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The Role of Mental Imagery in Paranoia

by

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ABSTRACT

FACULTY OF SOCIAL AND HUMAN SCIENCES

Doctor of Clinical Psychology

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THE ROLE OF MENTAL IMAGERY IN PARANOIA

By Gemma Marie Bullock

The literature review discusses the relationship between paranoia and social anxiety in clinical and non-clinical populations. Much of the literature points to a correlation between social anxiety and paranoia, with many cognitive and affective processes implicated in both presentations. Research has identified anxiety, depression, core beliefs and assumptions, mental imagery, and social behaviour to be similarly associated with social anxiety and paranoia. This supports a cognitive model of persecutory delusions in which many of the cognitive and behavioural processes implicated in the maintenance of anxiety disorders are also likely to be relevant to the maintenance of paranoia. Research to date however, is limited by a reliance on cross-sectional design and methodological differences across studies which make it difficult to extrapolate findings. Overall the findings support a view that paranoia and social anxiety are distinct and related presentations, characterised by similar psychological processes.

The empirical study aimed to explore the role of negative and positive imagery in individuals with high levels of non-clinical paranoia. A mixed design with one between-subjects variable (type of self-imagery) and one within-subjects variable (time pre and post the imagery manipulation design) was used. Thirty students with high levels of non-clinical paranoia participated in the study. Participants were allocated alternately to a positive or negative self-image condition. Image scripts were used to elicit the positive and negative imagery. All participants completed measures of paranoia, anxiety, self-esteem, mood and self-compassion. Results demonstrated that paranoia-related negative imagery increased paranoia, negative mood, and decreased self-esteem, self-compassion and positive affect. Conversely, positive imagery led to reductions in paranoia, negative mood, anxiety and increases in positive affect, self-esteem and self-compassion. Clinical and theoretical implications in relation to the findings are discussed.

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DECLARATION OF AUTHORSHIP

I, Gemma Marie Bullock, declare that this thesis entitled The Role of Mental Imagery in Paranoia, and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signed: .....

Date: .....

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Definition of Terms

Social Anxiety Disorder	Social Anxiety Disorder (also referred to as Social Phobia) is defined as a marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing. The individual recognizes that their fear is excessive or unreasonable. The avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person's normal routine, occupational (academic) functioning, or social activities or relationships, or there is marked distress about having the phobia (DSM-IV TR; American Psychiatric Association [APA], 2000).
Non-Clinical Paranoia	Non-clinical paranoia refers to a mode of thinking characterised by exaggerated self-referential biases that occur in typical everyday behaviour, suspiciousness, mistrust, and belief in external control or influence (Fenigstein and Vanable, 1992). Paranoia is thought to exist on a continuum ranging from common social evaluative concerns experienced in the general population (e.g. fear of rejection) through to more severe persecutory delusions (Freeman et al., 2005).
Persecutory Delusions	Persecutory delusions refer to clinical levels of paranoia in which the person fears that a persecutor intends to cause significant

	physical, social or psychological harm (Freeman et al., 2005). Persecutory delusions are included in diagnostic criteria for schizophrenia in the Statistical Manual of Psychiatric Disorders Text Revision (DSM-IV TR; American Psychiatric Association [APA], 2000).
Mental Imagery	Mental imagery refers to perceptual information that arises from memory rather than from information directly registered the senses. Mental imagery can occur in all sensory modalities such as “seeing with the minds eye”, “hearing with the minds ear”. Imagery encompasses memories, dreams, spontaneously triggered and deliberately self-generated images (Hackmann & Holmes, 2004).

Chapter 1: The Literature Review: What is the relationship between social anxiety and paranoia in clinical and non-clinical populations?

1.1 Introduction

Paranoia is defined by two key elements: the idea that harm is occurring, or is going to occur, and that the persecutor has the intention to cause that harm (Freeman & Garety, 2000). The paranoia hierarchy (Freeman et al., 2005; Figure 1) provides a framework indicating that paranoid thoughts range from common social anxieties, such as fear of rejection, to severe threat experienced by individuals with persecutory delusions (e.g. people are trying to cause significant physical, psychological or social harm, and conspiracies). At the severe end, paranoia is one of the most common and distressing symptoms of psychosis (Applebaum, Robbins & Roth, 1999; Freeman, 2007).

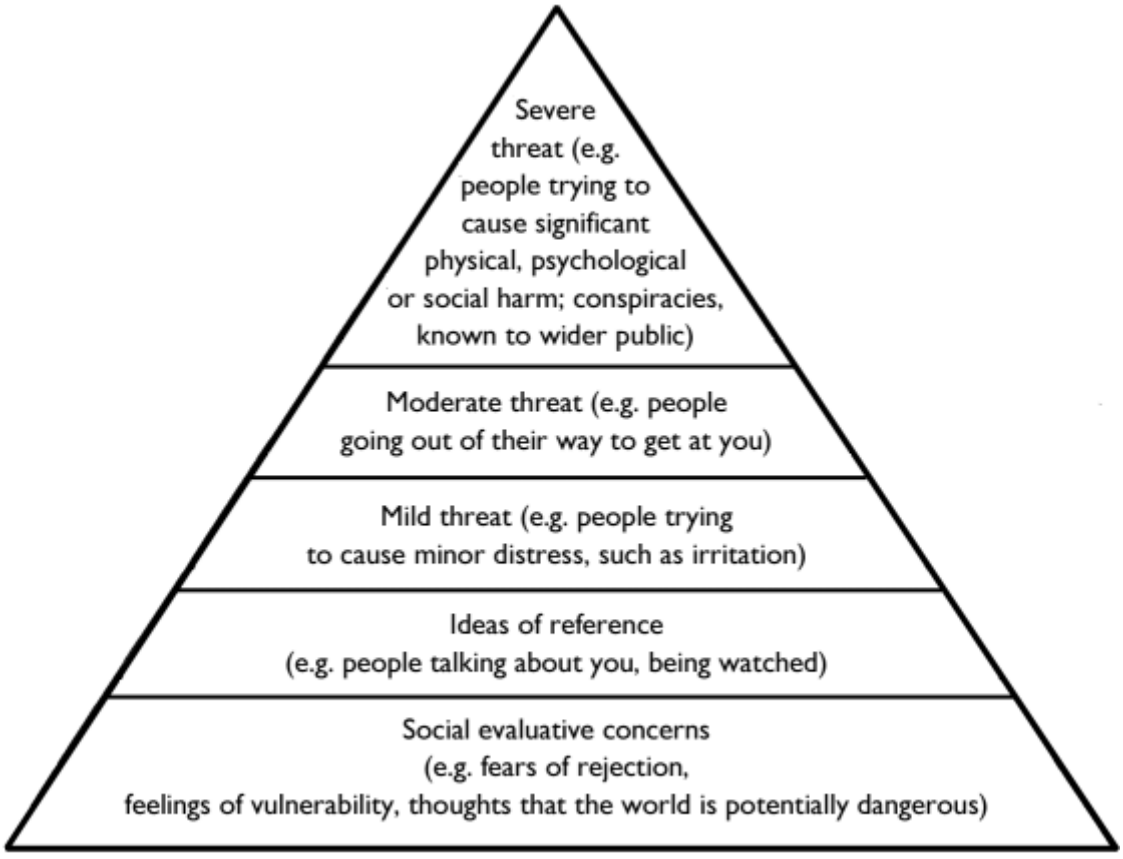

Figure 1. The Hierarchy of Paranoia (Freeman et al., 2005).

Social anxiety disorder (also referred to as social phobia) is marked by a persistent fear of social or performance situations, in which individuals fear that they will be evaluated negatively or that they will act in a humiliating or embarrassing way (APA, 2000). This leads to anxiety and deterioration of social functioning manifest in avoidance and withdrawal from

social interactions which significantly impacts an individuals' quality of life (Clark & Wells, 1995).

Social anxiety is one of the most prevalent and debilitating co-morbidities in people with psychosis with rates ranging from 8% to 36% (Birchwood et al. 2007; Cossof and Hafner, 1998; Michail & Birchwood, 2009). The frequent occurrence of emotional disorder prior to and accompanying psychosis indicates that neurosis contributes to the development of the positive symptoms of psychosis (Freeman & Garety, 2003). In particular, a close association between anxiety and paranoia has been demonstrated (e.g. Martin & Penn, 2001; Johns et al. 2004), with evidence to suggest that anxiety is predictive of the occurrence of paranoid thoughts (Freeman et al. 2003, 2005; Valmaggia et al. 2007) and the persistence of persecutory delusions (Startup et al. 2007). Despite a breadth of comorbidity literature (e.g. Birchwood et al. 2007; Cossof and Hafner, 1998; Michail & Birchwood, 2009), the nature of the nature of the relationship between social anxiety and paranoia remains unclear.

This review will outline current models of social anxiety and persecutory delusions before synthesising research that examines the epidemiological relationship between the two presentations. To the author's knowledge, no published review has specifically investigated the relationship between social anxiety and paranoia, and the cognitive or behavioural processes that might underpin both of these experiences. In a key review paper, Hartley, Barrowclough, and Haddock (2013) investigated the association between anxiety, depression and positive symptoms of psychosis. Their review explored the links between anxiety and depression on the experience of positive psychotic symptoms, and the possibility for a causal role of anxiety and depression. They concluded that there was a significant association between affective conditions and the severity, distress, and content of psychotic experiences. They highlighted a need to focus on subtypes of experience and this review will attempt to address part of this need by synthesising and critiquing the research on paranoia specifically, and on social anxiety. Further reasons why this review will focus on persecutory delusions or paranoia in relation to social anxiety are discussed as follows.

The current psychological literature on psychosis is increasingly focused on specific symptoms, such as hallucinations and delusions, rather than broadly defined syndromes such as schizophrenia (Peters, Joseph, & Garety, 1999; van Os, Hanssen, Bijl, & Ravelli, 2000; Verdoux & van Os, 2002). This reflects a recent shift in the conceptualisation of psychosis. Authors have questioned the validity of syndrome based models and diagnostic labels, such as schizophrenia on the basis that they are unreliable and fail to provide a useful foundation for

developing psychological understanding and treatment of psychosis (Kinderman & Cook, 2000; Chadwick, 2006). Many researchers have argued that focusing on specific experiences and behaviours will develop our understanding of the psychological mechanisms involved in the formation and maintenance of such symptoms and enhance interventions (Kinderman & Cook, 2000; Morrison, Haddock & Tarrier, 1995). Additionally, it has been argued that traditional diagnostic classification represents a dichotomy between psychosis, neurosis, and ordinary experience, which creates theoretical and practical divisions between ill and well that are not supported by the epidemiological literature (Kinderman & Cook, 2000; Boyle, 2007; Chadwick, 2006). In more recent years the importance of emotion in understanding psychosis has been increasingly recognised and the divide between psychosis and neurosis has narrowed (Birchwood, 2003; Freeman & Garety, 2003; Hartley, Barrowclough & Haddock, 2013). For instance, emotional disorders such as anxiety and depression are hypothesised in casual models of psychosis (e.g. Garety et al, 2001; Freeman et al, 2002).

Garety, Kuipers, Fowler, Freeman, and Bebbington's (2001) cognitive model of the positive symptoms of psychosis, provides a multi-factorial account of the positive symptoms of psychosis that includes a direct role for emotion in delusion formation. In this model, delusions are viewed as attempts to make sense of unusual internal events such as anomalous experiences. They proposed that delusional explanations are based on pre-existing beliefs about the self, world, and others, and that these beliefs are closely linked to emotion.

The theoretical comparisons between social anxiety and paranoia are increasingly more evident in current cognitive models of and persecutory delusions and social anxiety. Freeman, Garety, Kuipers, Fowler, and Bebbington (2002) extended the cognitive model of the positive symptoms of psychosis (Garety et al., 2001) to develop a specific account of the formation and maintenance of persecutory delusions. The model of persecutory delusions has greater emphasis on processes that are typically associated with anxiety and draws on a cognitive model of social anxiety (Clark & Wells, 1995).

The cognitive model of social anxiety disorder (Clark & Wells, 1995) conceptualises social anxiety as a set of threat beliefs, and proposed that irregular processing of social threat cues plays a central role in the development and maintenance of social phobia. The model postulates that individuals with social phobia have negative underlying assumptions about themselves and their social environment, based on early experience. In social situations, these underlying assumptions and core beliefs are triggered, and a number of processes are initiated that maintain and exacerbate the individual's anxiety. These include automatic thoughts about performance and the self (e.g. Norton & Hope, 2001; Rapee and Lim, 1992; Stopa & Clark,

1993), avoidance and safety behaviours that prevent the individual from disconfirming negative expectations, and changes in interpretational (Amir, Foa & Coles, 1998; Stopa & Clark, 2000) and attentional processes (Amir, Freshman & Foa, 2002; Pishyar, Harris & Menzies, 2004; Spector, Pecknold & Libman, 2003). This includes self-focused attention, in which the individual constructs an image of the self that is seen from an observer perspective. These images are usually negatively distorted, and yet are often taken by the anxious person to be an accurate representation of their situation. The image which is based on subjective feelings of anxiety, sensations, and memories, prevent socially anxious people from attending to the situation as it genuinely appears and contributes to the maintenance of the anxiety (Hackmann, Clark & McManus, 2000).

The cognitive model of persecutory delusions (Freeman et al., 2002) is based on a stress-vulnerability framework. The development of symptoms is caused by an interaction between genetic, biological, psychological, social vulnerability factors and stress. For individuals with a vulnerability to psychosis, stress arousal will initiate inner-outer confusion causing anomalous experiences (e.g. thoughts being experienced as voices). Threat beliefs are then activated by a search for meaning for these internal or external experiences that are unusual, anomalous, or emotionally significant for the individual. The explanations considered in the search for meaning will be influenced by cognitive biases associated with psychosis such as jumping to conclusions, externalising blame and theory of mind deficits leading to errors in reading the intention of others. In the search for meaning, pre-existing beliefs about the self, others, and the world are drawn upon. These beliefs are hypothesised to be closely associated with premorbid levels of anxiety. Anxious cognitions focused on impending danger may be reflected in the content of persecutory delusions. Anxiety may also result from further appraisal of the delusion and associated experiences, therefore anxiety is viewed as central to the formation and maintenance of persecutory beliefs. This means that many of the cognitive and behavioural processes implicated in the maintenance of anxiety disorders (Clark, 1999) are also likely to be relevant to the maintenance of persecutory delusions (Freeman & Garety, 1999; 2002). For instance, attentional, memory and reasoning biases, and safety behaviours maintain delusions through a combination of confirmatory and disconfirmatory processes.

There are many similarities highlighted in the mechanisms described in these two models. Both social anxiety and persecutory delusions are conceptualised as threat beliefs, which are influenced by core beliefs, assumptions and maintained through similar confirmatory and disconfirmatory processes.

