</td> <td style="width: 50%; height: 50%; text-align: right;">30</td> </tr> </table>	90	120	90	30	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; height: 50%; text-align: right;">30</td> <td style="width: 50%; height: 50%; text-align: left;">60</td> </tr> <tr> <td style="width: 50%; height: 50%; text-align: left;">120</td> <td style="width: 50%; height: 50%; text-align: right;">60</td> </tr> </table>	30	60	120	60
	90	120									
90	30										
30	60										
120	60										
Y	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; height: 50%; text-align: right;">30</td> <td style="width: 50%; height: 50%; text-align: left;">60</td> </tr> <tr> <td style="width: 50%; height: 50%; text-align: left;">120</td> <td style="width: 50%; height: 50%; text-align: right;">60</td> </tr> </table>	30	60	120	60	<table border="1" style="width: 100%; height: 100%;"> <tr> <td style="width: 50%; height: 50%; text-align: right;">60</td> <td style="width: 50%; height: 50%; text-align: left;">60</td> </tr> <tr> <td style="width: 50%; height: 50%; text-align: left;">60</td> <td style="width: 50%; height: 50%; text-align: right;">60</td> </tr> </table>	60	60	60	60	
30	60										
120	60										
60	60										
60	60										

Example 1: If you choose “X” and your opponent chooses “Y” then you would get 120 credits and your opponent gets 30 credits

.Example 2: If you choose “X” and your opponent chooses “Y” then you would get 30 credits and your opponent gets 120 credits.

Example 3: If you choose “X” and your opponent chooses “X” then you would get 90 credits and your opponent gets 90 credits.

Example 4: If you choose “Y” and your opponent chooses “Y” then you would get 60 credits and your opponent gets 60 credits.

Information Sheet Two

To clarify, it doesn't matter if you are player one or two; these matrixes are used as examples to show you how your decision can be combined with that of the other player. The choices of player's one and two are mirror images of each other, the numbers are used as illustrations only, no player is given preference over the other.

Before you go begin to play the first round of the game player could you please complete these short exercises. These exercises are not a test and the answers you give will not be included in the study, they are simply a test of comprehension in order to ensure each player makes an informed choice when they go onto play the game. Refer to the matrix below to answer the questions if you need to. You will not be able to commence the task until both you and the other player have completed these are practice questions.

Please complete the following questions by filling in the gaps with the correct amounts:

Example 1: If you choose "X" and the other player chooses "Y" then you would get _____ credits and the other player gets _____ credits.

Example 2: If you choose "X" and the other player chooses "X" then you would get _____ credits and the other player gets _____ credits.

Example 3: If you choose "X" and the other player chooses "X" then you would get _____ credits and the other player gets _____ credits.

Example 4: If you choose "Y" and the other player chooses "Y" then you would get _____ credits and the other player gets _____ credits.

		You	
		X	Y
Other Player	X	90 / 90	120 / 30
	Y	30 / 120	60 / 60

Appendix B: Instructions, Test of Understanding and Decision Sheet for Study 1 (2 Choice PDG).

Participant Number:

Decision Record Sheet

Please circle one of the following options (Please refer to the matrix on Information Sheet 2 if you need reminding):

X

Y

Information Sheet Two

The diagram below is the matrix you will actually be using during the course of the study. As you can see, the four corner cells of this matrix are identical to the diagram you used a few minutes ago to complete the examples. This matrix adds a third possible choice with the center column and the center row. You will be asked to select a choice, either “X”, “Y”, or “Z”. The person with whom you are interacting will be given the same matrix and will be asked to make a choice. Both individuals will make their decision in the privacy of their “home” room. Neither person will know what choice the other has selected until both have turned in their decisions. As before, the numbers in the diagram below represent the payoffs in pennies for both individuals for each of the possible combinations of choices that could occur. In each square of the interaction matrix, Person A’s payoff is located in the upper right corner and Person B’s payoff is located in the lower left corner.

		Person A		
		X	Y	Z
Person B	X	90 90	75 75	120 30
	Y	75 75	75 75	75 75
	Z	30 120	75 75	60 60

Example 1: If Person A chooses “Y” and Person B chooses “X” then Person A gets 75 pence and Person B gets 75 pence.

Example 2: If Person A chooses “Z” and Person B chooses “Y” then Person A gets 75 pence and Person B gets 75 pence.

Example 3: If Person A chooses “X” and Person B chooses “Z” then Person A gets 30 pence and Person B gets 120 pence.

Information Sheet Three

To clarify, it doesn't matter if you are player one or two; these matrixes are used as examples to show you how your decision can be combined with that of the other player. The choices of player's one and two are mirror images of each other, the numbers are used as illustrations only, no player is given preference over the other.

Before you go begin to play the first round of the game player could you please complete these short exercises. These exercises are not a test and the answers you give will not be included in the study, they are simply a test of comprehension in order to ensure each player makes an informed choice when they go onto play the game. Refer to the matrix overleaf to answer the questions if you need to. You will not be able to commence the task until both you and the other player have completed these are practice questions.

Please complete the following questions by filling in the gaps with the correct amounts:

Example 1: If you choose "X" and the other player chooses "Y", then you would get _____ credits and the other player gets _____ credits.

Example 2: If you choose "X" and the other player chooses "Z", then you would get _____ credits and the other player gets _____ credits.

Example 3: If you choose "Y" and the other player chooses "Z", then you would get _____ credits and the other player gets _____ credits.

Example 4: If you choose "Z" and the other player chooses "Z", then you would get _____ credits and the other player gets _____ credits.

Example 5: If you choose "Z" and the other player chooses "X", then you would get _____ credits and the other player gets _____ credits.

Example 6: If you choose "Y" and the other player chooses "X", then you would get _____ credits and the other player gets _____ credits.

Information Sheet Three Continued

		Person A		
		X	Y	Z
Person B	X	90	75	120
	Y	75	75	75
	Z	30	75	60

Social Strategies Study

Debriefing Statement

The aim of this research was to look at the relationship between paranoia and the strategy that you adopted in the social strategy game, i.e. compete or co-operate. We wanted to find out if scores on the paranoia measure predicted whether you would choose to compete or co-operate with the other player. Although you were told you would be playing between 1 and 6 rounds all participants play only one round of the game. Your participation in this study will help our understanding of paranoia as it exists within a student population.