Although similarities between the two experiences are becoming evident, differences are of equal theoretical and clinical interest and many have maintained that paranoia and social anxiety are distinct phenomena that are not always comorbid (e.g. Freeman et al., 2008a). Both are conceptualised as threat beliefs, however differences emerge in the content of the belief; individuals with paranoid delusions typically fear persecution from others and demonstrate perceptual anomalies (e.g. auditory, visual, sensory), and those with social anxiety worry about negative evaluation from others. Individuals with paranoia may display conviction in the validity of their beliefs, whereas people with social anxiety recognise their fear as excessive or unreasonable (Freeman et al., 2008).

Despite theoretical comparisons between social anxiety and paranoia as stipulated in the cognitive models discussed (Clark & Wells, 1995; Freeman et al., 2002), and a breadth of comorbidity literature, the nature of this relationship remains unclear. Researchers have theorised that paranoia and social anxiety share similar underlying processes (e.g. Freeman et al., 2005) however, the processes that underlie this relationship are yet to be clarified and evidenced.

1.1.1 Aims.

The aim of this review is to synthesise and evaluate the current literature relating to the links between paranoia and social anxiety/social phobia in an attempt to answer the following two key questions:

1) What is the relationship between social anxiety and paranoia in clinical and non-clinical populations?

2) What can the research tell us about the processes that underpin both social anxiety and paranoia?

1.2 Method

Electronic databases (PsycINFO, PsycARTICLES, CINAHL and MEDLINE) were used to identify literature for the present review. The search terms used to identify literature were *social phobia or social anxiety or social anxiety disorder*, combined *with paranoi* or persecutory delusions or paranoid delusions or paranoid ideation*. Papers published in English between 1998 and April 2014 were included[1]. Only published literature was included. A total of 209 papers were returned and screened. The review focused on explicit links between social anxiety and paranoia/persecutory delusions therefore only papers with a primary focus on both persecutory delusions/paranoia, and social anxiety were included. Papers were identified which included diagnoses of social anxiety, schizophrenia or non-clinical paranoia and symptoms of social anxiety, and used primary outcome measures of paranoia and social anxiety. A total of 14 papers identified through the electronic searches were ultimately included in the review. Figure 2 depicts the flow-chart of literature selection and details the process of exclusion criteria used for the review.

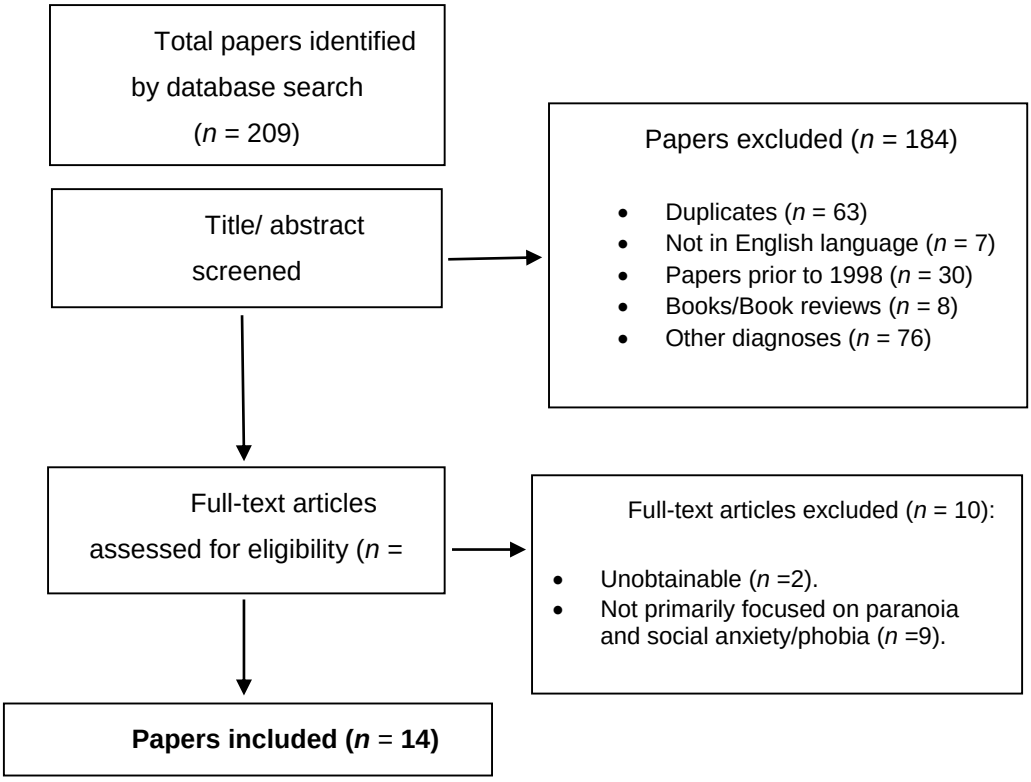

Figure 2. Literature Search and Study Categorisation Flow.

[1] Cognitive models of social anxiety and persecutory delusions were developed after this date, therefore papers preceding this data were excluded.

1.3 Narrative Synthesis

1.3.1 Summary of Methodologies

Of the fourteen studies included in the review, the majority (n=10) used a cross-sectional design (Martin & Penn, 2001; Combs & Penn, 2004; Gilbert et al., 2005; Huppert & Smith, 2005; Freeman et al., 2008; Michail & Birchwood, 2009; Lysaker et al., 2010; Tone et al., 2011; Newman-Taylor & Stopa, 2012; Matos et al., 2013), two papers utilised a qualitative approach (Lockett et al., 2012; Stopa et al., 2013), and two studies used a longitudinal, prospective design (Schutters et al., 2012; Rietdijk et al., 2009). Table 1 details the key characteristics of all the papers included in the review.

Table 1. Key characteristics of included studies

Study Reference	Aims	Sample	Design	Key Outcome Measures	Key Findings
Martin & Penn (2001)	To examine the relationship between multiple clinical and social-cognitive variables with paranoid ideation	Non-clinical sample of undergraduate students (n=193; 114 female, 79 male). Mean age 21.	Cross-sectional, correlational	PS SCID BFNE SAD BDI RSES	Higher levels of paranoid ideation were associated with greater social anxiety, depression, self-monitoring in public, and lower self-esteem.
Combs & Penn (2004)	To examine differences in social perception and social behaviour between high and low subclinical paranoia	Non-clinical sample of undergraduate students (n=60; 34 female, 26 male). Mean ages 20-21.	Cross-sectional, correlational	PS PAI BDI BFNE RSES SCS	High subclinical paranoia associated with lower self-esteem, social anxiety, depression, public self-consciousness, and attentional biases relative to persons low in subclinical paranoia.
Gilbert, Boxall, Cheung, Irons (2005)	To explore the relation of paranoid thinking with social anxiety in a mixed group of patients	Mixed clinical sample (n=71; 36 men, 35 women) diagnosed with anxiety, depression or personality disorder accessing acute wards, outpatient services or day hospital services. Mean age 40.9.	Cross-sectional, correlational	PS SIAS SPS	High correlation between paranoia and social anxiety, especially social phobia (fear of scrutiny) in clinical groups.
Huppert & Smith (2005)	To examine the interaction of specific anxiety subtypes and psychosis	Clinical sample (n=32; female 13, male 19) of outpatients diagnosed with schizophrenia or schizoaffective disorder. Mean age 36.	Cross-sectional, correlational	SIAS SPS BDI IHS PANSS Clinical Interview	Paranoia correlated with severity of social phobia, but not social interaction anxiety.
Freeman, Grittins, Pugh, Antley, Slater, Dunn (2008)	To identify factors that distinguish social anxiety and paranoid thoughts in an experimental situation	Non-clinical sample (n=200; 100 female, 100 male) of general population. Mean age 37.	Cross-sectional, correlational, experimental	CAPS SSPS SAD Virtual Reality Task	Perceptual anomalies predicted paranoia, not social anxiety. Anxiety, depression, worry and interpersonal sensitivity predicted both social anxiety and paranoia.
Michail & Birchwood (2009)	To determine the phenomenology of social anxiety disorder with and without psychosis	Mixed clinical sample (n=111). 80 (27 female, 53 male) diagnosed with first episode psychosis, 31 (20female, 11 male) with	Cross-sectional, correlational	SIAS SPS BFNE PANSS Clinical Interview	25% of the FEP sample was diagnosed with social anxiety disorder (FEP/SaD

		social anxiety disorder. Age range 16-35.			group). Similar levels of social anxiety, avoidance, autonomic symptoms and depression amongst the FEP/SaD and SaD groups. Percieved threat from persecutor was greater in FEP/SaD than FEP without SaD.
Rietdijk, van Os, de Graaf, Delespaul, van der Gaaga, (2009)	Explore the association between social phobia and paranoid symptoms in a prospective general population sample	General population sample of adults (n=7076; female 3005, male 2614). Used the data of the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Mean age 41.	Cross-sectional and prospective study	Clinical Interview CIDI SCID	Sub-clinical paranoia at baseline was associated with the onset of social phobia one to three years later.
Lysaker , Salvatore, Grant, Procacci, Olesek, Buck & Dimaggio (2010)	Examine the prevalence of Theory of Mind deficit in a paranoid sample and the relationship to social anxiety	Clinical sample (n=102; 12 women, 76 men) with a diagnosis of schizophrenia or schizoaffective disorder. Mean age 49.	Cross-sectional	PANSS LSAS Theory of Mind Tasks (e.g. Winsconsin Card Sort)	Participants with high paranoia and good ToM had significantly greater social anxiety than any other group.
Tone, Goulding & Compton (2011)	Examine the association between social anxiety and perceptual anomalies with self-reported paranoid ideation	Non-clinical sample of psychology students (n=644). Largely female sample (exact demographic data not reported).	Cross-sectional survey, correlational	BFNE PSQ	Social anxiety and perceptual anomalies made significant independent contributions to scores on a multidimensional measure of paranoid ideation
Lockett, Hatton, Turner, Stubbins, Hodgekins and Fowler (2012)	To explore imagery in comorbid psychosis and social anxiety	Clinical sample (n=7) of patients accessing Early Intervention In Psychosis (EIP) service. Age range 14-35	Qualitative	Semi-Structured interview	Participants experience typical social anxiety images. Some experience images that appear more threatening, and may be associated with residual psychotic paranoia
Newman-Taylor & Stopa (2012)	Explore cognition and behaviour that are typically associated with social phobia, in people with paranoia	Mixed clinical sample (n=48). 13 with social phobia, 13 with schizophrenia, 10 clinical controls (panic disorder) and 12 non-clinical controls. Mean ages 35, 39, 40, and 35 respectively. 38%	Cross-sectional	SCQ PS SAQ-R SIAS HADS CPI SCS-R	No significant difference between people with persecutory delusions and social phobia on measures of automatic thought, underlying assumptions, core beliefs, process and behaviour.

		female/62% male in the paranoia group, 77% female/23% male in the social phobia group, 70% female/30% male in the anxious controls, and 58% female/42% male in the non-clinical controls.		SBS EBS	
Schutters , Dominguez, Knappe, Lieb, Schruers & Wittchen (2012)	Explore cross-sectional and longitudinal associations between social phobia and paranoid symptoms	General population sample of adolescents and young adults (n=3021). Data derived from the German Early Developmental Stages of Psychopathology (EDSP) epidemiological study.	Longitudinal, prospective & cross-sectional	CIDI	Confirmed the prospective association between paranoid symptoms and later onset of social phobia.
Matos, Pinto-Gouveia, Gilbert (2013	Examine association between shame and shame memories with paranoia and social anxiety	Non-clinical general population sample (n=328; 220 female, 108 male). Mean age 37.	Cross-sectional, correlational	PS SIPAAS ESS IES-R CES	External shame and traumatic impact of shame associated with paranoid anxiety, internal shame linked to social anxiety.
Stopa, Denton, Wingfield, Newman Taylor (2013)	Explore threat experiences in people with social phobia and persecutory delusions	Clinical sample (n=18; 11 female, 7 male), 9 with social phobia, 9 with schizophrenia. Age range 22 – 58.	Qualitative	SCID CPI Semi-Structured Interview	Typical fear responses found in both groups, particularly in their reactions to Threat. Differences between the groups in their perceptual experiences.

Note. PS = Paranoia Scale; SCID = Structured Clinical Interview for DSM Disorders; BFNE = Brief Fear of Negative Evaluation Scale; SAD = Social Avoidance and Distress Scale; BDI = Beck Depression Inventory; RSES = Rosenberg Self-Esteem Scale; PAI = Personality Assessment Inventory; SCS= Self-Consciousness Scale; SPS = Social Phobia Scale, SIAS = Social Interaction Scale; IHS = Inventory of Hostility and Suspiciousness; PANSS = Positive and Negative Symptoms Scale; CAPS = Cardiff Anomalous perceptions Scale; SSPS = State Social Paranoia Scale; CIDI = Composite International Diagnostic Interview; LSAS = Liebowitz Social Anxiety Scale; Paranoia Suspiciousness Questionnaire; SCQ = Social Cognitions Questionnaire; SAQ-R = Social Attitudes Questionnaire; EBS = Evaluative Beliefs Questionnaire; SBS = Social Behaviour Scale; HADS = Hospital Anxiety and Depression Questionnaire; SCS = Self-consciousness Scale; CPI = Cognitive Profile Interview; SIPAAS = Social Interaction Performance Anxiety and Avoidance Scale; ESS = Experience of Shame Scale; IES-R = Impact of Event Scale; CES = Centrality of Event Scale

1.3.2 The temporal relationship between social anxiety and paranoia

There were only two studies to provide data on the temporal relationship between social anxiety and paranoia, the Netherlands Mental Health Survey and Incidence Study (NEMESIS) (Rietdijk et al., 2009) using a general population sample of adults, and the Early Developmental Stages of Psychopathology (EDSP) study researching adolescents and young adults from the general population. Rietdijk, van Os, de Graaf, Delespaul, and van der Gaaga, (2009) found that sub-clinical paranoia at baseline was associated with the onset of social phobia one to three years later, and not vice versa. However, the study is limited by the use of trained lay interviewers (i.e. using the CIDI) which may not have provided a reliable assessment of detecting symptoms such as paranoia. Nonetheless, the study has important implications regarding the temporal relationship that contrast with the hierarchy of paranoia (Freeman et al., 2005). The hierarchy of paranoia theorises that common social evaluative concerns and social anxiety precede the development of paranoid ideation (Freeman et al., 2005).

Schutters et al (2012) found a similar prospective association between paranoid symptoms and later onset of social phobia. The study has a number of limitations and so the conclusions should be considered cautiously. Firstly, the association between paranoid symptoms and social phobia was examined in the context of a large-scale epidemiological study that was not designed for that purpose. Secondly, paranoia was measured at a symptomatic level based on single experiences, whereas social phobia was assessed at a diagnostic level which has been used to explain the higher rate of paranoid symptoms compared with social phobia. Interestingly, when both were conceptualised at the symptomatic level, the temporal association appeared in the opposite direction, with social anxiety cognitions (negative evaluation of self) predicting the onset of paranoid symptoms. The study provides further support for an association between social anxiety and paranoia, and the latter finding is consistent with the proposed model of paranoia (Freeman et al., 2005) suggesting that paranoia builds on social anxiety at a non-clinical level, however the direction of the relationship at a diagnostic/clinical level remains unclear.

1.3.3 The association between social anxiety and paranoia in clinical populations

There were three studies which looked at the correlation between social anxiety and paranoia in clinical populations. Gilbert, Boxall, Cheung, and Irons (2005) asked a sample of patients diagnosed with anxiety, depression and personality disorders to complete self-report measures of paranoia (Paranoia Scale; PS) and social anxiety (Social Interaction Anxiety Scale;

SIAS and Social Phobia Scale; SPS). The study revealed a significant correlation between paranoid ideation and social phobia, and between paranoid ideation and social interaction anxiety, after controlling for depression. They concluded that there was a high correlation between paranoid ideation and social anxiety, particularly social phobia (fear of scrutiny) in heterogeneous clinical groups. The presence of, and correlation, between social anxiety and paranoia in mixed clinical sample supports a symptom approach over a categorical syndrome specific approach. However, the lack of a clear diagnostic group also makes it difficult to extrapolate the findings from this study. Huppert and Smith (2005) explored similar correlations in a sample of patients with schizophrenia or schizoaffective disorder. They found that increased levels of paranoia, as measured by the Positive and Negative Symptom Scale (PANSS) and clinician assessment, were correlated with severity of social phobia, but not social interaction anxiety, suggesting that the clinical distinction between features of social anxiety and paranoia are more discernible in schizophrenia than affective disorders. The latter part of this finding is in contrast to Gilbert et al. (2005). There is a distinction between The Social Interaction Anxiety Scale *(*SIAS; Mattick & Clarke, 1998*)* and Social Phobia Scale *(*SPS; Mattick & Clarke, 1998*)* measures used in both of these studies which are used to assess different but related concepts of social anxiety. The SIAS measures anxiety about general social group interaction (e.g. I am tense meeting in a group; I find it easy to find things to talk about) whereas SPS relates to fear of being scrutinised by others (e.g. I get nervous that people are staring at me as I walk down the street), the findings by Huppert and Smith (2005) suggest the latter may be more pertinent in schizophrenia disorders.

Further evidence from a longitudinal study by Schutters et al (2012) suggests that in addition to social anxiety and paranoia being more discernible in schizophrenia than affective disorders, the relationship may also be more significant at a clinical level. They found a significant correlation between clinical paranoia and clinical social phobia, however there was not a significant correlation between non-clinical paranoia and social phobia.

A further study to explore links with social anxiety in a clinical sample of young people with first episode psychosis (FEP) was conducted by Michail and Birchwood (2009). A key aim of the study was to examine whether social anxiety in psychosis is driven by the presence of psychosis symptoms, especially paranoia and persecutory delusions. They compared one hundred and eleven people with first episode psychosis to a sample with social anxiety using clinical interviews to confirm diagnoses, in addition to standardised assessment measures. They found no significant relationship between social anxiety disorder and persecutory delusions, and no relationship between level of persecutory delusions and severity of social

anxiety in a sub-sample of FEP patients with clinically significant social anxiety. However, they did find that a greater number of people with psychosis and social anxiety reported persecutory threat compared to those without social anxiety (45 % vs 11.6%), although the two groups did not differ significantly in the dimensions of persecutory delusions (e.g. conviction, and associated distress). The authors concluded that social anxiety is not simply a by-product of clinical paranoia and suggested three possible pathways for social anxiety and paranoia in psychosis: (a) social anxiety predicts onset and serves to maintain persecutory beliefs in this subgroup (b) social anxiety and persecutory ideation develop concurrently in the early phase of psychosis and follow a similar course; (c) social anxiety is a consequence of paranoid ideation. Future studies using longitudinal and prospective research designs may be useful to investigate these pathways and delineate the relationship between social anxiety and paranoid ideation.

1.3.4 What can the research tell us about the processes that underpin both social anxiety and paranoia in clinical populations?

Six of the studies provide data on the processes involved in social anxiety and paranoia in clinical populations. Newman-Taylor and Stopa (2012) compared 13 participants with social phobia to 13 participants with schizophrenia and persecutory delusions (without social phobia) on aspects of cognition and behaviour typically associated with social phobia, using a number of self-report measures. They found significant similarities between people with persecutory delusions and social phobia on self-report measures of anxiety, depression, paranoid thinking, socially anxious cognitions, underlying assumptions, core beliefs, and social behaviour. The study usefully included clinical (with panic disorder) and non-clinical control groups. However, the results should be interpreted with caution due to the relatively small sample size and the high correlation between the measures of paranoid thinking and social anxiety which might not be valid in discriminating underlying processes. In contrast to Newman-Taylor and Stopa (2013), the study by Huppert and Smith (2005) found a greater distinction between social anxiety and paranoia when assessed by a skilled clinician, as compared to self-report by patients. This suggests that social anxiety and paranoia may be more easily confounded by self-report, and the use of clinician assessments could provide additional validity to studies investigating the two constructs.

In a qualitative study by Lockett, Hatton, Turner, Stubbins, Hodgekins and Fowler (2012) seven participants with psychosis and clinically significant social anxiety were found to experience intrusive images in social situations. They found common themes for nearly all

participants including negative evaluation by others, loss of social status, experiencing an image that is negatively distorted, and experiencing images in all sensory modalities. However there were some differences in the imagery experienced in this group compared to typical social anxiety images (Hackmann et al, 1998). Some participants experienced images that were more threatening and more related to paranoia, for example images involving fear of physical threat (from others and fearing causing physical threat to others), and stigma relating to their illness, which contributed to fears of negative evaluation from others. They also found that typical social anxiety imagery tended to be seen from an observer perspective (i.e. see an image of themselves as they imagine other people see them), while those related to paranoia tended to be seen from a field perspective (i.e. from a first person point of view). The former finding is in line with the cognitive model of social anxiety. The study provides preliminary evidence for the role of imagery in people with comorbid persecutory delusions and social anxiety. These intrusive images may be congruent with typical social anxiety imagery, or related to paranoia, and a stronger sense of physical threat. The generalizability of the study is limited by the small sample size used. However, the finding that the imagery contains social evaluative and physical threat themes in a sample of people with co-morbid psychosis and social anxiety supports Freeman et al.'s (2005) view that social anxiety and paranoia fall on a continuum (Lockett et al., 2012).

In another qualitative study comparing nine participants with social phobia to nine participants with persecutory delusions, Stopa, Denton, Wingfield, and Newman Taylor (2013) identified similarities between the two groups in terms of typical fear responses. However, participants with social phobia had a stronger sense of imminent danger compared to those with paranoia where there was greater sense of being targeted by others, greater focus on the source of threat and the feared consequences. This is consistent with findings by Lockett et al (2012) which suggest that paranoid imagery relates to a fear of others. People in the paranoia group reported hallucinations, as well as less narrative coherence and less ability to decentre from an event than those with social phobia. In contrast to Lockett et al (2012), they found the distinction between observer and field perspective less straightforward suggesting that this may be more of a fluid process in which people move between field and observer perspectives over time. Again, these findings should be interpreted with caution given the small sample size, and owing to differences in treatment and medication being received by the clinical groups.

Lysaker et al (2010) explored pathways linking social anxiety and paranoia in a sample of patients with a diagnoses of schizophrenia or schizoaffective disorder. They examined whether

social anxiety independently predicts paranoia or interacts with Theory of Mind (ToM) in this sample. A cluster analysis was performed on the basis of ratings using the PANSS and a factor score summarised from four theory of mind assessments. The study revealed four subgroups with varying degrees of paranoia and ToM: (1) high paranoia and poor ToM, (2) low paranoia and good ToM (3) low paranoia and low middle ToM and (4) high paranoia and high middle ToM (n=23). The groups were compared on self-report measures of social anxiety (Liebowitz Social Anxiety Scale). Within these groups they found that participants with high paranoia and good ToM had significantly greater social anxiety than any other group. This finding is interesting in relation to the cognitive model of paranoia (Freeman et al., 2002) which hypothesised that theory of mind deficits may lead to errors in reading the intention of others, however the results suggest that good theory of mind in paranoia may lead to symptoms of social anxiety, perhaps due to hypersensitivity with regards to the intention of others.

Further support for overlap between the two presentations is provided by Gilbert, Boxall, Cheung, and Irons (2005). They found that perceptions of social power, rank, and submissive behaviour were correlated with both social anxiety and paranoid ideation. However this was found in a mixed clinical sample so it is unclear whether this relationship exists in people with social anxiety or persecutory delusions.

In sum, the studies provide evidence for an association and significant overlap of cognitive and affective processes in social anxiety and paranoia in clinical samples, providing support for the basis of cognitive models of paranoia (Freeman et al., 2005) which draws on the cognitive model of social anxiety (Clark & Wells, 1995). However the results should be interpreted with caution due to differences in methodology (i.e. differences in sample populations, methodological design, and instruments) across studies making it difficult to make comparisons and generalise findings.

1.3.5 The association between social anxiety and paranoia in non-clinical populations

Four studies looked at the correlation between social anxiety and paranoia in non-clinical populations. In a sample of 193 undergraduates, Martin and Penn (2001) administered a battery of questionnaires to assess paranoid ideation, depression, social anxiety, self-monitoring, attributional style and self-esteem. Correlational and regression analyses revealed that higher levels of paranoid ideation were correlated with higher levels of social anxiety in addition to more depression, more self-monitoring in public, and lower self-esteem. A similar study by Combs and Penn (2004) identified two groups of participants, those with high and low

paranoia based on the paranoia scale (PS) and found a correlation between sub-clinical paranoia and social anxiety.

Two longitudinal studies (Rietdijk et al., 2009; Schutters et al, 2012) reported similar incidence rates and comparable comorbidity of social anxiety and paranoia in the general population. Using a sample of 7076 people, Rietdijk, et al. (2009) found that a total of 575 individuals (8%) reported lifetime social phobia and 705 (10%) individuals reported one or more lifetime sub-clinical paranoid symptoms at baseline. There was a significant association between social phobia and sub-clinical paranoid symptoms at baseline (132, 1.9%) were comorbid). The study by Schutters et al. (2012) make a useful distinction between symptoms at a clinical and sub-clinical level. In a general population sample of 2548 people, 400 participants (15.7%) met criteria for lifetime incidence of paranoid symptoms, of whom 59.5% reported sub-clinical paranoia and 40.5% reported clinical paranoid symptoms. Lifetime incidence of social phobia was reported by 239 participants (9.4%), of whom 52% reported sub-clinical social phobia and 47.7% clinical social phobia. 2.2% met criteria for co-morbidity.

In sum, a number of studies (Combs & Penn, 2004; Gilbert, Boxall, Cheung, Irons; 2005; Huppert and Smith; 2005; Martin & Penn, 2001; Michail & Birchwood, 2009; Rietdijk et al., 2009; Schutters et al, 2012) provide support for a significant relationship between social anxiety and paranoia in clinical and non-clinical populations, and multiple pathways are hypothesised in the development of the two disorders: (a) social anxiety predicts onset and serves to maintain persecutory beliefs in this subgroup (b) social anxiety and persecutory ideation develop concurrently in the early phase of psychosis and follow a similar course; (c) social anxiety is a consequence of paranoid ideation.

1.3.6 What can the research tell us about the processes that underpin both social anxiety and paranoia in non-clinical populations?

Six of the studies provided data on the processes involved in social anxiety and paranoia in non-clinical populations. Schutters et al (2012), using data from the EDSP study, indicate that social anxiety and paranoia share cognitions around negative evaluation and behavioural inhibition though differences emerged between risk factors. They found that avoidance behaviour was specifically linked to the development of social phobia, whereas environmental risks such as cannabis use and traumatic experiences significantly increased the risk of paranoia.

The study by Martin and Penn (2001) found that higher levels of paranoid ideation were correlated with higher levels of social anxiety, more depression, more self-monitoring in public and lower self-esteem. Similarly, Combs & Penn (2004) found a correlation between high subclinical paranoia and greater social anxiety, lower self-esteem, more depression, and public self-consciousness, and more attentional biases for threatening information relative to persons low in subclinical paranoia. Both studies support overlap between paranoia and social anxiety in terms of affective processes. However, the cross sectional nature of the studies, and correlational analysis without controlling for confounding variables, limit the validity to infer any causal links. In support for affective dysregulation as a common risk factor for psychotic and affective states, Freeman, Grittins, Pugh, Antley, Slater, and Dunn (2008) found that anxiety, depression, worry and interpersonal sensitivity predicted both social anxiety and paranoia in a non-clinical sample. The study used sophisticated analyses with bivariate logistic regressions allowing for greater control of confounding variables, and the use of virtual reality tasks in addition to self-report measures of paranoia and social anxiety to ensure the validity of paranoid thoughts as unfounded suspicions as opposed to justified suspicion which might be revealed through use of self-report measures. The study also revealed that perceptual anomalies predicted paranoia but not social anxiety, though the nature of the association of paranoia and perceptual anomalies was not established in the study.

Further evidence for a distinct role of perceptual anomalies in relation to paranoia comes from a study by Tone, Goulding and Compton (2011). They found that social anxiety and perceptual anomalies independently predicted paranoid ideation. However, the interaction between social anxiety and perceptual anomalies was not a significant predictor of paranoia suggesting that the two factors contribute distinctly and independently to paranoid thinking. This is consistent with findings that both anxiety and perceptual anomalies increase the risk that an individual will report feeling persecuted (Freeman et al., 2008). Despite a large sample, the study used a predominately female sample (77%) limiting generalizability, and also relied on the use of self-report data.

Further distinctions were revealed by Matos, Pinto-Gouveia and Gilbert (2013), who found that shame memories, which function like traumatic memories, significantly predicted paranoia but not social anxiety. External shame (focused on the malevolent intentions of others towards the self) was also more associated with paranoid ideation, whereas internal shame (more focused on the deficits of the self that may lead to rejection by others) was specifically associated with social anxiety. The study used a cross sectional design, again limiting the opportunity to infer causal relationships.

To summarise, research using non-clinical samples produced further support for similar cognitive and affective processes in social anxiety and paranoia, including self-esteem, anxiety, depression, public self-monitoring, worry and interpersonal sensitivity. In addition, the studies identified distinctive features of paranoia such as perceptual anomalies, environmental risk, and trauma. Paranoia was closely related to interpersonal threat, particularly being negatively evaluated by others. In contrast, social anxiety was more closely linked to a sense of an inadequate and undesirable self, with a greater focus on the sense of self and internal shame (Matos et al., 2013).