Thank you for your participation in this research. If you have any further questions, please contact Dr Lyn Ellett (lyn.ellett@rhul.ac.uk) or Ms Rhani Allen (r.allen@rhul.ac.uk).

Second Consent

Having been fully debriefed about the aims and purpose of this study, I am happy for my data to be included in this study.

Signed

Date

Appendix E: Procedure and Script for Studies 1 and 2

1. Greet participants and show them to adjacent rooms, time their arrivals five apart to ensure sufficient time to do this.
2. Individually give participants a brief overview of the study, how long it will take, and what they will be required to do. **“This is a study of social interaction. During this study you will interact with the person in the room next to you in the form of a game I will ask you to play. After the first round of the game is finished I will ask you to complete two short questionnaires”**.
3. Get them to read and sign the consent sheet.
4. Ask them to fill out trait measures (paranoia scale and in the case of study two attitudes towards risk scale).
5. Inform them that they will receive a payment and the amount of this will be dependent on the decision they make in combination with the decision of the other person **“Each of you will receive money during this study. The money will be yours to keep at the end of the experiment. The amount of money you earn will be determined by the decision that you make in combination with the decision of the other person. You will be playing between 1 and 6 rounds”**.
6. Introduce participant 1 to information sheet 1 **“Please look at the first sheet that is lying in front of you. It should be entitled “Information Sheet”. This is a short description of how your decision might be combined with the decision of the other person. Please follow along as I read the first paragraph out for you”**.
7. Go over examples given in sheet one, and answer any questions. Ask them to look over this matrix whilst I repeat the process with participant 2.
8. Explain this matrix to them verbally remove the information sheet and ask them to go through practice exercise (stressing to participant that **this is not a test**).
9. Whilst 1 is filling out exercise, repeat this process with participant 2.
10. Return to participant 1 and check answers go over any mistakes made and ensure they fully understand matrix.
11. Repeat this process with participant 2.

12. Now explain they will be playing between one and six games against the person in the next room. Give them a few minutes to look over the matrix again and think about their choice.
13. Provide each person with a 'decision record sheet'. Ask them to indicate their choice by circling one of the options.
14. Collect decisions and write it down (double checking I have correct participant number) in log book.
15. Ask them each to fill out the 'in-task' paranoia measure. (SPS).
16. Tell them the outcome of trail one
17. Fully debrief participants. Only one round. **The aim of this research was to look at the relationship between paranoia, risk aversion scores and the strategy that you adopted in the social strategy game, i.e. compete or co-operate (or withdraw in study 2). We wanted to find out if scores on the paranoia measure predicted whether you would choose a compete (Y), or co-operate (X) strategy (within study Y = withdraw and Z = cooperate). Your participation in this study will help our understanding of paranoia as it exists within a student population.**
18. Thank them. Pay them their winnings, ensure they have my contact details and dismiss separately.

Appendix F: Self Report Measures for Study 3

Questionnaire 2 (*Rosenberg's RSES*)

Please tick the appropriate box for each statement depending on whether you strongly agree, agree, disagree, or strongly disagree with it.

	Strongly agree.	Agree.	Disagree	Strongly disagree
1. I feel that I am a person of worth, at least on an equal plane with others.				
2. I feel that I have a number of good qualities.				
3. All in all, I am inclined to feel that I am a failure.				
4. I am able to do things as well as most other people.				
5. I feel I do not have much to be proud of.				
6. I take a positive attitude toward myself.				
7. On the whole, I am satisfied with myself.				
8. I wish I could have more respect for myself.				
9. I certainly feel useless at times.				
10. At times I think I am no good at all.				

Appendix F: Self Report Measures for Study 3

Questionnaire 3 (BDI)

This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the ONE STATEMENT in each group that best describes the way you have been feeling for the LAST TWO WEEKS, INCLUDING TODAY. Circle the letter beside the statement you have picked. If several statements in the group seem to apply equally well pick the statement that is lower down in the list. Be sure not to pick more than one statement for any group including Item 16 (changes in sleeping pattern) or Item 18 (changes in appetite).

<p>1. Sadness</p> <p>0) I do not feel sad</p> <p>1) I feel sad much of the time</p> <p>2) I am sad all of the time</p> <p>3) I am so sad and unhappy that I cannot stand it</p>	<p>6. Punishment feelings</p> <p>0) I do not feel I am being punished</p> <p>1) I feel I may be punished</p> <p>2) I expect to be punished</p> <p>3) I feel I am being punished</p>
<p>2. Pessimism</p> <p>0) I am not discouraged about my future</p> <p>1) I feel more discouraged about my future than I used to be</p> <p>2) I do not expect things to work out for me</p> <p>3) I feel my future is hopeless and will only get worse</p>	<p>7. Self Dislike</p> <p>0) I feel the same about myself as ever</p> <p>1) I have lost confidence in myself</p> <p>2) I am disappointed in myself</p> <p>3) I dislike myself</p>
<p>3. Past Failure</p> <p>0) I do not feel like a failure</p> <p>1) I have failed more than I should have</p> <p>2) As I look back, I see a lot of failures</p> <p>3) I feel I am a total failure as a person</p>	<p>8. Self Criticalness</p> <p>0) I do not criticize or blame myself more than usual</p> <p>1) I am more critical of myself than I used to be</p> <p>2) I criticize myself for all of my faults</p> <p>3) I blame myself for everything bad that happens</p>
<p>4. Loss of pleasure</p> <p>0) I get a much pleasure as I ever did from the things I enjoy</p> <p>1) I do not enjoy things as much as I used to</p> <p>2) I get very little pleasure from the things I used to enjoy</p> <p>3) I cannot get any pleasure from the things I used to enjoy</p>	<p>9. Suicidal Thoughts or Wishes</p> <p>0) I do not have any thoughts of killing myself</p> <p>1) I have thoughts of killing myself, but I would not carry them out</p> <p>2) I would like to kill myself</p> <p>3) I would kill myself if I had the chance</p>