1.4 Discussion

1.4.1 Summary

The aim of this review was to examine evidence from papers which specifically investigated the relationship between social anxiety and paranoia in clinical and non-clinical populations. The results of this review highlight a high lifetime incidence of social phobia (8% to 9.4%) and paranoid symptoms (10% to 15.7%), and comorbid social anxiety and paranoia (1.9% to 9.4%) in the general population (Rietdijk et al., 2009; Schutters et al., 2012).

The review revealed a surprisingly limited number of studies investigating the link between social anxiety and paranoia in clinical populations (Gilbert et al., 2005; Huppert & Smith, 2006; Michail & Birchwood, 2009; Locket et al., 2012; Lysaker et al., 2010; Newman Taylor & Stopa, 2013; Stopa et al., 2013). Studies using mixed clinical groups revealed significant correlations between social anxiety and paranoia (e.g Gilbert et al., 2005; Newman Taylor & Stopa, 2013). Studies including samples of psychosis and schizophrenia (e.g Huppert & Smith, 2006; Michail & Birchwood, 2009) suggest that the clinical distinction between features of social anxiety and paranoia may be more discernible in schizophrenia than affective disorders, with fear of scrutiny becoming more pertinent in the former sample, and paranoid thoughts taking a more aberrant expression of persecutory delusions. Alternatively, clinicians within specialist services for psychosis may be better equipped at differentiating symptoms of paranoia from social anxiety (Huppert & Smith, 2006). The majority of studies used a cross-sectional, correlational design. However two studies using a qualitative design (Locket et al., 2012; Stopa et al., 2013) provide useful qualitative distinctions between social anxiety and paranoia. People with paranoia appear to have a greater sense of being targeted by others

(e.g. fearing physical harm), compared with people with social anxiety. This supports theoretical distinctions between the two with socially anxious individuals fearing negative evaluation or rejection from others and paranoid individuals fearing persecution (Michail & Birchwood, 2009). People with paranoia were also more likely to experience perceptual anomalies such as hallucinations, and less narrative coherence than those with social phobia (Stopa et al., 2013).

Studies using non-clinical samples (Martin & Penn, 2001; Combs & Penn, 2004; Freeman et al., 2008; Rietdijk et al., 2009; Tone et al., 2011; Schutters et al., 2012; Matos et al., 2013), also found significant correlations between social anxiety and paranoia, and numerous cognitive and affective processes were implicated in both social anxiety and paranoia providing support for the cognitive models (Clark & Wells, 1995; Freeman et al., 2002). Two longitudinal studies provided data on the temporal relationship between social anxiety and paranoia. Based on the assumptions of the model of persecutory delusions (Freeman et al., 2002), it could be hypothesised that social phobia precedes paranoid thinking, which is thought to build on emotional concerns (Freeman, 2007). The longitudinal studies (Rietdijk et al., 2009; Schutters et al, 2012) found an association between paranoid symptoms and later onset of social phobia, suggesting that paranoid thinking precedes the development of social phobia. This implies that the temporal relationship between social anxiety and paranoia may be more complex than theorised, particularly at a clinical or diagnostic level. However, the prospective association between paranoid symptoms and later onset of social phobia may be due to methodological issues. Social anxiety was assessed at a clinical level (criteria of DSM-IV diagnosis), whereas paranoia was measured at the symptomatic level. As a result, the study may have failed in detecting sub-clinical social anxiety which precedes paranoid symptoms. At the sub-clinical level, social anxiety cognitions (negative evaluation of self) were found to predict the onset of paranoid symptoms which supports the theorised nature of the development of paranoia.

A number of studies (e.g. Freeman et al., 2008; Gilbert et al., 2005; Newman Taylor & Stopa, 2013; Stopa et al., 2013) identified anxiety, depression, core beliefs and assumptions, and social behaviour to be similarly associated with social anxiety and paranoia. Cognitions relating to negative evaluation of self and others, as well as beliefs about social power were also related to social anxiety and paranoia.The evidence for shared processes provides implications for treatment, indicating that approaches used to treat social anxiety, suitably modified, may also be of benefit to people with paranoia (Freeman et al. 2006). In addition, the findings provide support for shared vulnerabilities across affective disorders and psychosis,

in line with recent conceptual shifts towards a dimensional approach to mental health. Similarly, the prevalence of paranoia in non-clinical samples and evidence that paranoid ideation is present in heterogeneous clinical samples other than psychosis (Gilbert et al., 2005) provides support for the use of symptom specific and continuum models.

Despite a number of shared characteristics, the evidence suggests that social anxiety and paranoia are distinct presentations. Perceptual anomalies and heightened perception of harm predicted paranoid thoughts only. The importance of perceptual anomalies to paranoia is consistent with the cognitive model of paranoia. Exposure to environmental risk factors of trauma and cannabis use increased risk of paranoid ideation in vulnerable individuals (Schutters et al., 2012). The salience of trauma memories significantly predicted persecutory delusions (Matos et al., 2012). However, shame cognitions were differentially associated with both paranoia and social anxiety. External shame was related to paranoid ideation, and internal shame was specifically related to social anxiety.

More than one causal pathway may be implicated in the development of social anxiety and paranoia: (a) social anxiety predicts onset and serves to maintain persecutory beliefs in this subgroup (b) social anxiety and persecutory ideation develop concurrently in the early phase of psychosis and follow a similar course; (c) social anxiety is a consequence of paranoid ideation (Michail & Birchwood, 2009).As yet, no single pathway is supported unequivocally by the evidence base. It is clear that further research is necessary to inform our understanding of the causal relationship between social anxiety and paranoia.

1.4.2 Methodological Limitations

The results from the literature should be interpreted with caution due to methodological limitations across the studies presented. Most of the studies included in this review used a cross-sectional design, while only a few studies controlled for confounding variables in the analyses, such as depression which is considered to overlap with anxiety. The failure to do so could have allowed for distortions in in the estimate of effects being reported. However, studies that did control for confounding variables (e.g. Gilbert et al., 2005; Freeman et al., 2008) revealed significant correlations between social anxiety and paranoia, and similar predictive factors in clinical and non-clinical samples. The reliance on cross-sectional design also limits the opportunity for conclusions of causality to be made, resulting in outstanding questions about the relationship between these two presentations. There are also a number of

methodological differences across studies, including different study designs and sample characteristics (e.g. size, population, age, gender) making it difficult to extrapolate findings and make comparisons between studies. Further research using robust longitudinal or controlled experimental designs is necessary to understand the nature of the association and establish causal links between the two.

1.4.3 Limitations of the Review

Due to the systematic search criteria, this review was limited to studies specifically focused on the association between the two presentations, therefore the review was limited in number and unable to draw on the wider literature on social anxiety and paranoia. Only studies published in peer-reviewed journals were considered, therefore limiting the scope of the findings. This criteria introduces the potential for bias in the results since unpublished data is perhaps more likely to demonstrate less significant relationships.

1.4.4 Conclusion

Paranoia and social anxiety are distinct and related presentations, characterised by similar psychological processes, including anxiety, depression, self-esteem, cognitions, imagery and social behaviour. The current evidence largely supports psychological models and frameworks for understanding persecutory delusions. The limited number of studies, and methodological differences across studies make it difficult for definitive conclusions to be drawn, particularly with regards to the temporal relationship between social anxiety and paranoia. Theoretical and clinical understanding of social anxiety and paranoia would benefit from more exploration through further, well-designed studies addressing the methodological problems identified in this review.

Chapter 2: The Empirical Paper: The Role of Imagery in Non-Clinical Paranoia

2.1 Introduction

2.1.1 Paranoia

Paranoia is the belief that one is being harmed intentionally by others or is at risk of such harm (Freeman & Garety, 2000). The paranoia hierarchy (Freeman, 2007) provides a framework for paranoia in which common social evaluative concerns, typical of social anxiety, precede ideas of reference and severe threat experienced by individuals with persecutory delusions.

The pervasiveness of paranoia has been firmly established over recent years. Paranoia, at its severe end, is one of the most common and distressing features of schizophrenia (Applebaum, Robbins & Roth, 1999; Freeman, 2007). Whilst only 2.2% of the population in high income countries such as the UK suffer from schizophrenia (WHO, 2008), approximately 15% of the general population experience paranoid thoughts regularly (American Psychiatric Association; APA, 2000; Freeman, 2007). It is estimated that in the UK 18.6% of the general population experience mild suspicion and paranoia (Freeman et al., 2011). Across the population, paranoid thoughts are associated with physical ill health, suicidal ideation, and increased use of services (Freeman et al., 2011). In addition, the psychological literature strongly suggests that paranoia exists on a continuum with normal experience (van Os, Hanssen, Bijl & Ravelli, 2000). Consequently, paranoid thoughts in non-clinical populations are phenomena of interest in their own right and may inform our understanding of persecutory delusions (Freeman et al., 2005).

2.1.2 Mental Imagery

Mental imagery has been defined as a type of cognition (Beck, 1976) whereby perceptual information leads to mental representations equivalent to “seeing in the mind’s eye” or “hearing in the mind’s ear” (Holmes, Geddes, Colom & Goodwin, 2008; Hackmann & Holmes, 2004; Kosslyn, Ganis & Thompson, 2001). Images frequently involve stressful or subjectively traumatic events or autobiographical memories, and convey a current threat or distressing meaning for the individual (Schulze, Freeman, Green, & Kuipers, 2013). Experimental research indicates that imagery may have a more powerful impact on emotional responses than verbal processing of the same material (Holmes & Mathews, 2005; Holmes, Mathews, Dalgleish, & Mackintosh, 2006, 2008). These characteristics make imagery an important focus in psychological research and therapy (Hackmann & Holmes, 2004).

To date, mental imagery has featured prominently in theoretical accounts of disorders such as PTSD (Brewin, Dalgleish, & Joseph, 1996; Ehlers & Clark, 2000) and social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997). Imagery is central feature of PTSD, typically experienced in the form of 'flashbacks' to the original traumatic event which then provoke powerful emotions. Such images are widely believed to contribute to the onset and maintenance of PTSD (e.g. Ehlers & Clark, 2000). Similarly, cognitive models of social phobia indicate that negative imagery has an important role in maintaining social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997). Empirical evidence supports a role for imagery in social anxiety. Hackmann, Clark, and McManus (2000) conducted a semi-structured interview with twenty-two socially anxious patients to explore the nature of imagery in this clinical sample. All participants were able to identify negative spontaneous images, which were linked to early experiences (e.g. bullying) and that were activated in subsequent social situations. In order to determine whether imagery plays a role in the development and maintenance of anxiety it was deemed necessary to experimentally manipulate imagery and show that such manipulations modulate the strength or the persistence of social anxiety (Hirsch et al, 2003). On this basis, Hirsch, Clark, Mathews, and Williams (2003) investigated whether negative self-images have a causal role in maintaining social anxiety. A clinical sample of sixteen patients with social anxiety participated twice in a conversation with a stranger, once whilst holding their usual negative self-image in mind and once whilst holding a positive self-image in mind. An assessor who was blind to the imagery condition was being held also rated participants' anxiety as more evident and their behaviour as less positive when the negative image was being held in mind. The study was the first to provide evidence that the manipulation of imagery can have causal consequences for social anxiety. A more recent study by Hulme, Hirsch and Stopa (2012) examined the effect of positive and negative self-imagery on implicit and explicit self-esteem in high and low socially anxious participants. They used a semi-structured interview to elicit positive and negative imagery (based on Hirsch, Clark, Mathews, and Williams', 2003) in a sample of eighty eight students before they were asked to take part in a social threat task. They found that holding negative self-images led to reduced levels of self-reported explicit self-esteem and implicit self-esteem (measured using the Implicit Association Test; IAT) after a social threat task than those holding positive self-images. Effect sizes in the study ranged from small to large[2]. The study is limited by the difference in measures used to assess each

[2] Effect sizes ranged from .10 to .33 on explicit self-esteem and from .01 to.36 on implicit self esteem.

construct, for instance the use of a single global self-report measure to assess explicit self-esteem, and no similar measure of implicit self-esteem.

Furthermore, research to date suggests that imagery rescripting techniques, aimed at modifying the content of emotion inducing imagery, may be useful in the treatment of disorders such as PTSD, and social phobia (e.g. Arntz, 2012; Hackmann & Holmes, 2004; Holmes, Arntz, et al., 2007; Wild, Hackmann, & Clark, 2007).

2.1.3 Self-Esteem and Paranoia

Mills, Gilbert, Bellew, McEwan, and Gale (2007) suggest that self-esteem plays a causal role in the early development of psychosis. In particular, beliefs about the self may be associated with the development and maintenance of paranoid ideation. Bentall et al. (1994) suggest that persecutory delusions may guard an individual from negative thoughts, thereby serving as a self-protective mechanism in individuals with low self-esteem. Supporting this theory, low self-esteem or negative associations between self-esteem and paranoia have been found in clinical and nonclinical populations (Freeman et al., 1998; Martin & Penn, 2001). However, the research base on self-esteem is equivocal, and it has been argued that Bentall's hypothesis may only apply to some individuals with persecutory delusions, and that delusions are consistent with existing ideas about the self, others, and the world, rather than a self-protective mechanism or defence (Garety & Freeman; 1999; Freeman et al., 2002).

On a related note, there is evidence that self-criticism (in contrast to self-compassion) and the inability to be self-soothing and self-reassuring in the face of life difficulties are associated with vulnerability to a variety of psychopathologies (Blatt & Zuroff, 1992; Macbeth & Gumley, 2012; Neff, 2003a, 2003b), including paranoia which has been associated with a highly self-critical style (Mills, Gilbert, Bellew, McEwan, & Gale, 2007). Conversely, higher levels of self-compassion are associated with lower levels of psychopathology (Macbeth & Gumley, 2012). However there is limited research to date investigating self-compassion in people with paranoia. One study by Lincoln, Hohenhaus and Hartmann (2012) found that compassion-focused imagery led to significantly lower levels of negative emotion, higher self-esteem, and less paranoid thoughts than a control condition in a sample with sub-clinical paranoia.

2.1.4 The Role of Imagery in Paranoia

One reason to consider the role of imagery in paranoia stems from recent conceptualisations of psychosis which have commented on similarities between the processes

involved in the development and maintenance of emotional disorders, particularly anxiety, and those found in people experiencing psychosis (Freeman & Garety, 2003). A cognitive model of persecutory delusions (Freeman, Garety, Kuipers, Fowler & Bebbington, 2002) highlights the central role of anxiety in the development of psychotic symptoms. In this model, persecutory delusions are conceptualised as threat beliefs, owing to the observed similarities between persecutory delusions and anxious thoughts (Freeman & Garety, 2003). Therefore, many of the cognitive and behavioural processes implicated in the maintenance of anxiety disorders (Clark, 1999) are also likely to be relevant to the onset and maintenance of persecutory delusions (Freeman & Garety, 1999, 2002). Recent empirical findings support the notion that anxiety and paranoia are characterised by similar psychological processes, including cognitions and mental imagery (Freeman et al., 2008; Gilbert et al., 2005; Lockett et al., 2012; Newman Taylor & Stopa, 2013; Stopa et al., 2013) in clinical and non-clinical populations.

As described above, negative imagery has an important role in maintaining social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997), and both intrusions and the interpretation of intrusions have long been incorporated in the conceptualisation of anxiety disorders (e.g. Clark, 1986). However, mental imagery remains an under-explored field in relation to psychosis (Pearson et al., (2013), despite the fact that cognitive models of persecutory delusions are largely based on cognitive models of social phobia (Clark & Wells, 1995). Beck (1976) included mental imagery in his description of cognition and emphasised that therapeutic focus should be on meanings which can be accessed through images as much as verbal thought. Yet, cognitive theories of mental disorders, including psychosis, have paid more attention to the role of negative verbal thought than to the role of visual intrusions (Brewin, 1998; Hackmann & Holmes, 2004).

Morrison (2001) presents a model of psychosis which is unique in its direct reference to the role of imagery in psychosis (Morrison, Haddock & Tarrier, 1995). In Morrison's (2001) model it is argued that many positive psychotic symptoms (such as hallucinations and persecutory delusions) can be conceptualised as intrusions into awareness and that it is the interpretation of these intrusions that causes the associated distress.

Despite the suggestion that intrusive imagery is likely to be implicated in the development of psychotic symptoms (Morrison et al., 1995; Morrison, 2001), there is limited empirical research investigating the experience of intrusive images in people with symptoms of psychosis. Morrison and Baker (2000) compared the frequency of, and response to, intrusive thoughts in patients with schizophrenia and auditory hallucinations, with psychiatric and non-

clinical control groups. Patients who experienced auditory hallucinations experienced a higher frequency of intrusive thoughts than the control groups. They also perceived their intrusive thoughts as more distressing, uncontrollable and unacceptable than the control groups.

Morrison et al. (2002) explored the occurrence of imagery in 35 patients who were experiencing hallucinations and/or delusions. They found that the majority (74%) experienced images in association with these symptoms. Approximately 70% reported the image as recurrent and associated with a memory for a past event. Most were able to identify specific emotions and beliefs that were associated with the images. Common themes included images about feared catastrophes associated with paranoia or persecutory ideas, traumatic memories, and images about the perceived source or content of voices. They concluded that the pattern of results implicates mental imagery in the maintenance of hallucinations and delusions, and supports the view that similar processes are involved in the maintenance of both anxiety and psychosis (Morrison, 2001). There are a number of limitations to the study. The findings were based on a small sample of patients involved in cognitive therapy, no standardised assessment measures were used and data were collected by each patient's therapist. In addition, limited information on the clinical characteristics of the sample were recorded and there was no direct examination of relationships between the intrusions and aspects of psychotic symptoms. However, the exploratory study indicates the potential importance of images in psychosis and highlights a need for further studies using robust methodologies *(*Schulze et al., 2013).

On the basis of preliminary evidence for the role of imagery in psychosis, Morrison (2004) investigated the therapeutic impact of imagery treatment in an exploratory case study. In this case study, a male participant with a history of paranoid delusions and ideas of reference causing significant impairment to social and occupational functioning was treated using an imagery based intervention. This led to a reduction in delusional distress, conviction and preoccupation. It is difficult to generalise conclusions from a single case study but it does highlight a need for additional research exploring the relationship between imagery and hallucinations or persecutory delusions.

Only one published study to date has systematically investigated intrusive mental imagery in relation to persecutory delusions specifically. Using semi structured interviews from existing imagery research (Hackmann, Clark, & Mcmanus, 2000), Schulze, Freeman, Green and Kuipers (2013) explored the prevalence and characteristics of paranoia-related intrusive images, and their relationship with clinical symptoms in 40 patients with persecutory delusions. They found that 73% of patients reported recurrent intrusive images related to

paranoia. Image-related anxiety was associated with general anxiety and delusional distress, which was in turn related to depression. The findings provide further support for the relevance of affect, particularly anxiety and linked processes, in persecutory delusions (Freeman et al., 2002). The study is limited by its cross-sectional design, and limited power for testing multivariate relationships. In addition, they did not assess anxiety disorders or explore how intrusive images may relate to potentially confounding variables. However, the results of this study indicate that intrusive images may be relatively common in patients with persecutory delusions and may contribute to the distress of paranoid experiences (Schulze et al., 2013).

2.1.5 The Present Study

The current study investigated the role of negative and positive imagery in individuals with high levels of non-clinical paranoia. The rationale for conducting this study is based on the observed similarities between social anxiety and paranoia (Freeman, 2007; Freeman & Garety, 2003). Imagery is a key factor in the maintenance of social anxiety and other anxiety presentations through its influence on self-esteem and associated distress (e.g. Hulme, Hirsch and Stopa, 2012). Drawing on understandings of social anxiety, Morrison (2001) has suggested that intrusive imagery is likely to be implicated in the development and maintenance of psychotic symptoms, including persecutory delusions. Therefore, this study aims to build on preliminary evidence for the role of imagery in the maintenance of paranoia and associated distress and address the methodological limitations of cross-sectional designs. Drawing on research in the area of social anxiety, it is important to experimentally manipulate imagery to investigate the causal effect of imagery in this client group. Therefore, the study will use an experimental design, incorporating image scripts from previous research into social anxiety, and paranoia (e.g. Hirsch, Clark, Mathews, & Williams, 2003; Hulme, Hirsch and Stopa, 2012; Schulze et al., 2013) as well as standardised assessment measures.

In addition, the study aims to address gaps in the current literature by exploring the role of imagery in relation to non-clinical paranoia. It is understood that paranoia exists on a continuum with normal experience, therefore research into the role of imagery in non-clinical paranoia may inform our understanding of persecutory delusions. The study will also extend current research to explore the role of positive imagery in addition to negative imagery on paranoia and mood, and to explore the role of self-compassion.

2.1.6 Hypotheses

It was hypothesised that there would be an increase in state levels of paranoia, anxiety, and negative mood for individuals with high non-clinical paranoia following participation in a negative imagery task, and that state levels of self-esteem, self-compassion and positive affect would decrease.

Conversely, it was hypothesised that there would be a reduction in state paranoia, anxiety and negative mood for individuals with high non-clinical paranoia in the positive imagery condition along with an increase in state levels of self-esteem, self-compassion and positive affect.

2.2 Method

2.2.1 Design

The study used a mixed design with one between-subjects variable (type of self-imagery) and one within-subjects variable (time pre and post the imagery manipulation). The dependent variables were state measures of paranoia, anxiety, general mood, self-esteem, and self-compassion. Trait levels of paranoia, anxiety and self-esteem were measured to ensure groups were comparable.

2.2.2 Participants

Participants from a local university population were screened using the Paranoia Scale (PS; Fenigstein & Vanable, 1992). Normative percentile scores from the screening questionnaire were used to determine a high paranoia group based on the mean PS score for non-clinical groups (*M* = 42.7 *SD* = 10.2) identifying participants falling in the 84th percentile or above (+1*SD* of 53 or greater). Participants who were identified as being in the high paranoid group took part in the study in exchange for course credits or payment of £3. There were no other inclusion or exclusion criteria. Comparison t-tests and chi-square tests were conducted on the demographic variables to assess group differences. There were no differences in age between the groups (positive imagery group *M* =21.53, *SD*=8.15; negative imagery group *M*= 20.33, *SD*= 2.38, *t(28)* =0.547, *p*= .588). There were also no significant differences in gender between the groups ($\chi(1) = 0.244$, $p = 0.621$).Table 2 details the full demographic data of the sample. Figure 3 displays the flow of recruitment. Power was calculated using G*Power version 3 (Faul, Erdfelder, Lang & Buchner, 2007). To obtain a medium effect size, 82 participants (41 in each group) were required to test a two-tailed hypothesis, with 80% power and a 5% significance level.

Table 2

Demographic Data for Each Condition

Age	Positive Imagery	Negative Imagery
Mean (SD)	21.53 (8.15)	20.33 (2.38)
Range	18-50	18-25
Gender		
Male	5	4
Female	10	11
Ethnicity		
White British	8	8
Asian	1	2
Black	3	0
Mixed	1	1
Chinese	2	1
Other	0	3

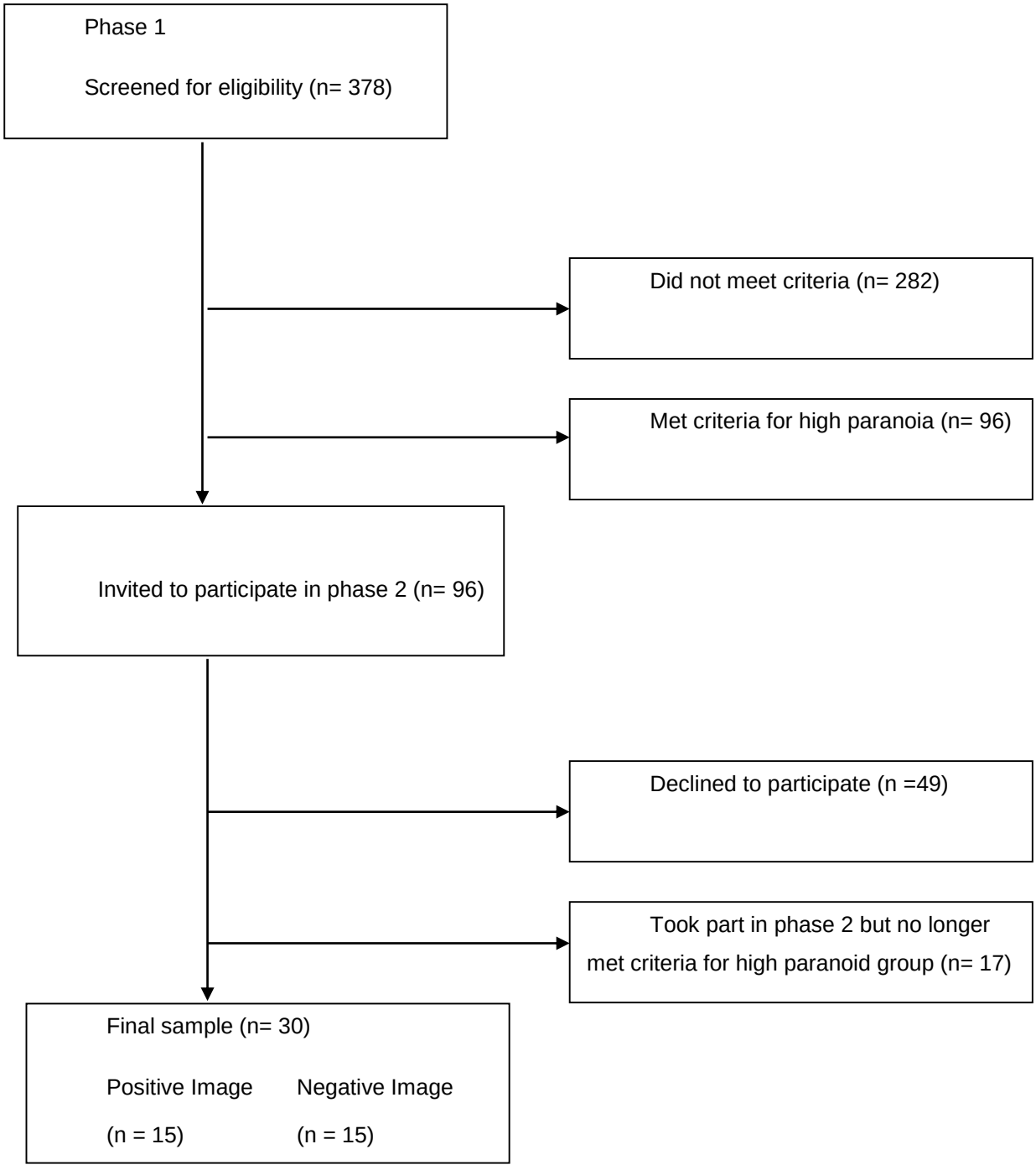

Figure 3. Consort Flow Diagram.

2.2.3 Materials

Imagery Manipulation Scripts. Participants were allocated alternately to either the positive or the negative self-image condition. Image scripts aimed at social anxiety (Hirsch, Clark, Mathews, & Williams, 2003) were adapted to manipulate paranoia and to elicit the positive and negative images (Appendix A & B). Participants were asked to recall a memory of a situation in which they had felt significantly secure or trusting (positive) or significantly suspicious and mistrusting (negative). Once an image was identified, participants closed their eyes and described it in detail. Questions focused on how the participants looked and felt, how they and other people in the image acted, and sensory details. Participants rated the vividness of the image on a scale of 0 (*not at all vivid*) to 100 (*extremely vivid*). Where the vividness of the self-image was rated as less than 60, additional details were requested to reinforce the image generated. The groups did not differ on ratings of vividness (positive imagery group M = 80, SD = 10.86; negative imagery group M = 76, SD = 8.70, $t(28) = .644$, $p = .429$). Participants held the image in mind whilst they completed questionnaire measures.

Copies of questionnaires are detailed in Appendix C.

Paranoia Scale (PS; Fenigstein & Vanable, 1992). The Paranoia Scale is a validated 20-item scale designed to measure trait levels of sub-clinical paranoia. Participants rate the extent to which each statement is applicable to them using a 5 point scale (1=not at all applicable to me, 5=extremely applicable to me). Scores range between 20 and 100 with higher scores indicating greater levels of paranoia. Fenigstein and Vanable (1992) report good test-retest (0.70) and internal reliability (0.72) on their original sample. Internal consistency in the current sample was good ($\alpha = .84$).

Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965). The RSE is a 10 item self-report measure with item scores ranging from 1 (strongly agree) to 4 (strongly disagree). It measures global feelings of self-worth and scores can range from 10-40, with higher scores indicating higher self-esteem. The RSE demonstrates good internal reliability (a= .92) and a two-week test-retest reliability coefficient of .88 (Corcoran & Fischer, 1987). The RSE is commonly used in clinical practice (Blascovich & Tomaka, 1991) and is a well-validated measure of self-esteem (Winters, Myers, & Proud, 2002). The RSES demonstrated good internal consistency in the current sample ($\alpha = .88$).

State and Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The STAI is a validated 40-item inventory comprising two questionnaires of 20

items each. Respondents rate the applicability of state items on a 4-point Likert Scale ('not at all' to 'very much so') and the applicability of trait items on a 4-point Likert Scale ('almost never' to 'almost always'). Both scales have high internal consistency, (.90-.94 for the state scale and .89-.92 for the trait scale). The trait component of this measure has a test re-test of .86. Scores range from 20 to 80 on both scales, with higher scores indicating greater levels of trait and state anxiety. The STAI demonstrated good internal consistency in the current sample (α = .87).