<p>5. Guilty feelings</p> <p>0) I do not feel particularly guilty</p> <p>1) I feel guilty over many things I have done or should of done</p> <p>2) I feel quite guilty most of the time</p> <p>3) I feel guilty all of the time</p>	<p>10. Crying</p> <p>0) I don't cry anymore than I used to</p> <p>1) I cry more than I used to</p> <p>2) I cry over every little thing</p> <p>3) I feel like crying but I can't</p>
<p>11. Agitation</p> <p>0) I am no more restless or wound up than usual</p> <p>1) I feel more restless or wound up than usual</p> <p>2) I am so restless or agitated that it's hard to stay still</p> <p>3) I am so restless or agitated that I have to keep moving or doing something</p>	<p>17. Irritability</p> <p>0) I am no more irritable than usual</p> <p>1) I am more irritable than usual</p> <p>2) I am much more irritable than usual</p> <p>3) I am irritable most of the time</p>
<p>12. Loss of interest</p> <p>0) I have not lost interest in other people or activities</p> <p>1) I am less interested in other people or things than before</p> <p>2) I have lost most of my interest in other people or things</p> <p>3) It is hard to get interested in anything</p>	<p>18. Changes in appetite</p> <p>0) I have not experienced any change in my appetite</p> <hr/> <p>1a) My appetite is somewhat less than usual</p> <p>1b) My appetite is somewhat greater than usual</p> <hr/> <p>2a) My appetite is much less than before</p> <p>2b) My appetite is much greater than usual</p> <hr/> <p>3a) I have no appetite at all</p> <p>3b) I crave food all the time</p>
<p>13. Indecisiveness</p> <p>0) I make decisions about as well as ever</p> <p>1) I find it more difficult to make decisions than usual</p> <p>2) I have much greater difficulty in making decisions than I used to</p> <p>3) I have trouble making any decisions</p>	

<p>14. Worthlessness</p> <p>0) I do not feel I am worthless</p> <p>1) I do not consider myself as worthwhile and useful as I used to</p> <p>2) I feel worthless as compared to other people</p> <p>3) I feel utterly worthless</p>	<p>19. Concentration Difficulty</p> <p>0) I can concentrate as well as ever</p> <p>1) I cannot concentrate as well as usual</p> <p>2) It is hard to keep my mind on anything for very long</p> <p>3) I find I cannot concentrate on anything</p>
<p>15. Loss of energy</p> <p>0) I have as much energy as ever</p> <p>1) I have less energy than I used to</p> <p>2) I do not have enough energy to do very much</p> <p>3) I do not have enough energy to do anything</p>	<p>20. Tiredness or Fatigue</p> <p>0) I am no more tired or fatigued than usual</p> <p>1) I get more tired or fatigued more easily than usual</p> <p>2) I am too tired or fatigued to do a lot of the things I used to do</p> <p>3) I am too tired or fatigued to do most of the things I used to do</p>
<p>16. Changes in sleeping pattern</p> <p>0) I have not experienced any change in my sleeping pattern</p> <hr/> <p>1a) I sleep somewhat more than usual</p> <p>1b) I sleep somewhat less than usual</p> <hr/> <p>2a) I sleep a lot more than usual</p> <p>2b) I sleep a lot less than usual</p> <hr/> <p>3a) I sleep most of the day</p> <p>3b) I wake up 1-2 hours early and cannot get back to sleep</p>	<p>21. Loss of interest in sex</p> <p>0) I have not noticed any recent change in my interest in sex</p> <p>1) I am less interested in sex than I used to be</p> <p>2) I am much less interested in sex now</p> <p>3) I have lost interest in sex completely</p>

Appendix F: Self Report Measures for Study 3

Questionnaire 4 ([Brief Fear of Negative Evaluation Scale](#))

Please read each of the following statements carefully and indicate how characteristic it is of you.

	Not at all characteristic of me	Slightly characteristic of me	Moderately characteristic of me	Very characteristic of me	Extremely characteristic of me
1. I worry what other people will think of me even when I know it does not make any difference					
2. I am unconcerned even if I know that people are forming an unfavourable opinion of me					
3. I am frequently afraid of other people noticing my shortcomings					
4. I rarely worry about what kind of impression I am making on someone					
5. I am afraid that others will not approve of me					
6. I am afraid that people will find fault with me					
7. Other people's opinions of me do not bother me					
8. When I am talking to someone, I worry about what they may be thinking about me					
9. I am usually worried about what kind of impression I make					
10. If I know someone is judging me, it has little effect on me					
11. Sometimes I think I am too concerned with what other people think of me					
12. I often worry that I will say or do the wrong things					

Appendix F: Self Report Measures for Study 3

Questionnaire 5 (Rumination)

RESPONSES TO DEPRESSION

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you never, sometimes, often, or always think or do each one when you feel down, sad or depressed. Please indicate what you generally do, not what you think you should do by circling the appropriate number.

1 = almost never 2 = sometimes 3 = often 4 = almost always

- | | | | | |
|---|---|---|---|--|
| 1 | 2 | 3 | 4 | - think about how alone you feel. |
| 1 | 2 | 3 | 4 | - think "I won't be able to do my job/work because I feel so bad." |
| 1 | 2 | 3 | 4 | - think about your feelings of fatigue and achiness. |
| 1 | 2 | 3 | 4 | - think about how hard it is to concentrate. |
| 1 | 2 | 3 | 4 | - think about how passive and unmotivated you feel |
| 1 | 2 | 3 | 4 | - analyse recent events to try to understand why you are depressed |
| 1 | 2 | 3 | 4 | - think about how you don't seem to feel anything anymore. |
| 1 | 2 | 3 | 4 | - think "Why can't you get going?" |
| 1 | 2 | 3 | 4 | - think "Why do I always react this way?" |
| 1 | 2 | 3 | 4 | - go away by yourself and think about why you feel this way. |
| 1 | 2 | 3 | 4 | - write down what you are thinking about and analyse it. |
| 1 | 2 | 3 | 4 | - think about a recent situation, wishing it would have gone better. |
| 1 | 2 | 3 | 4 | - think "Why do I have problems other people don't have?" |
| 1 | 2 | 3 | 4 | - think about how sad you feel. |
| 1 | 2 | 3 | 4 | - think about all your shortcomings, failings, faults, mistakes. |
| 1 | 2 | 3 | 4 | - think about how you don't feel up to anything. |
| 1 | 2 | 3 | 4 | - analyse your personality to try to understand why you are depressed. |
| 1 | 2 | 3 | 4 | - go someplace alone to think about your feelings. |
| 1 | 2 | 3 | 4 | - think about how angry you are with yourself. |
| 1 | 2 | 3 | 4 | - listen to sad music. |
| 1 | 2 | 3 | 4 | - isolate yourself and think about the reasons why you feel sad. |
| 1 | 2 | 3 | 4 | - try to understand yourself by focusing on your depressed feelings. |