Paranoia Checklist (PC; Freeman et al., 2005). The Paranoia Checklist is an 18-item self-report scale developed to measure paranoid ideation. It includes items assessing ideas of persecution (e.g., ''I need to be on my guard against others'') and reference (e.g., ''There might be negative comments being circulated about me'') each rated with regard to frequency, conviction, and distress on 5-point Likert scales. The Paranoia Checklist has excellent internal consistency (Cronbach a > .90) and good convergent validity, and previous studies have demonstrated its sensitivity to paranoid ideation in non-clinical populations (Freeman et al., 2005). For the purpose of this study, the adapted state version of the Paranoia Checklist (Lincoln et al., 2010) was used. Participants rated the extent to which the items apply ''at the moment'' on a 5-point scale ranging from 1 (not at all) to 5 (very strongly). The complete score is obtained by summing up the items and can range from 18 to 90. The state adapted version has demonstrated high internal consistency (Cronbach a =.86) (Lincoln et al., 2009). Internal consistency for the current sample was high (α = .91)

State Self-Esteem Scale (SSES; McFarland & Ross, 1982). The SSES is a 12-item self-report measure of state self-esteem. Items are rated using a Likert scale ranging from 1 (not at all) to 11 (extremely). Total scores range from 12-132, with higher scores indicating higher state self-esteem. The scale is reported to successfully measure changes attributable to self-esteem (Baumgardner, Kaufman, & Levy, 1989). The SSES demonstrated good internal consistency in the current sample (α = .90).

Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS is a 20-item self-report measure of positive and negative affect. Participants are asked to rate 10 positive and 10 negative feelings and emotions on a scale from 1 (very slightly) to 5 (extremely) according to how they feel at the present moment. Scores for positive and negative affect are calculated separately, with scores for each scale ranging from 10 to 50, with a higher score indicating a higher degree of that particular affect. Both scales on the PANAS have high internal reliability (PA α = .89, NA α = .85; Crawford & Henry, 2004), and

demonstrated high internal consistency in the current sample (positive affect α = .90; negative affect α = .82).

The Self-Compassion Scale (SCS; Neff, 2003). The SCS is a 26 item self-report measure assessing six trait factors relating to three components of self-compassion including self-kindness/self-judgment, common humanity/perceived isolation, and mindfulness/over identification. The SCS has high internal reliability (α = .90) and test-retest consistency, .93 (Neff, 2003a). An adapted version of the SCS was used to assess state self-compassion (Breines & Chen, 2013). The state version contains 16 items and participants are asked to rate the extent to which the items apply ''right now" on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The state version has demonstrated high internal consistency (α = .76; Breines & Chen, 2013). Internal consistency in the current sample was good (α = .80).

2.2.4 Procedure

Participants were recruited via advertisements online and on campus offering credits or payment for taking part in the research on 'understanding mental imagery'. Informed consent based on details provided in the Participant Information Sheet (Appendix D) was gained from all participants. Participants who met the inclusion criteria following screening were invited to attend the experimental session and were allocated to either the positive or the negative self-imagery condition. The recruitment process and experimental sessions ran simultaneously over a period of six months, therefore participants experienced a period of time after completing the initial screening questionnaire and completing the study[3]. At the experimental session, participants were asked to complete the PS (Fenigstein & Vanable, 1992) again to confirm eligibility (i.e. still met criteria for high paranoia), in addition to trait measures of self-esteem and anxiety. Participants also completed state measures of paranoia, anxiety, self-esteem, positive and negative affect, and self-compassion. Participants were then guided through the self-imagery exercise. Subsequently, participants were asked to hold the image in mind whilst they repeated state measures of paranoia, anxiety, self-esteem, positive and negative affect, and self-compassion. Participants in the negative imagery condition took part in a brief positive visualisation exercise to stabilise any potential increase in distress levels. All

[3] For reasons of confidentiality and anonymity exact data on length of time between completing the initial screening questionnaire and participating in the study is unavailable.

participants were provided with a debriefing statement (Appendix E) and offered the opportunity to ask questions about the study (*see figure 4*).

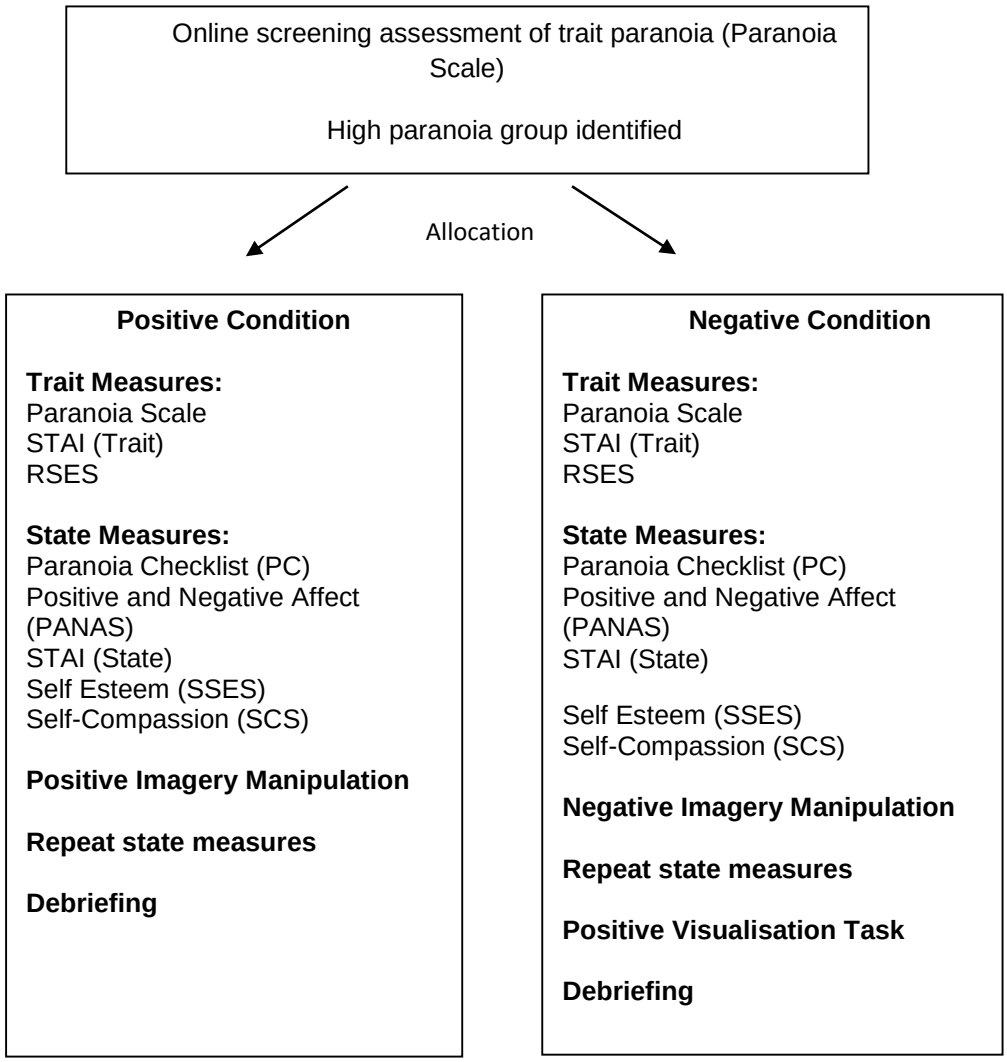

Figure 4. Study Procedure.

2.2.5 Ethics

The study was awarded ethical approval by the University of Southampton's School of Psychology Ethics Committee (Appendix F).

2.3 Results

2.3.1 Data Analytic Strategy

Data were analysed using the statistical package IBM SPSS 21 for Windows. Data were tested for normality and homogeneity of variance. Visual inspection of the data was conducted and z scores were calculated for skewness and kurtosis and were found to be within the critical value (+/- 1.96) resulting in the assumption that the data was approximately normally distributed. All dependent variables were based on scores obtained on measures of state paranoia, self-esteem, anxiety, self-compassion, positive affect, and negative affect. The primary outcome variable was state paranoia. The hypotheses were tested using a series of six mixed model analyses of variance (ANOVA) for each of the dependent variables, all with one between-subjects factor (negative imagery vs. positive imagery condition) and one within-subjects factor (time: pre and post the imagery induction). A series of post hoc t-tests were conducted to explore simple effects for each dependent variable. A minimum statistical level of .05 was set for all tests.

2.3.2 Descriptive Statistics

There were no differences in trait paranoia between the groups[4] measured by the Paranoia Scale (positive imagery group *Mdn = 57*, *SD* = 4.78; negative imagery group *Mdn* = 62, *SD* = 5.88, *U* = 157.5, *p* = .061.).

There were no differences in trait anxiety between the groups (positive imagery group *M* = 49.67, *SD* = 7.56; negative imagery group *M* = 51.73, *SD* = 9.01, *t*(28) = -0.681, *p* = .502).

There were no differences in trait self-esteem between the groups (positive imagery group *M* = 26.13, *SD* = 4.95; negative imagery group *M* = 26.53, *SD* = 5.11, *t*(28) = -0.218, *p* = .829).

[4] Data violated assumption of normal distribution therefore non-parametric test was used.

2.3.3 Group Differences following Assignment to Condition

Table 3

Mean scores and standard deviations (in parentheses) of all measures

Measure	Positive Imagery	Negative Imagery	*t*	*p*
PC Pre	40.87 (11.87)	37.07 (10.48)		
PC Post	27.33 (5.48)	55.33 (7.97)	-8.48	.000
STAI-S Pre	44.67 (12.07)	42.87 (9.53)		
STAI-S Post	33.00 (10.03)	60.40 (9.64)	-7.63	.000
SSES Pre	84.13 (21.04)	83.93 (20.73)		
SSES Post	99.33 (16.40)	56.87 (22.16)	5.97	.000
SCS Pre	53.87 (8.20)	55.73 (8.47)		
SCS Post	60.80 (9.2)	46.27 (7.64)	4.70	.000
PANAS-P Pre	28.33 (8.56)	25.40 (7.75)		
PANAS-P Post	34.47 (7.78)	20.27 (7.85)	4.98	.000
PANAS-N Pre	17.00 (5.36)	16.07 (5.62)		
PANAS-N Post	14.47 (4.55)	27.80 (8.20)	-5.50	.000

Note. PC = Paranoia Checklist, STAI = State Trait Anxiety Inventory (State), SSES = State Self Esteem Scale, SCS = Self Compassion Scale, PANAS = Positive and Negative Affect Scale (P-Positive N-Negative

State Paranoia. See table 3 for group means. A small correlation was found between positive affect and the primary outcome variable[5] (*refer to Appendix G for table of correlations)* therefore an Analysis of Covariance (ANCOVA) was conducted to control for positive affect at time 1. There was a significant main effect of group $F(1, 27) = 24.34$, $p = <.001$, $\eta_p^2 = .4$, but not of time $F(1, 27) = 1.43$, $p = .243$, $\eta_p^2 = .05$. However, there was a significant interaction effect of time and group, $F(1, 27) = 85.40$, $p = <.001$, $\eta_p^2 = .76$. A series of independent and paired samples t-tests were used to explore this interaction. There was a significant increase in state paranoia scores in the negative imagery condition pre and post the imagery manipulation, $t(14) = -8.70$, $p = <.001$[6], $d = -1.9$. There was also a significant decrease in state paranoia scores pre and post the imagery manipulation for participants in the positive imagery condition, $t(14) = 5.219$, $p = <.001$, $d = 1.5$. An independent samples t-test confirmed that over time, participants in the negative imagery group reported significantly more paranoia than participants in the positive imagery group, $t(28) = -8.48$, $p = <.001$, $d = -3.2$.

State Anxiety. See table 3 for group means. There was a significant main effect of group, $F(1, 28) = 13.83$, $p = .001$, $\eta_p^2 = .3$, but not of time, $F(1, 28) = 3.46$, $p = .073$, $\eta_p^2 = .1$, on state anxiety scores. However, there was a significant interaction between group and time, $F(1, 28) = 85.71$, $p = <.001$, $\eta_p^2 = .75$. A series of independent and paired samples t-tests were used to explore this interaction. There was a significant increase in state anxiety scores in the negative imagery condition pre and post the imagery manipulation, $t(14) = -9.05$, $p = <.001$, $d = -1.8$. There was also a significant decrease in state anxiety scores in the positive imagery condition pre and post imagery manipulation, $t(14) = 4.69$, $p = <.001$, $d = 1.0$. There was a significant difference between groups post imagery manipulation, $t(28) = -7.63$, $p = <.001$, $d = -2.9$.

State Self-Esteem. See table 3 for group means. There was a significant main effect of group, $F(1, 28) = 9.63$, $p = .004$, $\eta_p^2 = .25$, and a significant main effect of time, $F(1, 28) = 4.91$,

[5] A positive association with paranoia and positive affect was found (correlation of 0.4).

[6] Bonferroni corrected p-values were used to counteract the use of multiple comparisons. Corrected p value therefore was 0.025.

p = .035, η_p^2 = .15, on state self-esteem. This was qualified by a significant interaction of time and group, F(1, 28) = 62.33, p = <.001, η_p^2 = .69. A series of independent and paired samples t-tests were used to explore this interaction. There was a significant decrease in state self-esteem scores in the negative imagery condition pre and post imagery manipulation, t(14) = -5.71, p = <.001, *d = 1.3*. There was also a significant increase in state self-esteem scores in the positive imagery condition pre and post imagery manipulation, t(14) = -6.11, p = <.001, *d = -.8*. The difference between groups post imagery manipulation was also significant, t(28) = 5.97, p = <.001, *d = 2.3*.

State Self-Compassion. See table 3 for group means. There was a significant main effect of group, F(1, 28) = 5.24, p = .030, η_p^2 = .15, and a significant main effect of time, F(1, 28) = 9.13, p = .032, η_p^2 = .03. This was qualified by a significant interaction of time and group, F(1, 28) = 38.25, p = <.001, η_p^2 = .57. A series of independent and paired samples t-tests were used to explore this interaction. There was a significant decrease in state self-compassion scores in the negative imagery condition pre and post imagery manipulation, t(14) = 5.36, p = <.001, d= -.07. There was also a significant increase between state self-compassion scores of participants in the positive imagery condition pre and post imagery manipulation, t(14) = -3.51, p = .003, d= -.8. Participants in the negative imagery group reported significantly lower self-compassion than participants in the positive imagery group post imagery manipulation, t(28) = 4.70 , p = <.001, d = 1.8.