Appendix G: Interview Schedule for Study 3

Question	Response
<p>1. Have you ever had a feeling that people were deliberately trying to harm,upset or undermine you in some way?</p>	
<p>2. Please describe an example of the situation where you have felt pretty sure someone intended to harm you in some way, without there actually being clear proof (e.g. as there is when someone is hit)</p>	
<p>3. In the above situation that you have described, at that time did you feel that the other people involved actively intended to harm you?</p>	

Question	Rating at the time (1 to 5)	Rating now (1 to 5)	What do you think has happened to prompt this change in your feelings about the experience?
1. How much did this feeling preoccupy you at the time? Could you rate it on a scale from 1 to 5, where 1 is not at all and 5 is very much			
2. How much did this event distress you?			
3. How much impact do you feel this experience had on your well-being?			
4. How much did you believe that the other party/parties deliberately intended to harm/upset you?			

Appendix I: Framework Table for All Changes in Paranoia Ratings

Theme	Subtheme	Examples
1.Changing Relationship to Persecutor	1.1 Viewing the persecutor more positively	414: "I got to know her and she was actually quite nice and friendly...I started to think that it can't be possible that someone who was that nice could do that" 441: "He is a very lovely person" 442: "I now believe that she didn't intend to hurt me"
	1.2 Power shift	466: "I'm at university now and they are not I kind of just think; well hey you teased me and now I'm at university and I'm doing a masters and you're not" 439: "I've also realized looking at what she has done with her life now and what I've done with mine... like she hasn't progressed" 412: "I don't think the power imbalance is there anymore over me. But when we were younger I think she had a lot of influence over me."
	1.3 Face to Face Resolution	424: "we have talked it through and there was a few misunderstandings that we have sort of straightened out" 433: "I actually confronted her about it and we sorted it out" 414: "I think it is because we sort of got along for a while after that. I mean as girls, so I sort of forgave her"
2. Normalizing vs. Personalizing	2.1 Likely to occur to anyone (Normalizing)	414: "There were rumours about everybody really, so it was just my turn I guess" 401: "I think it could have happened to any other girl who had just been in the wrong place at the wrong time" 471: I saw it happening to everyone else and I saw that they got equally annoyed when it was going on"
	2.2 Depersonalization	432: "I mean that is the way he acted to most people...I think at the time I still took it quite personally... I think I now know that it was mainly him " 412: ""Now I can look back on it and can see that she was trying to show her dominance and show that she could control people, I then realized she wasn't a very nice person ...I think she had problems, I think she probably didn't feel very happy with herself. I mean she would always be going on all these diets when she would only be eating broccoli...I wasn't sure she had such a good grasp on her own life and maybe that was reflected in how she dealt with other people." 401:That is how she is with everyone, I think it's her being a cow, and so it's just a case of, it's her problem , if she is going to be like that let her get on with it. It's just trying to undermine someone and make them feel small and it's sort of pathetic really"

	2.3 Taking it personally	<p>435: "It's still personal because, it happened to you so that makes it personal whether it happened to other people or not ,it still happened to you"</p> <p>P1: "There was more personal vindictiveness about it"</p> <p>440: "They say mean things about me and I feel sad that they do it, I do still take things personally"</p>
3. Self protection	3.1 Level of current threat	<p>413 "At the time there was like a question mark over what was going to happen and whether he was going to basically disrupt one of my most important friendships, and so I was worried about that and because that's not a threat or a risk anymore it is not something that affects me. The danger is passed. There is no hanging question mark there anymore"</p> <p>448 "The main thing would be coming here and knowing that like he can't get to me here. It's only about an hour, but -Yeah it's enough and erm I guess it's because everything here is on campus, it just feels like a very closed, safe community, where it is like a little bubble that he can't ruin really."</p> <p>462: "If he had the opportunity he might just want to still carry out that threat he is still very angry with me... he might just want to repay me back"</p>
	3.2 Generalised Distrust	<p>425: "I think I have kind of learnt from it and now I know not to get too close to anyone. It has just made me cautious really. I've got my guard up with other people. Like also if one person could do it then it makes you think anyone could do it, so yeah"</p> <p>448: "There is a lot of people that I don't trust anymore, it does affect how close I get to people"</p> <p>404" Say one of my lodgers got a girlfriend who was a bit like that I would be quite wary of her, do you know what I mean? ... I just wouldn't open up too much and I wouldn't buddy up with her very much and if I got the opportunity to get rid of that lodger I probably would. Perhaps what I have taken forward is a kind of slightly unjustifiable belief that there are certain kinds of women who are trouble and who I would be very wary of."</p>
	3.3 Self-defence	<p>442 "I tried to like consciously remember these bad experiences and not to be hurt in the future in the same way, yeah I like built a wall and it is still there. The easiest way to deal with the problem to build a wall."</p> <p>420: "I surround myself with almost like a shield from different goings on ... I suppose you could call it a safety zone, where I can just escape from it all"</p> <p>404: "I have learnt from the experience and I have protected myself"</p>

4. Social Support	4.1 Support from family and friends	426: "I think my mum at the time was really good about helping me deal with it" 458: "That has kind of made me cope with it a bit better, having other people to sort of support you" 448: "my new boyfriend has been very supportive ...just protecting me and looking after me"
	4.2 Lack of social support or understanding	437: "I was surprised that everyone was acting so normal, they thought that it wouldn't affect me" 408: "He had a lot of followers let's say. In the presence of other people he would kind of put me down and said some things that other people would listen to and maybe I just felt that I was getting less respect than what I deserved from them. I mean if people see you being put down they are going to feel like maybe they can [put you down] too." 461: "I didn't have people really to talk to back home"
5. Personal Growth	5.1 Incident as a positive learning experience	470 "I think having these sorts of experiences does toughen you up. I think being in that sort of situation predisposes you to feeling like you are a bit of an outsider or not in the centre of things, and that has its pros and cons. If you are one of the crowd then things are arguably easier, but when you reach an adult life you are not sure who you are. Whereas I knew who I was because I was different to everyone else." 467: "it shaped my character. At the time it was a bad experience, but now I see it as something good from it" 451: "it helped me in the end because I just learned to handle it...I mean it was hard for me, but I think it helped quite a lot in the end.
	5.2 Self esteem	444: "I was getting more confident and I was getting good feedback from clients and stuff like that" 467: "I have been successful in many things and I have had very many experiences since" 406: "I've also achieved something, I got married, I had my own home. I've grown in confidence on a completely different scale that has turned me into a completely different person than I used to be... So yeah I think it is personal development and growth. I am now a much stronger person now than I used to be."
	5.3 Improved coping skills	460: "I've learnt to deal with better ... I laugh about it instead of getting upset about it now" 432: I now know how to cope with it,.. I could just walk away, or say something that would sort of stop them. No problem" 450: " I think I have developed physically and mentally, like improved, and can take a step back if something like that happened again"
	5.4 Increased independence	435: I realized, maybe, you don't have to get on with everybody. If people are disrespectful or mean to you, you don't need them. You don't have to be close friends with everyone you meet - You know, when I was a kid I needed them because, I needed some people...I was only close to maybe two or three of them, so I clung, I really clung to them, what I've learned is by not clinging, and just by being casual with it, they'll call you, you can call them. It's not a big deal." 406: I got a completely independent life. I am my own person and I'm not necessarily dependent on an adult any more. 468:"Before I really tried to make an effort to please anyone and everyone and now I don't see the point, and if they are not willing to take me on as an individual then I don't see any point of being friends with them"

6. All Consuming vs. Wider Perspective	6.1 Loss of importance or relevance	405: ""In the great scheme of things it's actually not that important in my opinion there is no point in making it any bigger than it is...It was a stupid comment." 414: "Looking back it is such a small trivial part of my life in comparison to all the other things that have happened in the meantime. It is just something that has blended out and so it is just not that present in my memory anymore I suspect... it is just not that important anymore at all " P1: "I'm too busy to be that occupied about things ... I've got so much going on"
	6.2 Continued importance or relevance	437: "Well it still plays on your mind... It is not something that is going to go away I think" 427: "when I was back at home, I had more people, and I had more things to do and now I have less it is one of my main concerns, I think about it more" 416: "it still is really horrible and I am still really offended by it"
	6.3 Social Choice	424: "It made me realize that I don't have to just be friends with that group. I can make other friends; I don't have to stick with one set of friends. There are lots of other people" 435: "You're kind of trapped in the environment, you don't have an escape. Now I can choose who I talk to, I can choose who I'm friends with and I can choose my actions a lot more" 403 "Having choice would have placed it into perspective because if you only have one thing and that is taken away then that's 100% of all the things you have, whereas if you have other friends then you still have something to do. I mean just objectively it's less bad"
7. Letting go	7.1 Acceptance of the situation	410: I accepted the fact that, you know, I'm not going to be the popular girl or belong in the popular group necessarily ... I accepted that that was going to be it for a while. 449: "I accepted the fact that that was how it was gonna be, because when I came here I obviously had all these hopes and after 6 months you do accept it, you think this is not how I expected it to be but I've got to deal with it" 429: "I've just kind of like accepted it because it has been like for quite a while now. I've just accepted it as just like, I can't let it get me down because it doesn't really mean anything."
	7.2 Letting go and moving on	462: "I told myself that I would just have to let it go and move on with my life." 469: "I just let things go. I would just sort of say to myself life is too short to hold onto these things, and to hold a grudge against somebody, and I just don't see any point in it. I don't see any benefit in holding onto a grudge or sort of internalizing that sort of thing or holding it. So I think it is healthier to let it go than hold onto it really." 405: "I think there are certain things in your life when you have these kind of moments, either you can dwell on them or you can just let them go, and I've just let it go rather than dwell on it"

Appendix J: Coded Single Case Interview

Participant 432

I: Starting with preoccupation, how much you thought about it, what do you think has happened in this six years to prompt this change, why has it gone down, do you think?

432: I think because I've grown up a bit and realised that it is not necessarily that important how people sort of think about you [Loss of Importance]

I: You think it is less important?

432: Yeah, I think probably as I've done more things for myself, [Increased Independence] I've realised that it is sort of better to forget about things like that, and just get on with things. Not to dwell on it. [Letting go and moving on]

I: OK, So you think it is better not to dwell on it?

432: Yeah I think so, it's kind of easier if you have sort of moved on with your life. [Letting go and moving on]

I: OK, What has happened to allow you to stop dwelling on it?

432: I think getting on better with other people, having new friends [Social Choice] and sort of knowing that there are things that you have done that you are proud of, and that those people who have upset you should not really impact your life [Self Esteem].

I: OK, so do you have a different group of friends at the moment?

432: Yeah, kind of, a bit

I: What is it do you think it is about having these other friends that really helps you think about it less?

432: I think because they all act in a nicer, much more sort of grown up way [Support from family and friends]. More than that I think it sort of reaffirms the fact that it probably isn't going to happen again, [Current level of threat] and if it does then I would know how to cope with it. [Improved coping skills]

I: OK, distress, it did distress you, it was a five and it is now a two. What do you think has happened in that time to stop you being quite so distressed about it?

432: Probably at the time I didn't really know how to cope with it. I didn't know sort of what to say or do, and now I probably would be less worried about it. I think I'm a bit more mature I now know how to cope with it and I could probably just, you know, walk away, or say something that would sort of stop them. No problem. [Improved coping skills]

I: OK, so you feel you've got some coping strategies that you didn't have at the time?