State Positive Affect. See table 3 for group means. There was a significant main effect of group, F(1, 28) = 9.58, p = .004, η_p^2 = .25 but not of time, F(1, 28) = 0.293, p = .593, η_p^2 = .01. However, there was a significant interaction effect of time and group, F(1, 28) = 37.15, p = <.001, η_p^2 = .57. A series of independent and paired samples t-tests were used to explore this interaction. There was a significant decrease in state positive affect in the negative imagery condition pre and post imagery manipulation, t(14) = 4.95, p = <.001, d = 0.7. There was also a significant increase in state positive affect of participants in the positive imagery condition pre and post imagery manipulation, t(14) = -4.01, p = .001, d = -0.8. Participants in the negative

imagery group reported significantly lower positive affect than participants in the positive imagery group post imagery manipulation, $t(28) = 4.98$, $p = <.001$, $d = 1.9$.

State Negative Affect. See table 3 for group means. There was a significant main effect of group, $F(1, 28) = 10.02$, $p = .004$, $\eta_p^2 = .26$ and a significant main effect of time, $F(1, 28) = 19.06$, $p = <.001$, $\eta_p^2 = ..40$. This was qualified by a significant interaction of time and group, $F(1, 28) = 45.83$, $p = <.001$, $\eta_p^2 = .62$. A series of independent and paired samples t-tests were used to explore this interaction. There was a significant increase in negative affect scores in the negative imagery condition pre and post imagery manipulation, $t(14) = -6.82$, $p = <.001$, $d = -1.7$. There was no significant difference in negative affect scores in the positive imagery condition pre and post imagery manipulation, $t(14) = 2.08$, $p = .056$, $d = 0.51$. However, there was a significant difference between the negative imagery group and the positive imagery group post imagery manipulation, $t(28) = -5.50$, $p = <.001$, $d = -2.08$.

2.4 Discussion

The current study is the first to explore the role of mental imagery in relation to non-clinical paranoia using an experimental design. The aim was to investigate the effects of negative and positive imagery on state levels of paranoia, anxiety, self-esteem, mood and self-compassion in individuals with high levels of non-clinical paranoia. The results of the study provide support for the hypotheses. As predicted, paranoia-related negative imagery led to increased paranoia, negative mood, and anxiety as well as decreased self-esteem, self-compassion and positive affect. Conversely, positive imagery led to reductions in paranoia, negative mood, anxiety and increases in positive affect, self-esteem and self-compassion. This is an important finding; the effect of imagery manipulation on non-clinical paranoia and mood has not been demonstrated previously.

These findings support preliminary evidence for a role of mental imagery in paranoia (e.g. Schulze et al., 2013). There is increasing evidence that intrusive visual images and memories are a common feature of many disorders (e.g. Harvey, Watkins, Mansell, & Shafran, 2004; Hirsch & Holmes, 2007) and this may extend to persecutory delusions (Morrison, 2001). Previous research has demonstrated high rates of intrusive imagery in people with persecutory delusions (e.g. Morrison & Baker, 2000). Intrusive imagery refers to involuntary, spontaneous images, whereas the current study asked participants to recall a situation in order to generate an associated image, deliberately self-generated images are considered as important as spontaneously triggered imagery and is commonly used in psychological research on imagery (Brewin et al., 2010). One advantage of experimentally manipulating imagery is the opportunity to provide evidence on the causal nature of imagery, and this study is the first to provide evidence that manipulation of imagery can have causal consequences for paranoia and associated mood states. Imagery was found to be related to general affect, and anxiety, which is perhaps not surprising given previous research suggesting an association between image-related anxiety and general anxiety, and the relevance of affect, particularly anxiety, in persecutory delusions (Freeman et al., 2002; Schulze et al., 2013).

The study also provides support for the impact of imagery on self-esteem in paranoia. The study found similar results to those reported in the social anxiety research, in which holding negative imagery in mind led to a reduction in levels of self-esteem (e.g. Hulme, Hirsch & Stopa, 2012). Previous research has also found negative associations between self-esteem and paranoia in clinical and non-clinical populations (Freeman et al., 1998; Martin and Penn, 2001).

In addition, self-compassion was significantly affected by type of imagery. Little is known about the role of self-compassion in people with paranoia and further research is required before conclusions can be drawn. However, the study provides tentative support for the use of positive or compassion imagery in individuals with sub-clinical paranoia. This supports findings by Lincoln, Hohenhaus and Hartmann (2012) that compassion imagery may be useful in reducing symptoms and potentially preventing the development of persecutory beliefs in psychosis prone participants.

The current study demonstrated larger effect sizes than those reported in social anxiety research (e.g. Hulme, Hirsch & Stopa, 2012). This suggests that imagery plays an important causal role in the development and maintenance of paranoia, however these findings need to be replicated and extended to clinical populations before firm conclusions can be drawn. The indication that imagery may be as significant to this population as samples with social anxiety has important theoretical and clinical implications, as follows.

2.4.1 Theoretical Implications

Mental imagery is identified as a key component in the cognitive behavioural models of a number of anxiety disorders (Clark & Wells, 1995; Ehlers & Clark, 2000; Rapee & Heimberg, 1997). This study suggests that mental imagery may also be implicated in the maintenance of paranoia. If findings are replicated in clinical groups, cognitive behavioural models of paranoia might usefully include imagery as well as verbal cognition. Currently, only Morrison's (2001) model of psychosis refers directly to the role of imagery in psychosis. In this model, imagery is conceptualised as intrusions into awareness and that it is the interpretation of these intrusions that causes the associated distress. It might also be useful for specific models of paranoia (i.e. the cognitive model of persecutory delusions; Freeman et al., 2002) to directly consider the role of imagery in maintaining symptoms, particularly given the similarities between this model and the model of social anxiety (Clark & Wells, 1995) which identifies imagery as a key component. The current study provides further support for similar psychological processes between social anxiety and paranoia.

Less is known about the mechanisms in which paranoia may be maintained through imagery. It could be hypothesises that imagery may maintain paranoia through its influence on self-esteem, anxiety or related mood states. The vividness of imagery may also reinforce conviction in the validity of beliefs or fears related to persecution, however further research is required to explore the ways in which imagery acts as maintaining factor.

These findings provide additional support for the theory that imagery may have a more powerful impact on emotional responses than verbal processing of similar material and that this is true for negative and positive imagery (Holmes & Mathews, 2005; Holmes, Mathews, Dalgleish, & Mackintosh, 2006, 2008). It has been hypothesised previously that mental images (in all sensory modalities) are primarily sensory-perceptual representations, and that sensory-perceptual signals have more direct connections with emotional systems in the brain, such as the amygdala. Therefore, imagery acts as an emotional amplifier in both negative and positive emotional states across disorders (Holmes & Mathews, 2010).

2.4.2 Clinical Implications

The significant effect of imagery manipulation in this study indicates that targeting and manipulating imagery in therapeutic interventions (e.g. through use of imagery rescripting) may be of benefit for individuals with paranoia. For instance, it may be useful to include imagery, as well as other cognitions, in the assessment of individuals with paranoia. If imagery is identified as an important aspect of an individual's formulation in terms of maintaining their distress, then interventions such as Cognitive Behaviour Therapy (CBT) could address imagery in addition to other cognitive and behavioural mechanisms. There is evidence to suggest that mental imagery processes may underlie the effectiveness of clinical treatments such as imagery re-scripting in CBT (e.g. Holmes, Arntz, & Smucker, 2007). In line with the theoretical models of social anxiety and PTSD, mental imagery interventions have been developed and shown to be effective for these groups (e.g. Arntz, 2012; Hackmann & Holmes, 2004; Holmes, Arntz, et al., 2007; Wild, Hackmann, & Clark, 2007). Building on preliminary evidence for the role of mental imagery in paranoia, this study shows that imagery focused interventions may also be effective in reducing paranoia and improving mood. This study now requires replication and extending to clinical populations. Morrison (2004) presented a case study reporting on the cognitive-behavioural treatment of one patient with delusional disorder indicating that targeting intrusive images can reduce paranoid experiences, conviction and distress. However, additional research is needed to examine the feasibility and potential benefit of including such techniques in the psychological treatment of patients with persecutory ideation (Arntz, 2012; Schulze et al., 2013).

Interestingly, the current study provides novel findings to suggest that the use of positive imagery may be of equal benefit as targeting negative intrusive imagery in people with non-clinical paranoia. There is some existing evidence to suggest that positive imagery training can be useful for certain clinical populations, including borderline personality disorder (Arntz &

Weertman, 1999; Giesen-Bloo et al., 2006) and compassionate mind imagery for depression (Gilbert & Irons, 2004).

Morrison (2001) argues that analysis of the relationship between imagery and memories or perceptions of the real world may be beneficial in therapy. A key factor in the maintenance of persecutory delusions could relate to the appraisal rather than the presence of the images per se (i.e. images are experienced as reflecting reality, rather than seen as images). Future research could include assessment of interpretation of imagery, in addition to the characteristics and emotional impact of imagery.

2.4.3 Limitations

There are several limitations of note in this study. Firstly, the study is limited by its relatively small sample size, and predominately female sample. Secondly, the study did not include a comparison group therefore no information was available on the effects of imagery in individuals with low levels of non-clinical paranoia. Thirdly, no standardised assessment measures of social anxiety were used in the study. The STAI provides a more general assessment of anxiety and does not map onto social anxiety disorder. This may be an important distinction given the overlap between social anxiety and paranoia. In addition, the majority of participants in this sample were psychology students. Whilst research into both paranoia (Freeman, 2006) and social anxiety (Stopa & Clark, 2001) demonstrate suitability of carrying out research in the healthy population, the sample may be unrepresentative of reactions in the general population A further limitation of the study is that the researcher was not blind to the group conditions and hypotheses, though it would have been useful to have an independent assessor conducting the imagery interviews, it was beyond the scope of this research. Finally, the study did not include any manipulation checks following the imagery task (i.e. to record the percentage of time image was held in mind).

A small correlation was found between the positive affect subscale of the PANAS and state paranoia (as assessed by the paranoia checklist) prior to imagery manipulation. The PANAS-P measures items such as ‘alert’, ‘active’, and ‘attentive’ therefore it is possible that these traits were associated with state paranoia particularly if paranoid participants were hyper-vigilant. It also possible that participants with high state paranoia can simultaneously experience positive affect. However, the reasons for this correlation are speculative at this stage. Due to the correlation with the primary outcome variable, positive affect was controlled for in the analysis of state paranoia.

Relationships were also found between secondary variables, including positive affect, self-esteem and self-compassion however it was considered important at this exploratory stage to consider all variables in relation to imagery in paranoia, and though these concepts are related they are thought to be qualitatively different and distinct constructs (e.g. Neff, 2011). It was also not surprising to find that negative affect and state anxiety were related as the negative affect subscale of the PANAS includes items such as 'nervous', and 'scared'. However, it might be useful for future studies to consider use of an alternative less generalised measure of state anxiety such as a specific measure of social anxiety, again for reasons listed above.

Finally, the study did not achieve the sample size predicted, owing to the difficulty in recruiting paranoid participants to take part in the experimental stage. However, large effect sizes were found within this smaller sample. Interestingly, a high proportion of participants no longer met criteria for high paranoia when assessed again at the experimental stage. There was a time lapse between screening and the experimental stage, and this variation suggests that the trait measure of paranoia may not be as stable as assumed.

2.4.4 Directions for Future Research

A number of directions for future research have been identified in this discussion. The study findings would benefit from replication, addressing certain limitations (e.g. including use of a specific social anxiety measure. It could also be useful to extend the study to include a task which evokes mild paranoia, in order to assess the protective benefits of positive imagery, and the effects of negative imagery in the face of triggering situations. It would be useful to extend the research to clinical populations, if findings were replicated in clinical groups this would have implications for theoretical models of paranoia, and therapeutic interventions. More research is needed on the use of imagery interventions with people experiencing persecutory delusions. Finally, future research could investigate interpretation of imagery, in addition to the characteristics and emotional impact of imagery (Morrison, 2001). This may help to improve our understanding of the role of imagery in maintaining paranoia and the processes in which imagery serves to maintain paranoia and associated distress.

2.4.5 Conclusion

Although the results need to be treated with caution given limitations to the design, the study suggests that imagery may be a key component in the maintenance of paranoia, and

that mental imagery interventions may be of benefit clinically. This is the first experimental study to demonstrate the effects of imagery on non-clinical paranoia and mood. Further research is needed to expand our understanding of the relationship between imagery and persecutory thinking in clinical and non-clinical populations, and its potential for change.

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Appendices

Appendix A

Positive Imagery Interview

Participant Number_____

I'd like you to think of a time when you have been with other people - it may be just one other person or it might be a group, it could be a family member or it might be with a friend or friends - when you felt relaxed, and secure and you felt that you could trust the people whom you were with?

Q: Can you think of a time like this when you felt particularly secure or trusting? (*Pause*)

Q: Can you briefly tell me about it?

Q: Rate how safe and secure you felt on a scale of 0 to 100 where 0 represents not feeling secure and 100 represents feeling extremely secure?

Q: Now rate how much you trusted the other person/people on a scale of 0 to 100 where 0 represents not trusting at all and 100 represents completely trusting?

(Choose another situation if it is not above 60%)

When people feel secure and safe with other people and feel confident that they can trust them, they often feel good about themselves and may have an image or a sense of themselves in their mind…

Did you have a positive sense of yourself in the situation?

Yes/no

(If no then identify another situation).

Now you have identified a situation please close your eyes and re-create that situation, and the image you have of yourself, as vividly as possible whilst I ask you some questions about it…

What is happening in the image that you can see right now? Describe to me what is going on.

What are you doing?
(If I was watching that on screen/TV what would I see?)

Who are you with?

What can you see and hear?

What are other people doing?

What do you look like to other people; that is, if someone else was looking at you, and they had to describe you; what would they see?

(*Summarise and check if each bit is right and get more detail on each aspect*)

I'd like you to stay focusing on that situation, try to get a really clear picture or sense of what it was like, where you were, who you were with, what you were doing… (*Pause*)

Q: How vivid is the image/ sense of your self on a scale of 0 not at all vivid/strong to 100 extremely vivid/strong? (*If less than 60% go back and get more detail*)

Q: As you think about it now, do you have any sensations in your body?

Q: What emotions do you feel now as you hold this image in mind? Rate that feeling from 0-100 (0 *not at all strong*, 100 *extremely strong*).

Do you feel any other emotions as you hold this image in mind? Rate each emotion

Now keeping that situation clearly in mind, can you focus on how you felt about yourself? Do you have an image of yourself in that situation, this could be a picture of yourself or you may hear your voice?

Yes/No

If not then ask: -

Q: Can you describe it (insert participant's own words to refer to the image) to me?

Use prompts if necessary – see Q's above

Q: How positive is your view of yourself. Can you rate it on a scale from 0 to 10 where 0 is not at all positive and 10 is extremely positive?