432: Yeah, definitely, I think it is past the stage where you can expect other people to sort it out for you, and I think it is very true, I think that you need to be able to stand up for yourself. [Increased independence]

I: So you feel you are able to stand up for yourself better now than you did then?

432: Yeah

I: Why do you think you are? What has prompted that change? Why are you better able to stand up for yourself?

432: Probably just a self confidence boost, [Self Esteem] having more friends, moving to different places [Social Choice] and being able to cope instead of completely falling apart. [Improved coping skills]

I: OK, so you've moved away and you've got other friends.

432: Yeah, you are more independent at university; you are doing things for yourself. [Increased independence] You can't always just go home and sort of forget about things, you have to sort of cope with things all the time.

I: Yeah, so you feel that sort of having moved away you have gained independence, you've gained more friends and that has helped you grow in confidence which has meant that this sort of thing distresses you less?

432: Yes

I: OK, the impact. It had a reasonable impact at the time and that's gone down one, so it has changed a bit. Why do you think this experience is having less of an impact on your overall life now?

432: Probably because it hasn't happened since [Current level of threat]

I: So it was an isolated incident?

432: Yes

I: Do you feel this experience has affected your well-being and you said three, and that has gone down to a two, and you feel that part of that change is because you felt it was just an isolated incident. Is there anything else?

432: Probably again it is a self confidence thing, [Self Esteem] yeah what I said in the previous conversation.

I: OK. This one is interesting; you were really quite convinced at the time that, the intent of this boy was to deliberately upset you. You are now not quite so convinced that that was his intent. Why has that gone down a little bit?

432: Maybe I put that a bit wrongly.

I: OK

432: I think yes, it probably was his intent, he wanted to hurt me, but now I don't know that it is because he was a really malicious person. I think it might just be that he didn't actually know how to socially interact with other people without upsetting them. [Depersonalization]

I: OK, so you don't think it was necessarily malicious, it was something in him?

432: Yeah, I think, I mean that is the way he acted to most people. [Depersonalization]

I: OK, so you saw him doing it to others, is that what caused this change?

432: Yeah, I think at the time I still took it quite personally. [Taking it personally]

I: OK, but how did you feel when you saw him doing it to other people?

432: Yeah, I think I that maybe, you know it was something to do with me— but I now know that it was mainly him. [Depersonalization]

I: Do you still take it slightly personally now?

432: Yeah, a bit I think so. [Taking it personally]

I: OK, that's great, thank you very much is there anything more you'd like to add?

432: No I don't think so

I: OK, thanks

Appendix K: Tabulated Results of Systematic Review

Table 26, Studies of paranoid thinking in nonclinical populations

Study	Year	N	Assessment	Time period	Prevalence
Christenson & Blazer *	1984	997 adults (aged 65+) in Durham county N.C., USA	Mini-Mult (Kincannon, 1968)		Generalized persecutory ideation in total group 4% Generalized persecutory ideation for group without cognitive impairment 2%
Tien & Anthony*	1990	4994 adults (aged 18 to 49) who took part in US EPA study	Diagnostic Interview Schedule (Robins et al. 1981)	New occurrence of symptoms in the past year	New symptom onset: People spying on you 2.6% People following you 1.6% Trying to hurt you 0.5% Reading your mind 0.6% Others control you 0.3% Steal thoughts 0.2%
Eaton et al.*	1991	810 adults in Baltimore, United States	Diagnostic Interview Schedule (Robins et al. 1981)	Past month	Symptom endorsement (Clinical symptom) People spying on you 12% (1%) People following you 8% (1%) Trying to hurt you 5% (1%) Reading your mind 2% (1%) Others control you 2% (2%) Steal thoughts 2% (1%)
Forsell & Henderson *	1998	1420 adults (aged 75+) in Stockholm, Sweden	Comprehensive Psychopathological Rating Scale (CPRS) (Asberg et al. 1978)		6.3% had paranoid symptom For group without cognitive impairment 2.6%
Verdoux et al. *	1998	462 adults (18+ years) without psychiatric disorder attending general medicine practices in Southwest France	Peters et al. Delusions Inventory (PDI) (Peters et al. 1999)	Lifetime	Do you ever feel as if you are being persecuted in some way? 25.5%. Do you ever feel there is a conspiracy against you? 10.4%

Study		N	Assessment	Time period	Prevalence
Olfson et al. *	2002	1005 adults (aged 18 – 70) attending a general medicine practice in northern Manhattan, N.Y. USA	Mini International Neuropsychiatric Interview (Sheehan et al. 1998)	Currently present	Belief that others were spying on or following them 10.6% Belief that people were plotting or trying to poison them 6.9% Delusion of reference 4.7% Belief that people were secretly testing or experimenting on them 4.6%
Osting & Skoog *	2002	347 adults (aged 85) without dementia in birth cohort in Goteborg Sweden	Comprehensive Psychopathological Rating Scale (CPRS) (Asberg et al. 1978)	Last month	Belief of being persecuted, harassed, or unfairly treated that did not reach delusional proportions was classified as paranoid ideation 6.9% Persecutory delusion 3.5%
Cohen et al. *	2004	1027 adults (aged 55+) without cognitive impairment in Brooklyn, N.Y. USA	Paranoid sub-scale of the SCL-90 (Derogatis, Lipman & Covi, 1973)	Past week	Paranoid ideation present 13%
Johns et al. *	2004	8580 UK adults (aged 18 to 74) who took part in the 2000 British National Survey of Psychiatric Morbidity	Psychosis Screening Questionnaire (Bebbington & Nayani, 1995)	Past year	People were against you 21.2% People deliberately acting to harm you or your interests 9.1% group of people plotting to cause you serious harm or injury 1.5% Thought insertion 9.0%

Study	Year	N	Assessment	Time period	Prevalence
Freeman, Garety, Bebbington, Smith et al. *	2005	1202 university students (aged 16 – 61) in Southeast England, UK	Paranoia Checklist (Freeman et al. 2005)	Last month	Percentages of sample experiencing paranoid thoughts at least weekly: There might be negative comments being circulated about me 42% Bad things are being said about me behind my back 30% People deliberately try to irritate me 27% I might be being observed or followed 19% People are trying to make me upset 12% Someone I know has bad intentions towards me 12% I am under threat from others 10% I have a suspicion that someone has it in for me 8% Someone i don't know has bad intentions towards me 8% People would harm me if given the opportunity 8% There is a possibility of a conspiracy against me 5% ⁷