I am going to summarise what you have described to me and after I want you to let me know if I have captured your image correctly.

Ok, now I want you to hold this image in mind whilst you complete the questionnaires.
Now open your eyes.

Appendix B

Negative Imagery Interview

Participant Number_____

I'd like you to think of a time when you have been with other people - it may be just one other person or it might be a group, it could be a family member or it might be with a friend or friends, or it might be with people you don't know or don't know well - when you felt wary or suspicious and you felt that you could not trust the people whom you were with?

Q: Can you think of a time like this when you felt particularly wary or suspicious and mistrusting of others? Or that people were out to get you in some way? (*Pause*)

Q: Can you tell me about it briefly?

Q: How suspicious did you feel at the worst moment on a scale of 0 not at all to 100 extremely suspicious? *(Choose another situation if it is not above 60%)*

When people feel suspicious of other people, and that they cannot be trusted, they often feel negatively about themselves and may have an image or a sense of themselves in their mind…

Q: Did you have a negative sense of yourself in the situation?

Yes/no

If no then identify another situation.

Now you have identified a situation please close your eyes and re-create that situation, and the image you have of yourself, as vividly as possible whilst I ask you some questions about it...

What is happening in the image that you can see right now? Describe to me what is going on.

What are you doing?
(If I was watching that on screen/TV what would I see?)

Who are you with?

What can you see and hear?

What are other people doing?

What do you look like to other people; that is, if someone else was looking at you, and they had to describe you; what would they see?

(*Summarise and check if each bit is right and get more detail on each aspect*)

I'd like you to stay focusing on that situation, try to get a really clear picture or sense of what it was like, where you were, who you were with, what you were doing… (*pause*)

Q: How vivid is the image/ sense of yourself on a scale of 0 not at all vivid/strong to 100 extremely vivid/strong? (*If less than 60% go back and get more detail*)

Q: Do you have any sensations in your body?

Q: What emotions do you feel now as you hold this image in mind? Rate that feeling from 0-100 (0 *not at all strong*, 100 *extremely strong*).

Do you feel any other emotions as you hold this image in mind? Rate each emotion

Now keeping that situation clearly in mind, can you focus on how you felt about yourself? Do you have an image of yourself in that situation, this could be a picture of yourself or you may hear your voice?

Yes/No

If not then ask: -

Can you describe it (insert participant's own words to refer to the image) to me?

Use prompts if necessary – see Q's above

Q: How negative is your view of yourself. Can you rate it on a scale from 0 to 10 where 0 is not at all negative and 10 is extremely negative?

I am going to summarise what you have described to me and after I want you to let me know if I have captured your image correctly.

Ok, now I want you to hold this image in mind whilst you complete the questionnaires. Now open your eyes.

Appendix C

Paranoia Checklist

Please read the following statements and rate the extent to which they apply at this moment.

1. I need to be on my guard against others

1 2 3 4 5
Not at all *Very Strongly*

2. There might be negative comments being circulated about me

1 2 3 4 5
Not at all *Very Strongly*

3. People deliberately try to irritate me

1 2 3 4 5
Not at all *Very Strongly*

4. I might be being observed or followed

1 2 3 4 5
Not at all *Very Strongly*

5. People are trying to make me upset

1 2 3 4 5
Not at all *Very Strongly*

6. People communicate about me in subtle ways

1 2 3 4 5
Not at all *Very Strongly*

7. Strangers and friends look at me critically

1 2 3 4 5
Not at all *Very Strongly*

8. People might be hostile towards me

1 2 3 4 5
Not at all *Very Strongly*

9. Bad things are being said about me behind my back

1 2 3 4 5
Not at all *Very Strongly*

10. Someone I know has bad intentions towards me

1 2 3 4 5
Not at all Very Strongly

11. I have a suspicion that someone has it in for me

1 2 3 4 5
Not at all Very Strongly

12. People would harm me if given an opportunity

1 2 3 4 5
Not at all Very Strongly

13. Someone I don't know has bad intentions towards me

1 2 3 4 5
Not at all Very Strongly

14. There is a possibility of a conspiracy against me

1 2 3 4 5
Not at all Very Strongly

15. People are laughing at me

1 2 3 4 5
Not at all Very Strongly

16. I am under threat from others

1 2 3 4 5
Not at all Very Strongly

17. I can detect coded messages about me in the press/TV/radio

1 2 3 4 5
Not at all Very Strongly

18. My actions and thoughts might be controlled by others

1 2 3 4 5
Not at all Very Strongly

Paranoia Scale

Please indicate to what extent the following statements apply to you, with **1 being not at all applicable to me**, and **5 being extremely applicable to me**

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

Rosenberg Self-Esteem Scale

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1.I feel that I am a person of worth, at least on an equal plane with others.	SA	A	D	SD
2.I feel that I have a number of good qualities.	SA	A	D	SD
3.All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
4.I am able to do things as well as most other people.	SA	A	D	SD
5.I feel I do not have much to be proud of.	SA	A	D	SD
6.I take a positive attitude toward myself.	SA	A	D	SD
7.On the whole, I am satisfied with myself.	SA	A	D	SD
8.I wish I could have more respect for myself.	SA	A	D	SD
9.I certainly feel useless at times.	SA	A	D	SD
10.At times I think I am no good at all.	SA	A	D	SD

State Self-Esteem Scale

SSES

For each of the items, please circle the number on the scale that best represents how you feel right now.

1. Pride

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

2. Inadequate

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

3. Competent

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

4. Confident

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

5. Incompetent

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

6. Stupid

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

7. Worthless

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

8. Smart

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

9. Resourceful

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

10. Effective

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

11. Ashamed

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

12. Efficient

1	2	3	4	5	6	7	8	9	10	11
Not at All										Extremely

State Trait Anxiety Inventory

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name_____ Date_____

DIRECTIONS

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	1	2	3	4
22. I feel nervous and restless	1	2	3	4
23. I feel satisfied with myself	1	2	3	4
24. I wish I could be as happy as others seem to be	1	2	3	4
25. I feel like a failure	1	2	3	4
26. I feel rested	1	2	3	4
27. I am "calm, cool, and collected"	1	2	3	4
28. I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4
29. I worry too much over something that really doesn't matter	1	2	3	4
30. I am happy	1	2	3	4
31. I have disturbing thoughts	1	2	3	4
32. I lack self-confidence	1	2	3	4
33. I feel secure	1	2	3	4
34. I make decisions easily	1	2	3	4
35. I feel inadequate	1	2	3	4
36. I am content	1	2	3	4
37. Some unimportant thought runs through my mind and bothers me	1	2	3	4
38. I take disappointments so keenly that I can't put them out of my mind	1	2	3	4
39. I am a steady person	1	2	3	4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

STAIP-AD Test Form Y
www.mindgarden.com

SELF-EVALUATION QUESTIONNAIRE STAI Form Y-1

Please provide the following information:

Name_____Date_____S_____

Age_____ Gender (*Circle*) **M** **F** T_____

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment.* There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

STAIP-AD Test Form Y
www.mindgarden.com

Positive and Negative Affect Scale

PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate number next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale provided to record your answers.

1 = very slightly or not at all
2 = a little
3 = moderately
4 = quite a bit
5 = extremely

1. Interested	1	2	3	4	5
2. Disinterested	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

Self-Compassion Scale

Please read the following statements. To the left of each item, indicate how you feel right now, using the following scale:

Strongly Disagree ***Strongly Agree***

1 2 3 4 5

_____1. I'm trying to be kind and reassuring to myself.

_____2. I'm being understanding towards myself.

_____3. I'm trying to take a supportive attitude towards myself.

_____4. It's okay to make mistakes.

_____5. I'm being hard on myself.

_____6. I'm being intolerant towards those aspects of my personality that I don't like.

_____7. I feel stupid.

_____8. A lot of people have negative experiences, I'm not the only one.

_____9. Everyone makes mistakes sometimes.

_____10. Everyone feels bad about themselves sometimes.

_____11. I feel like other people have it easier than me.

_____12. These types of things seem to happen to me more than to other people.

_____13. In the scheme of things, this is not that big of a deal

_____14. I'm taking a balanced perspective on the situation.

_____15. I keep thinking about what happened.

_____16. I feel consumed by feelings of inadequacy.

Appendix D

Participant Information Sheet and Consent Form

Participant Information Sheet

Study title: Investigation into Mental Imagery

Researcher: Gemma Bullock, Trainee Clinical Psychologist

Study ID number: 5890 (Study Code GB6)

Please read this information sheet carefully before deciding to participate in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

I am a Trainee Clinical Psychologist studying at the University of Southampton. As part of my training, I am conducting research examining the process of mental imagery in university staff and students. This area of research is currently receiving much attention.

Why have I been chosen?

A large number of people completed a questionnaire for phase one of this study on iSurvey. Following this, some people were selected to take part in the experimental second phase of the study.

What will happen if I take part?

This is an experimental study. You will be asked to take part in an imagery exercise. You will also be asked to complete some questionnaires before and after the imagery exercise. Your participation should take approximately 30 minutes in total.

Are there any benefits in my taking part?

If you choose to take part, you will be granted course credit or money. Your participation will also contribute towards knowledge in this area of psychology.

Are there any risks involved?

There are no risks involved. You may experience some transient negative thoughts and feelings. After the study has finished, the research will be fully explained to you and you will be given the opportunity to ask questions.

Will my participation be confidential?

Any collected data will not include personal identifying characteristics and will be kept on a password protected computer. Only those involved in the study (myself and my two supervisors) will have access to the study data.

What happens if I change my mind?

Your participation is voluntary and you have the right to withdraw at any time. If you withdraw, this will not have any effect on your grade or your treatment as a student in the psychology department.

What happens if something goes wrong?

If I have any questions about my rights as a participant in this research, or if I feel that I have been placed at risk, I may contact the chair of the Ethics Committee, Psychology, University of Southampton, SO17 1BJ, UK. Phone: +44 (0)23 8059 4663, email slb1n10@soton.ac.uk

CONSENT FORM

Study title: The Role of Mental Imagery

Researcher name: Gemma Bullock, Trainee Clinical Psychologist
ERGO Study ID number: 5890 (Study Code GB6)

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (Version2, 30.09.2013) and have had the opportunity to ask questions about the study	☐
I agree to take part in this research project and agree for my data to be used for the purpose of this study	☐
I understand my participation is voluntary and I may withdraw at any time without penalty	☐
I understand that my data collected will be treated confidentially and that published results of this research project will also retain my confidentiality.	☐

Name of participant (print name)……

Signature of participant……..

Date……

Appendix E

Debriefing Statement (Example)

The Role of Mental Imagery
Debriefing Statement – Negative Imagery Group

Study ID: 5890 (Study Code GB6)

Brief paranoid thoughts or passing suspiciousness is experienced at some point by most people and is common in the general population. Examples of suspiciousness include thinking that other people are trying to irritate you or feeling like you are being watched. Passing suspicious thoughts can have a useful function. For example, if you think that someone might be following you when walking along a dark path, you may change your direction in order to feel more safe. This level of suspiciousness is not a sign of mental health difficulties/a clinical problem. However, examining non-clinical levels of suspiciousness can inform our understanding of the phenomenon in clinical populations. Investigating low-level phenomena is a common method of research. People with low level anxiety or low mood are often recruited to studies in order to inform an understanding of emotional disorders.

The overall aim of this study was to explore the role of imagery in non-clinical paranoia/suspiciousness. Mental Imagery is one factor identified as important in the maintenance of anxiety disorders, including social anxiety. Research suggests that paranoia and social anxiety are likely to be maintained by similar psychological processes. As research suggests that targeting imagery is an effective way of reducing distress in people with anxiety, research into similar processes in people with paranoia would be valuable.

The study involved completing some questionnaires before and after a negative imagery interview. The study assigned one half of all individuals recruited to participate in a negative imagery interview. The other half of individuals were assigned to a positive imagery interview. The purpose of this was to investigate the role of imagery in non-clinical paranoia/suspiciousness. **You were assigned to participate in the negative imagery interview group.**

It is expected that participating in a negative imagery task will result in increased paranoia, anxiety and general mood, and lower self-esteem and self-compassion compared to the positive imagery group. The questionnaires you were asked to complete measured these areas.

The visualisation task at the end of the experiment was designed to restore your mood, in case you experienced any negative thoughts or feelings during the task.

If you have any further concerns or questions, please do not hesitate to contact me, Gemma Bullock, on gb19g11@soton.ac.uk or contact your GP for further advice.

You may have a copy of this summary if you wish.

Thank you very much for your participation in this study.

References for further reading on this topic:

Freeman, D. (2007). Suspicious minds: the psychology of persecutory delusions. *Clinical Psychology Review, 27*, 425-457.

Freeman, D., Freeman, J., & Garety, P. (2006). Overcoming paranoid and suspicious thoughts. *London, UK: Constable & Robinson*.

Appendix F

Ethics Approval

Submission Number: 5890

Submission Name: Thesis: The Role of Imagery in Paranoia

This email is to let you know your submission was approved by the Ethics Committee.

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment)

Comments

None

Click here to view your submission

ERGO : Ethics and Research Governance Online

http://www.ergo.soton.ac.uk

DO NOT REPLY TO THIS EMAIL

Appendix G

Correlations

			TotalStateAnx1	TotalParanoia1	TotalPosAffect1	TotalNegAffect1	TotalStateSelfEst1	TotalCompassion1
	TotalStateAnx1	Pearson Correlation	1	.168	-.539**	.521**	-.723**	-.565**
		Sig. (2-tailed)		.373	.002	.003	.000	.001
		N	30	30	30	30	30	30
	TotalParanoia1	Pearson Correlation	.168	1	.413*	.077	.130	.076
		Sig. (2-tailed)	.373		.023	.685	.494	.690
		N	30	30	30	30	30	30
	TotalPosAffect1	Pearson Correlation	-.539**	.413*	1	-.401*	.704**	.720**
		Sig. (2-tailed)	.002	.023		.028	.000	.000
		N	30	30	30	30	30	30
	TotalNegAffect1	Pearson Correlation	.521**	.077	-.401*	1	-.474**	-.365*
		Sig. (2-tailed)	.003	.685	.028		.008	.047
		N	30	30	30	30	30	30
	TotalStateSelfEst1	Pearson Correlation	-.723**	.130	.704**	-.474**	1	.766**
		Sig. (2-tailed)	.000	.494	.000	.008		.000
		N	30	30	30	30	30	30
t1	TotalCompassion1	Pearson Correlation	-.565**	.076	.720**	-.365*	.766**	1
		Sig. (2-tailed)	.001	.690	.000	.047	.000	
		N	30	30	30	30	30	30

		Pearson Correlation	-.565**	.076	.720**	-.365*	.766**	1
	TotalCompassion1	Sig. (2-tailed)	.001	.690	.000	.047	.000	
		N	30	30	30	30	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).