* Studies included in Freeman's (2007) review paper

Study	Year	N	Assessment	Time period	Prevalence
Rössler et al. Longitudinal Zurich study	2007	372 adults in Zurich Switzerland born between 1958 and 1959 who took part in all interviews at ages 21, 23, 28, 30, 35 and 41 years.	SPIKE (Structured Psychopathological Interview and Rating of the Social Consequences of Psychological Disturbances for Epidemiology) Paranoid ideation subscale of the SCL90-R (Derogatis, 1977). Structured Interview and Self report questionnaire	Last four weeks	Sample reported some (at least 'a little bit') paranoid ideation. Most (but not all) symptoms showed a decline over 20 years: Feeling others are to blame for your troubles aged 20 - 21 = 27% aged 40 - 41 = 20.6 % Feeling that most people cannot be trusted aged 20 - 21 = 37.1 % aged 40 - 41 = 29.2% Feeling that you are watched by others aged 20 - 21 = 42.8 % aged 40 - 41 = 33.3% Having ideas that other do not share aged 20 - 21 = 58.0 % aged 40 - 41 = 32 % Others not giving you proper credit aged 20 - 21 = 42.4 % aged 40 - 41 = 42.3 % Feeling that people take advantage of you aged 20 - 21 = 32.0 % aged 40 - 41 = 36.5%

Study	Year	N	Assessment	Time period	Prevalence
Rietdijk et al.	2009	7076 Dutch population cohort (aged 18 – 64) who took part in the Netherlands Mental Health Survey and Incidence Study (NEMESIS)	Composite International Diagnostic Interview (CIDI)	Lifetime	10% reported one or more lifetime paranoid ideation
Freeman et al.	2010	8580 English private household residents (aged 16 to 74), who took part in the second British National Survey of Psychiatric Morbidity	Psychosis Screening Questionnaire (PSQ; Bebbington and Nayani, 1995). Self-completion (screening) questionnaire version of the Structured Clinical Interview for DSM-IV (SCID-II; First et al., 1997). Self report questionnaire	Past year	Belief that people were deliberately acting to harm them 9.0% Belief that a group of people was plotting to cause serious harm or injury 1.6%
Murphy et al.	2010a	7266 English private household residents without clinically defined psychosis (aged 16+), who took part in the 2007 Adult Psychiatric Morbidity Survey.	Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995). Self report questionnaire	Past year	Belief in potential plots to cause them serious harm. 1.5%
Murphy et al.	2010b	5893 non-institutionalised persons (aged 15 -54) in the 48 coterminous states of America, who took part in The National Comorbidity Survey (NCS) (1990–92)	Composite International Diagnostic Interview (CIDI: World Health Organisation 1990) - modified version. Structured interview	Lifetime	Belief in being spied on or followed 12.88% Belief in others plotting, poisoning, or aiming to hurt respondent 3.61%

Study	Year	N	Assessment	Time period	Prevalence
Chan et al.	2011	4951 Chinese undergraduates (mean age 20) from five universities in Beijing, Guangzhou, and Zhuhai	Paranoid ideation checklist adapted for Chinese respondents from items on the Paranoia Checklist (Freeman et al., 2005). Self report questionnaire	Frequency of thoughts assessed from rarely to once a day	One or more paranoid symptoms, 71.5% Two or more symptoms, 56.3% Paranoid ideation at least once a week, 2.1 to 18.2% Somewhat believed the paranoid thought (conviction) 9.3% to 53.5% Somewhat distressing. 14.7 to 31.3%
Freeman et al.	2011	7281 English private household residents (aged 16 +), who took part in the 3rd Survey of Psychiatric Morbidity	Three items from the Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995). Self report questionnaire	Past year	Belief people were against them, 18.6% Belief that people were deliberately acting to harm them, 8.2% Belief potential plots to cause them serious harm. 1.8%
Cella et al.	2011	800 students, 400 from Swansea university UK, 400 from Cagliari in Italy (aged 18 -30)	Peters et al Delusions Inventory (PDI; Peters et al. 1999, 2004). Self report questionnaire	Lifetime	Paranoid thinking present in 41% Paranoid ideation is most common delusional theme
Wigman et al.	2011	(Study 1) 5422 Dutch school children (aged 12 – 16), who took part in the Health Behaviour in School-Aged Children Study(2005) (Study 2) 2230 Dutch school children (aged 11 - 17) who took part in the Tracking Adolescents' Individual Lives Survey (TRAILS), a prospective cohort study among adolescents in the general Dutch population	The Community Assessment of Psychic Experiences (CAPE) positive experiences scale. Self report questionnaire	Lifetime	89.7% (study 1), 89.8% (study 2) reported 'ever' feeling, 29.4 % (study 1), 25.5% (study 2) reported 'often or almost always' feeling: That they are persecuted in some way That people look at them oddly because of their appearance That some people are not what they seem to be That people say things with a double meaning That there is a conspiracy against them

Table 27, Questionnaire based studies of affective processes in nonclinical paranoia post Freeman’s 2007 review

Study	Year	N	Assessment of paranoia	Other assessments	Findings
Gracie et al.	2007	228 students at Kings College and Birkbeck University London	Paranoia Scale (Fenigstien & Venable, 1992)	<ol style="list-style-type: none"> 1. The Self-Report Scale-Post Traumatic Stress Disorder (SRS-PTSD; Carlier et al., 1998) 2. The Brief Core Schema Scale (BCSS; Fowler et al., 2006) 3. The Launay Slade Hallucination Scale (LSHS; Launay & Slade, 1991) 4. The Structured Interview for Assessing Perceptual Anomalies (SIAPA; Bunney et al., 1999) 	Paranoia was associated with negative schematic beliefs about the self and others and PTSD
Jones & Fernyhough	2008	183 undergraduates students at British University	The Persecutory Ideation Questionnaire (PIQ; McKay et al., 2006)	<ol style="list-style-type: none"> 1. Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen) 2. Manifest Anxiety Scale (TMAS; Taylor, 1953) 3. Marlowe–Crowne Social Desirability Scale (Crowne & Marlowe, 1960) 	Levels of persecutory ideation were predicted by the interaction between thought suppression and anxiety. Thought suppression was positively associated with paranoia only when anxiety was high.
Thewissen et al.	2008	154 participants, consisting of both those with a psychotic disorder and participants sampled from the general population	<p>Paranoia Scale (Fenigstien & Venable, 1992)</p> <p>State Paranoia subscale within Experience Sampling Method assessment form (Thewissen, 2008)</p>	<ol style="list-style-type: none"> 1. The Community Assessment of Psychic Experiences (CAPE) 2. Positive and Negative Syndromes Scale (PANSS) 3. Self-Esteem Rating Scale (SERS) 	Paranoia was associated with both lower self esteem and greater fluctuations in self esteem. Momentary Paranoia was associated with a decrease in self-esteem.

Study	Year	N	Assessment of paranoia	Other assessments	Findings
Pickering, Simpson & Bentall	2008	551 UK university students (aged between 18–63 years)	The persecution and deservedness scale (PaDS; Melo et al., 2010)	<ol style="list-style-type: none"> 1. Revised Launay–Slade hallucinations scale-revised (LSHS; Bentall & Slade, 1985) 2. The relationship questionnaire (RQ; Bartholomew and Horowitz, 1991) 3. The Beck depression inventory (BDI-II; Beck, Steer, & Brown, 1996) 4. The self-esteem rating scale (SERS; Nugent & Thomas, 1993) 5. The negative events scale (Kaney et al., 1997) 6. The Levenson locus of control scale (Levenson, 1973) 	Paranoia was predicted by insecure attachment. This relationship was mediated by; negative self-esteem, anticipation of threatening events and a perception of others as powerful. Perceptions of deservedness were predicted by low self-esteem.
Freeman et al.	2009	300 (18+) participants with no history of treatment for severe mental illness and 30 patients with presence of persecutory delusion	Green et al. Paranoid Thoughts Scale (GPTS; Green et al., 2008)	<ol style="list-style-type: none"> 1. Insomnia Severity Index (ISI; Bastien et al., 2001) 2. Sleep-50 Questionnaire (Spoormaker et al., 2005) 3. Depression Anxiety Stress Scales (DASS; Lovibond and Lovibond, 1995) 	Persecutory ideation was associated with insomnia, this association was partly explained by levels of anxiety and depression.
Freeman & Fowler	2009	200 members of UK general public	Green et al. Paranoid Thoughts Scale (GPTS; Green et al. 2008)	<ol style="list-style-type: none"> 1. Cardiff Anomalous Perceptions Scale (Bell et al., 2006) 2. Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999) 3. Depression Anxiety Stress Scales (Lovibond and Lovibond, 1995) 4. Brief Core Schema Scales (Fowler et al., 2006) 5. Maudsley Addiction Profile (Marsden et al., 1998) 	Persecutory ideation was significantly associated with a history of trauma, and this association was explained by levels of anxiety.

Study	Year	N	Assessment of paranoia	Other assessments	Findings
Raes & Van Gucht	2009	131 adolescents (aged 15 to 19) attending last two years of secondary school in Belgium	Paranoia Scale (Fenigstien & Venable, 1992) Paranoia Checklist (Freeman et al., 2005b)	1. The Beck Depression Inventory (BDI-II; Beck et al., 1996) 2. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) 3. The Self-Esteem Instability Scale (SEIS; Raes & Van Gucht, 2009)	Paranoia was associated with low self esteem and self esteem instability in adolescent population.
Yamauchi, Sudo & Tanno	2009	128 Japanese undergraduate students	Japanese version of The Paranoia Checklist (PC; Freeman et al. 2005)	Unspecified	Paranoid thoughts characterised by higher levels of distress, absurdity, anger, corrigibility, perception of intended harm and lower conviction than socially anxious thoughts.
Melo, Sigmaringa & Bentall	2010	608 university students from the UK and Portugal	The Persecution and Deservedness Scale (PaDS; Melo et al., 2009)	1. The Response Styles to Depression Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991) 2. The COPE (Carver et al., 1989) 3. Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961)	Depression and rumination predicted paranoia scores. Avoidant coping and denial predicted subclinical paranoia. Deservedness was associated with acceptance and with engaging in dangerous activities.
Van Dongen et al.	2011	269 people from the general population and 79 inpatients from different psychiatric facilities	Persecutory Ideation Questionnaire (PIQ; McKay et al., 2006)	1. Community assessment of psychic experiences (CAPE; Konings, et al., 2006) 2. Aggression Questionnaire (AQ; Buss & Perry, 1992) 3. Marlowe–Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960) 4. Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987)	Persecutory ideation was significantly related to self-reported aggression in both the nonclinical and the clinical sample

Study	Year	N	Assessment of paranoia	Other assessments	Findings
Thewissen et al.	2011	158 participants, consisting of those with a psychotic disorder and participants sampled from the general population.	Paranoia Scale (Fenigstien & Venable, 1992) Momentary paranoia and paranoid episodes subscale within Experience Sampling Method assessment form (Thewissen, 2011)	1. Positive and Negative Syndromes Scale (PANSS; Kay et al., 1987) 2. Emotional experiences momentary self esteem, and momentary hallucinations reports taken from the Experience Sampling Method Reports (Thewissen et al. 2011)	Paranoid episodes were associated with high levels of negative emotions and low level of self-esteem, and could be predicted by momentary increases in anxiety and a decrease in self-esteem.
Tone, Goulding & Compton	2011	644 students (including 25% of participants who reported past mental health treatment)	Paranoia/Suspiciousness Questionnaire (PSQ; Rawlings et al., 1996)	1. Perceptual Aberration Scale (PAS; Chapman et al., 1978) 2. Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969) 3. Depression, Anxiety, and Stress Scale (Lovibond & Lovibond, 1995)	Paranoia was predicted social anxiety, perceptual aberrations, and negative affect.